EXAMINING SELF-CARE AMONG THE ELDERLY

USING OREM'S SELF-CARE FRAMEWORK

BY

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A Thesis
Submitted to the Faculty of Graduate Studies
in Partial Fulfillment of the Requirements
for the Degree of

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Examining self-care among the elderly using Orem's self-care framework

BY

Valerie M. Wiebe

A Thesis/Practicum submitted to the Faculty of Graduate Studies of The University of Manitoba in partial fulfillment of the requirements of the degree of Master of Nursing

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ABSTRACT

Secondary data analysis was conducted with data from the 1991/92 Manitoba Study of Health and Aging (MSHA). The purpose of this investigation was to test the reliability and validity of the Self-Management Inventory (SMI) as a measurement tool for self-care abilities among elderly respondents based on Orem's model of Self-care (1991). The sample consisted of well elderly residing in Winnipeg Manitoba (n =809). Findings demonstrated that for this sample, the SMI was not a valid or reliable measurement of self-care. However, findings suggested a self-care indicator consisting of the self-reported ability to do house work and yard work.

Logistic regression analysis was conducted to determine the correlation between the self-care indicator and conditioning factors posited by Orem (1991). Findings suggested a relationship between the self-care indicator and self-reported health, age, gender, life satisfaction, and utilization of pharmacist services. Implications for research and practice were identified.

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1.

Statement of the Problem

How does one measure self-care behaviours in the elderly? This thesis attempts to investigate the validity and reliability of a tool that claims to measure self-care and further to examine correlates of self-care based on a model developed by Dorothea Orem (1991).

The proportion of older adults, that is, persons aged 65 years and older in Canada has been increasing; with the greatest future growth expected to be among those who are 80 years of age and older (Ory & DeFriese, 1998; Denton & Spencer, 1995). The occurrence of chronic illness is also expected to increase, given that the majority of older adults report at least two chronic illnesses (Dean, Hickey, & Holstein, 1986; Miller, 1991; Musil, 1998).

In Manitoba, Canada between 1971 and 1983, persons 65 years of age and over increased by 29 per cent while the number of those older adults reporting poor health increased by 73 per cent (Black, Roos, Havens, & MacWilliam, 1995). The percentage was higher when the "old-old" that is, those over 85 years of age were analyzed separately. In that same study, while the number of old-old individuals increased by 25 per cent, their self-reported health declined by 111 per cent (Black et al., 1995). In addition, between 1971 and 1983 physician visits

increased by 273 per cent , and non-consultative visits rose by 75 per cent (Black et al., 1995).

The greying of the population and consequent increase in morbidity has continued to be associated with an increase in health care costs on per capita terms and as a proportion of the Gross Domestic Product (GDP). Total spending on health care increased from a range of 5.5 to 7 per cent of GDP in the 1960's to 9.9 per cent in 1991 (Barer, Evans, & Hertzman, 1995).

Consequent to the increase in the size of the older adult population coupled with an even greater increase in morbidity it has been projected that by 2011, the estimated population increase (33%) of older adults will have to be accompanied by an increase in health care expenditures of approximately 50 per cent to maintain the 1986 health care standards (Barer et al., 1995). Expenditures will have to increase by 115 percent to accommodate a population growth of 55 percent by 2041(Barer et al., 1995). Much concern has been expressed in the literature in relation to these projections and the ability of society to expand health care resources to meet the demands of an aging Canadian population.

Barer and his colleagues (1995) have argued that the increase in health care utilization among elderly persons has less to do with the increase in the older population and more to do with the fact that the health care system continues to

provide more services than it did a decade ago. Evidence has indicated that the current health care system is often ineffective, inappropriate, and fails to meet the needs of the elderly population (Denton & Spencer, 1995; Evans & Stoddart, 1990). While the underlying causes of the inefficiencies of the health care system are not clearly understood, fundamental changes in health care to achieve greater efficiency is needed (Barr, 1990). The challenge for health care in the 21st century will be to minimize health care costs for the increasing number of the chronically ill elderly experiencing impairment and disability while maintaining adequate services to meet their needs. Enhancing self-care abilities of older adults may assist in reducing health care expenditures.

Self-care, simply defined, is the care that individuals or families provide for themselves (Orem, 1991). If self-care can be maximized, then there may be concomitant decreasing demands on the health care system. In addition to contributing toward a more efficient utilization of scarce health care resources, self-care may be the only appropriate strategy in chronic illness where traditional medical treatment is ineffective (Dean, 1981; 1989; DeFriese & Woomert, 1992; Levin & Idler, 1983, Ory et al., 1998). Self-care has also been recognized as the treatment of choice for coping with the complexity and duration of chronic conditions (DeFriese & Woomert, 1992; Dill, Brown, Ciambrone, & Rakowski,

1995; Orem, 1980, 1985, 1991). Several studies on self-care have indicated that the majority of individuals prefer their own strategies to deal with chronic illness rather than consulting with a physician (Dean, 1981; 1989; Levin & Idler, 1983; Wykle & Haug, 1993). Research has demonstrated that self-care is not simply a consequence of a lack of physician availability but may be the primary form of health care across societies (Dean, 1986; Hickey, 1986; Levin, Katz, & Holtz, 1976; Segall & Chappell, 1989). Indeed, it has been suggested that without individual and family self-care, the health care system would be overwhelmed (Levin & Idler, 1983; Levin, 1976).

For older adults, self-care facilitated by community and social services seems most appropriate for meeting their holistic needs and for preventing premature institutionalization (Chappell, Strain, and Blandford, 1986; Dean et al., 1986; DeFriese & Konrad, 1993; Mockenhaupt, 1993). Even in the presence of impairment and disability self-care has been positively associated with self-esteem, self-efficacy, independence, quality of life, overall health status, and fewer physician visits (Chappell et al., 1986; DeFriese & Konrad, 1993; Jirovec & Kasno, 1993; Mockenhaupt, 1993). Self-care has been conceptualized as being both a historically dominant form of health care and a currently viable strategy for more effective health care in view of the increasing proportion of older adults and

their reporting of chronic conditions (Dean et al., 1986).

Much attention has been directed toward the idea of self-care and older adults. Despite the extensive research aimed at developing a congruous knowledge base about self-care, several limitations exist. Although theoretical frameworks do exist, much of self-care research tends to be driven by the literature. Conceptual definitions of self-care vary resulting in several different measurement tools which lack established psychometric properties. Consequently, self-care has been measured in varying ways: (a) as a specific response or a group of responses to a symptom, (b) as a specific behaviour or group of behaviours aimed at preventing illness, and (c) as the functional ability to manage activities of daily living (ADL) (Segall, 1987; Segall & Goldstein, 1989; Dean, 199; Schuster, Petosa, & Petosa, 1995; Yu, 1995). Findings based on these varying measurements have therefore been inconsistent and often contradictory.

Additionally, the current research tends to limit the study of self-care to the performance of illness and health self-care behaviours. Hence self-care is generally considered in terms of what people do when they are ill, and what they do when they are well to promote and maintain their health. One theorist, Orem (1991) adds a third dimension to self-care behaviours that entails a developmental perspective. In old age developmental needs often reflect conditions brought

about by physical and psycho-social changes that occur in the last stages of life. Examples include diminished functional ability, increased chronicity, problems of social adaptation related to losses within an older adult's social network, and reduced income following retirement. According to Orem, the ability of individuals to manage their developmental self-care needs establishes a baseline for their ability to perform illness and health self-care behaviours, particularly in old age. Authors have identified that illness and health self-care behaviours are conditioned by individual's developmental stages and life experiences (Dean, 1989, Ory & DeFriese, 1998). Yet currently, self-care instruments have limited ability to measure the developmental component of self-care.

The relationship between self-care and the formal health care system is diverse and not completely understood. Some researchers consider the decision to consult professional care providers as an act of self-care, while others believe that consultation of health professionals to be outside the realm of self-care (Green, 1985; Ory & DeFriese, 1998; Penning & Chappell, 1990).

Another additional limitation is that research utilizing Orem's model is limited in terms of the size of the population under study. Small, convenience sample sizes of older adults may not adequately represent a heterogenous elderly

population known to demonstrate a wide range of behaviours.

The proposed research seeks to contribute to the aging and self-care literature by addressing some of the current theoretical and methodological limitations. As a means to address the limited theoretical knowledge base for self-care, a model of self-care developed by Orem has been employed. Self-care is examined using a measuring tool based on Orem's (1991) framework. The Self-management Inventory (SMI) (Snyder et al., 1991) includes the measurement of developmental self-care behaviours along with illness and health self-care behaviours. To address the limitation related to small sample sizes used to test Orem's model, this research will examine self-care using data from a previous study, the 1991/92 Manitoba Study of Health and Aging (MSHA). The MSHA (1991/1992) collected data from a community sample of 1763 persons aged 65 years and older.

In summary, demographic changes, concerns about mounting health care costs and a growing attention to the role of self-care among older adults forms the basis for a closer examination of the concept and measurement of self-care. Limitations in the current self-care knowledge base include a lack of theory based research, diverse self-care measurements, and the inability to generalize findings often due to small sample sizes. These limitations are addressed in this research by

examining self-care according to Orem's theoretical framework with a large sample size which includes a developmental self-care component.

2. Review of the Literature

This review addresses self-care and aging in relation to conceptual and empirical issues. The definition of self-care adopted for this proposed research is compared with other conceptualizations of self-care. Several conceptual aspects of self-care are discussed with reference to the origin of self-care and the scope of self-care. Additionally, several self-care theoretical frameworks used in the research to date are presented. Orem's self-care model is described briefly in this section, with a more detailed presentation to follow in chapter three. Empirical findings related to self-care and aging are examined in terms of correlates of self-care. Finally, a summary is presented.

2.0. Self-care: A Definition

The World Health Organization (WHO), is adopted for this research. This definition is congruent with Orem's self-care theoretical framework.

> "Self-care in health refers to the activities individuals, families, and communities undertake with the intention of enhancing health, preventing disease, limiting illness, and restoring health. These activities are derived from technical knowledge and skills from a pool of professional and lay experience. They are undertaken by lay people on their own behalf, either separately or in participatory collaboration with professionals" (as quoted in Ory, DeFriese & Dunker, 1998, pp. xvii).

2.1 Self-care: Conceptual Issues

It has been suggested that self-care is the primary source of health care in all societies (Dean, 1981; Hickey, 1986). Self-care has been considered to be effective and relevant for the maintenance of health and optimal well being for all age groups regardless of health status (Levin et al., 1976; Mettler & Kemper,

1993). Two major issues identified in the literature involve the origin and the scope of self-care. In terms of the origin of self-care, the debate focuses on whether or not self-care is a contemporary social movement or a traditional attribute of all society that has existed throughout history. Controversy also exists regarding the definition of self-care in terms of whether self-care is a substitute of professional care or whether professional care is a dimension of self-care.

2.1.0. Self-care: Social Movement or Traditional Attribute?

Diverse opinions exist regarding the origin of self-care, that is, whether or not self-care is a recent movement or a historical, traditional attribute of all humans. Some investigators have posited that the growing popularity of self-care is the result of current social trends, including consumerism and feminism. Public dissatisfaction with caustic medical procedures that have often resulted in iatrogenic illnesses, may have encouraged self-reliance, individualism and self-care. The preference for self-care may have been reinforced by the growth of women's rights movements and public scepticism concerning the existing medical hierarchy (DeFriese & Konrad, 1993, Levin & Idler, 1983). The tendency toward de-professionalization has further corresponded with society's interest in

consumerism, self-determination, and increased knowledge (DeFriese & Konrad, 1993; Fleming, Giachello, Anderson, & Andrade, 1984; Levin & Idler, 1983; Kronefeld, 1979). Some of the literature has depicted self-care as a contemporary as a strategy to reinforce a contemporary societal trend aimed at self-reliance.

In contrast, others have asserted that self-care represents a traditional attribute employed by society throughout history (Hickey, 1986; Levin et al., 1976). Self-care is recognized as a human behaviour reflecting traditional practises of humans. The role of self-care throughout history is evident by the use of home remedies in response to symptoms. Historical documents record the personal strategies employed by individuals and their families to treat illness and maintain their well being throughout the lifespan (Dill, 1995).

Hasselkus (1994) suggested that independence and self-sufficiency were behavioral norms associated with adulthood. Similarly, Segall and Goldstein (1986) suggested that self-care is not new and further, that it is and historically has been human nature to care for one-self and one's family. Home remedies have been a traditional practise throughout history. According to this perspective, self-care was not a contemporary social movement and it had not developed as a reaction to ineffective professional treatment (Dean, 1981; Levin et al, 1986).

Muchow (1993) added that traditional self-care strategies are increasingly

more appropriate, given the trend toward an aging society experiencing increased chronicity and the failure of a contemporary medical care system to "solve" chronic health problems. She suggested that self-care is more prominent in today's society because it meets the need for health care that is low cost and sustainable over the duration of a chronic condition. Furthermore, the traditional sense of self-sufficiency, independence, and resistance to change demonstrated by the current cohort of older adults, particularly in the rural communities also reinforces the use of self-care (Muchow, 1993).

For this study, self-care was seen as a traditional attribute. As such, self-care was not perceived as a new social movement. The growing interest in self-care may reflect the ongoing demands of an aging society within a health care system that is limited in dealing with chronic health problems.

2.1.1. Professional Health Care: A Substitute or a Dimension of Self-care?

Opinion is split regarding whether or not professional health care services should be included as part of self-care. Debate revolves around whether or not self-care substitutes, that is, replaces professional care; or whether professional care is a dimension of self-care.

Some have suggested that self-care is an immediate treatment response to illness that excludes professional involvement (Haug, Wykle, & Namazi, 1989). Individuals practising self-care would decide to either do nothing about a symptom or would treat the illness by themselves (Haug et al., 1989). Professional consultation fell outside of the scope of self-care. Hence, the basic trait of self-care was its non-professional, non-bureaucratic nature (Haug et al., 1989; Levin & Idler, 1983). Vickery and Levinson (1993) maintained that when professional care providers were consulted, individuals were less likely to exercise autonomy in making decisions about their own care plan. Hence, professional care and self-care were considered as being separate based on who makes the decision regarding care.

Green (1985) also defined self-care exclusive of professional involvement. Self-care was restricted to include lay diagnosis, symptom treatment, and preventive care carried out by individuals or their own lay support system. Green (1985) suggested that the term "self-health management" more accurately described the co-ordination of professional care alongside self-care practises.

Other arguments for the exclusion of professional consultation as a self-care practice have been based on the availability of physicians and medical treatments. Where physicians were scarce in number and unavailable in remote

areas, self-care may indeed have substituted for professional care (Dean, 1981). Prior to the invention of effective analgesia and anesthesia, medical treatments were often more damaging and painful than the initial symptoms. Consequently individuals often preferred their own remedies, completely replacing professional treatment with self-care practises (Fleming et al., 1984). Individuals who were sceptical of physicians and whose cultural norms reinforced the use of self-care strategies were more likely to substitute professional care with self-care (Fleming et al., 1984; Penning & Chappell, 1990; Strain, 1991).

In contrast to these arguments seeking to exclude professional consultation from self-care practices, the position that professional care is a dimension of self-care suggests that individuals practise self-care when they consult professional care providers (Dean, 1981; Levin et al., 1976, Ory et al., 1998). As a first step, individuals might respond to symptoms by using lay strategies. Lay strategies encompass self-care practises initiated by the individual without professional intervention. Decisions regarding what to do about a symptom are based on past habits and/ or past experiences with symptoms and the strategies that were successful in providing relief in similar situations. Lay consultation, that is advise elicited by individuals from their friends and relatives also influenced self-care behaviours of individuals (Strain, 1989). Common lay practises arising from past

experience and lay consultation included self-medication, self-treatments, and the use of home remedies (Dean, 1981; Strain, 1989). However, if symptoms were serious and did not subside, these individuals might turn to professional services (Chappell & Guse, 1989; Segall & Chappell, 1989). The critical factor was that professional intervention was initiated as a result of individual's or their care provider's autonomous decision making processes. Furthermore, individuals and/or their family members also determined the level of assistance that they would accept from professional care providers (Orem, 1991). If the essence of self-care is self-control and self-determination, the decision to consult a professional caregiver could be considered a dimension of self-care (Dean, 1981; Orem, 1991).

The complementary relationship between self-care and professional care suggests that professional care is a dimension of self-care that is necessary to promote health and well being (Chappell, 1989; Health Canada, 1997; Ory et al., 1998; Penning & Chappell, 1990). Self-care is aimed at meeting everyday basic human needs and treating minor symptoms using home remedies (Barofsky, 1978; Stoller, Forester, & Portugal, 1993; Strain, 1989). Professional health care services are not used for everyday needs. Rather, professional services are sought to cure illness and care for those unable to meet their needs as a result of illness. Evidence exists in the literature that for older adults, the initial tendency was to

respond to their symptoms using their own self-care resources (Strain, 1989). If symptoms persisted or worsened, professional involvement to obtain relief was initiated (Strain, 1989).

Clearly, individuals have not abandoned self-care when they engage in professional care. Hence, in some illness conditions that did not subside using self-care alone, the tendency was to augment traditional, ongoing self-care practises with professional care (Dean, 1992; Dill et al.,1995; Kart & Engler, 1994; Segall & Goldstein, 1986; Stoller & Kart, 1994; Strain, 1989). Individuals seem capable of holding lay explanations and using home remedies as well as relying on professional care (Penning & Chappell, 1990; Strain, 1989; Segall & Goldstein, 1986). Rather than losing the benefits of modern technology, the inclusion of professional care within the definition of self-care has expanded the comprehensive nature of self-care (Penning & Chappell, 1990).

In the past, self-care was used to offset the perceived medicalization by professionals of common health and illness events. According to Health Canada (1997), self-care has evolved to include professionals as individuals learn to shape the processes and outcomes of the professional care they receive. This has extended the self-care role of individuals to include self-management of chronic conditions. This is evident as health professions have incorporated self-care

concepts and educational methods into their practises to facilitate their patients' self-care abilities (Ory et al.,1998). A current focus in health care is the development of programs and interventions that enhance self-reliance and maintain the independence of the elderly (Health Canada, 1997; Ory et al., 1998).

The complementary nature of self-care is also illustrated by the resurgence of interest in self-care as a researchable area by investigators. Attention has shifted from the examination of self-care as replacement for professional interventions toward the motivation of professionals to gain an understanding of the nature, causes and consequences of self-care (Ory & DeFriese, 1998).

Except for the studies on family caregiving of older adults, relatively little research on family-based self-care has been carried out. The choice to engage in self-care practises is often deeply rooted in socio-cultural background and studies have indicated that caregiving families tend to use formal care services as a last resort (Strain, 1989; Chappell et al., 1986). Moreover, families tend to not reduce the care they provided despite involvement with professional care programs and services (Chappell & Guse, 1989). In fact, when an older relative's level of disability increased, the provision of family-based informal care had also increased as a strategy to ameliorate the consequences of chronicity (Brody, Kleban, & Moles, 1983; Lorig, 1993; Moinpour, 1983). Levin and Idler (1981) asserted that

adaptation to minor illness, health-promotion, and prevention of disease were nurturing functions of the family that remain outside the jurisdiction of a physician. The provision of care reported by wives to their institutionalized spouses was ongoing and included companionship, monitoring health and doing little things (Ross, Rosenthal, and Dawson (1997). Ross and her associates (1997) determined that collaboration between wives and staff in long term care facilities was necessary to support and enhance the quality of care provided.

For this study, professional care and self-care are viewed as complementary. While self-care is the primary source of health care for all individuals and their families, the health care provided by professionals are included as a dimension of self-care.

2.1.2. Self-care Theoretical Frameworks

Several self-care models have been developed within the social sciences. According to the social science literature, self-care encompasses a range of illness and health self-care behaviours. Illness self-care behaviours are aimed at alleviating symptoms, while health self-care behaviours encompass health promotion and illness prevention (Chappell, Strain & Badger, 1988; Dean, 1992,

1991; Dill et al., 1995; Edwardson, et al., 1995). Individuals' decisions regarding their self-care behaviours were influenced by social, cultural, and environmental factors. Associations between self-care behaviours and sociodemographic characteristics, health status, health beliefs, and socio-cultural contexts have been examined (Dean, 1992; Stoller et al., 1993; Stoller & Pollow, 1994). The subsequent section will examine several self-care theoretical frameworks. Inconsistency and diversity in terms of the conceptualization, operationalization, and measurement of self-care pervade. To begin, a brief overview of Orem's theory of self-care deficit is presented followed by Mechanic's model of illness behaviour, the health belief model, the Anderson-Newman model, and the functional independent living framework.

Orem's theory of self-care deficit.

Orem's (1991) model of self-care deficit was selected for this research on the basis of a comprehensive nature. While the majority of the self-care models conceptualize and measure self-care according to illness and health self-care behaviours, Orem's model adds a developmental perspective. The ability to satisfy human needs that arise from situations specific to the individuals' stage of human

development is germane to the study of self-care in old age. The needs of older adults in illness and in health reflect their developmental stage, but their ability to satisfy these needs is dependent on past experiences and the physical and psycho-social situations that arise with increasing age. Orem suggested that the capacity for effective self-care was developed spontaneously throughout the lifespan as people learned to interact appropriately within the context of their physical, social, and cultural realities (Orem, 1991; Dodd & Dibble, 1993; Ip et al., 1996; Jirovec & Kasno, 1993).

Consistent with the WHO definition, Orem (1991) defined self-care as activities performed and initiated by individuals to maintain life, health, and well being. As such, the purpose of self-care was to help persons satisfy their illness related needs, their daily needs when they are in good health (referred to by Orem as "universal "needs), and their developmental needs specific to their stage of life (Orem, 1991). Orem's model postulates that these three needs (illness, health, and developmental) occur simultaneously at any one time and hence, are not examined in isolation.

According to Orem the scope of self-care is broad, including the decision to consult professional care providers. The framework postulates that a relationship exists between the capacity of individuals for performing self-care and

internal and external conditioning factors such as demographic characteristics, health status (psychological and physical), socio-cultural contexts, and political and physical environments experienced by individuals. Orem also distinguishes between independent self-care and dependent self-care. Independent self-care practises are carried out by individuals to maintain health, prevent illness, and to treat symptoms (Orem, 1991). Dependent self-care practises refer to the care provided by responsible family members for individuals who are unable to care for themselves (Orem, 1991).

Mechanic's model of illness behaviour: A sociological perspective.

Mechanic's model of illness behaviour reflects a broad, sociological conceptualization of self-care that recognizes professional intervention as an act of self-care. Mechanic conceptualized a pathway or process of illness self-care behaviours practised by individuals when they experienced symptoms. Mechanic postulated that people perceive and evaluate their symptom(s) in terms of seriousness, and then make decisions about how to ameliorate them. This process determined whether professional or lay treatment was obtained. Various combinations of stages have been suggested in the literature. For example, a

pathway of illness self-care behaviour for common non-serious ailments might involve the following practises: (1) do nothing, (2) self-treat the symptom, (3) seek informal help, or (4) consult professional services (Chappell et al., 1988).

The health belief model.

The health belief model (HBM) posits that motivation to perform health self-care behaviours is influenced by one's perception of susceptibility to illness and efficacy of the behaviour. Additionally, compliance is dependent upon the belief that the benefits of performing health self-care behaviours outweigh the barriers encountered with such regimes (Janz & Becker, 1984). Researchers have used the HBM to correlate specific health self-care behaviours to perceived barriers and benefits (Stoller & Pollow, 1994). Specific health self-care behaviours encompassed taking vitamins, exercising regularly, using seat-belts, getting adequate rest, eating a nutritious diet, abstaining from alcohol and nicotine, and participating in regular medical or self-examinations.

The Anderson-Newman model.

The Anderson-Newman model (1973) has been utilized to examine one dimension of illness self-care behaviour, that is, the use of formal health services. The framework postulates that three sets of factors are associated with the use of formal health services. The three factors include (a) enabling factors (accessibility and availability of professional services); (b) predisposing factors (sociodemographic factors, health beliefs, self-perceived health, attitudes toward health services, and knowledge about disease); and (c) need factors (perceived symptom severity and susceptibility to illness).

Functional independent living framework.

A relatively recent model developed by Yu (1995) is the functional independent living (FIL) framework . The framework postulated that self-care ability is determined by an individual's level of functional independence. In order to maintain one's functional independence in the community, adequate physical and mental functioning was required. Yu (1995) employed "The Functioning-for-Independent Living Scale" to measure physical functions of community dwelling

older adults that included vision, hearing, speech, mobility, transfer, hand and arm movement, and continence (Yu, 1995). The FIL Scale also measured mental functions that encompassed memory, identity, speech clarity, wandering, and unconventional behaviours (Yu, 1995). Yu tested the model and identified five significant variables as optimal predictors of independent functioning.

2.1.3 Summary: The Conceptual Issues

The WHO definition of self-care has been adopted for this research. The definition conceptualizes self-care as a traditional human trait demonstrated by individuals and/or their care giver to meet human needs in health and in illness. Consistent with Orem's framework, the WHO conceptualization includes professional intervention when solicited by the individual or caregiver.

The two major conceptual issues identified in the literature with respect to the origin of self-care and the scope of self-care have been discussed. The first issue pertains to whether self-care is a current societal trend or a traditional attribute of all human beings. The second issue concerns the scope of self-care, in terms of whether or not professional care is a dimension of self-care. For the purpose of this research, self-care is seen as a traditional attribute of all societies

with professional care as a dimension of self-care.

Several models have guided the self-care research including Orem's model of self-care deficit, Mechanic's model of illness behaviour, HBM, Anderson-Newman model, and the FIL framework. With the exception of Orem's model, most of these frameworks have confined self-care within the context of an individual activity examining correlates of specific illness and health self-care behaviours. Orem's model provides an additional understanding of developmental self-care behaviours.

2.2.

Self-care: Empirical issues

Much of the research has examined the relationship between self-care behaviours and associated factors. Research examining self-care behaviours of older adults has considered mostly cross-sectional, convenience samples, employing a quantitative approach. In the subsequent sections selected studies of self-care and older adults in terms of the measurement and correlates of self-care behaviour are presented. Much of the self-care research is multivariate, examining associations between self-care and two or more independent variables

simultaneously. In this literature review, correlates of self-care behaviours are presented as isolated independent variables for the purpose of organization and clarity. The limitations of this research are explored. Finally, a summary is presented.

2.2.0. Measurement of Self-care: Illness and Health Self-care Behaviours

The measurement of self-care in the research most frequently focuses on illness and/or health self-care behaviours. Frequencies related to illness self-care behaviours involve older adults' responses to their illness symptoms, while the measurement of health self-care behaviours targets practices that are aimed at health maintenance and illness prevention. Although illness and health self-care behaviours have been commonly viewed as distinct behaviours, this distinction becomes less pronounced as the occurrence of chronic illness increased in old age. In the following section, the measurement of specific illness and health self-care behaviours examined in the research is presented. The dichotomous nature of illness and health self-care behaviours in old age is discussed.

Illness self-care behaviour.

Self-care has been seen as an appropriate strategy, particularly for the management of chronic illness symptoms in old age (Dean et al., 1986). However, the types of responses have varied according to specific symptoms and conditions under study (Dean, 1991; Stoller & Pollow, 1994; Strain, 1996). For example, illness self-care behaviours commonly reported for arthritis symptoms varied in comparison to behaviours related to symptoms of cardiovascular disease (Strain, 1996).

Self-care in response to illness symptoms appears to be a process of strategies. At the first sign of a symptom, an individual might do nothing for several days (Chappell et al., 1988). This strategy might be followed by a previously "tried and true" old home remedy, self-medication, and/or self-treatment strategies for certain symptoms. Friends and family members would be consulted for their advice (Kart & Engler, 1994; Stoller et al., 1993). If the symptom persisted, or was perceived as serious and having a medical cause it was quite likely that a physician or other formal health care service would be consulted. Professional assistance tends to be a last resort or is primarily reserved for serious symptoms experienced over a long period of time (Chappell et al.,

1988; Kart & Engler, 1994; Penning & Strain, 1994; Stoller et al., 1993; Strain, 1991, 1996). Scepticism regarding professional services has also been a factor in seeking professional help, particularly when the symptom was not perceived as serious or painful (Strain, 1991).

Studies have also indicated that older adults may report different illness self-care behaviours in response to a list of symptoms depending on whether or not they are answering for themselves or others (Chappell et al., 1988; Kart & Engler, 1994; Segall & Goldstein, 1986). For example, in one study, after being given a list of ten symptoms, 35 percent of the older adults reported that self-care was the appropriate response for their peers. However, when those same symptoms were applied to their own experience, 86.3 percent of these older adults indicated that they had responded to the symptom by using a self-treatment strategy (Kart & Engler, 1994).

In terms of self-care illness behaviour, research has indicated that older adults tend to deal with the symptom, rather than changing their habits or seeking information to treat the underlying cause (Dean, 1991; Stoller et al., 1993; Stoller & Pollow, 1994). This was demonstrated in a study that examined the illness self-care behaviours of rural elderly females with urinary incontinence (Engberg, McDowell, Burgio, Watson, & Belle, 1995). Women rarely made an attempt to

treat the underlying cause of incontinence, despite the reported efficacy of bladder retraining and pelvic muscle exercises. Instead, the most common illness self-care behaviours included staying close to a bathroom, using absorbent pads, and voiding more frequently (Engberg et al., 1995). The propensity for older adults to manage symptoms rather than to treat underlying causes was attributed to the high prevalence of chronic illness and a fatalistic outlook. Many older adults believed that their symptoms were inevitable consequences of ageing and hence, at best they had only hoped to manage the symptoms (Dean, 1991; Iqbal & Castleden, 1997; Stoller et al., 1993; Stoller & Pollow, 1994).

Overall, illness self-care behaviours are measured as the frequency of specific responses to varying symptoms. Frequently practised responses included self-medication , self-treatment, lay consultation, the use of home remedies and professional consultation. Individuals' illness self-care behaviours in response to specific symptoms were found to be influenced most frequently by the persistence and severity of the symptom, having a history of self-care responses for symptoms, and a propensity to deal with the symptom rather than the underlying cause.

Factor analysis in a study conducted of 250 individuals with coronary heart disease showed that evaluation, implementation and decision making were key aspects of illness self-care (Lukkarinen & Hentinen, 1998). These behaviours were

strongly correlated with knowledge, motivation and physical prerequisites (Lukkarinen & Hentinen, 1998).

Health self-care behaviours.

Health self-care behaviours include but are not limited to: (a)dietary practises (limiting fat, reducing salt and including fibre), (b) exercising regularly, (c) monitoring weight, (d) screening of illness vis-a-vis professional consultation or by self-examination, (e) adhering to accepted safety practises and/or avoiding risks (i.e. not smoking, wearing seat belts, reducing alcohol consumption), (f) obtaining adequate rest, (g) seeking information, (h) attending regular medical and dental check-ups, and (i) relying on faith (Boland, 1998; Dean, 1991; Gallant & Connell, 1997; Rakowski et al., 1987; Segall & Goldstein, 1986; Stoller & Pollow, 1994). Other health self-care behaviours involve basic ADL and IADL such as bathing, eating, socializing, engaging in hobbies, and shopping. Despite the importance that older adults might assign to health maintenance and illness prevention, variation has been reported in the type and frequency of the behaviours that people perform. Some health self-care behaviours were reported more frequently than others. In several studies, the most commonly reported health self-

care behaviours of older adults were eating a balanced diet, and ensuring adequate sleep (Chappell et al., 1988; Segall & Goldstein, 1986; Stoller & Pollow, 1994). In another study of community residents age 45 and older, only ten percent of the older adults reported regulating their diet, while 30 percent reported stress reduction behaviour (Dean, 1991).

Fewer older adults report participating in exercise. Dean (1991) found that 50 percent of the Danish older adults did not exercise regularly. Schuster, Petosa and Petosa (1995) found that in a group of post-retirement independent adults, 52 percent had not engaged in regular physical activity, while 64 percent of a sample of older adults in New York had not exercised (Stoller & Pollow, 1994). However, fewer Canadian older adults (35%) have reported neglecting their exercise regime (Chappell et al.,1988). Adherence to safety and avoidance behaviours also varied among older adults. Approximately 80 percent of the older adults from two studies avoided tobacco and alcohol (Chappell et al., 1988; Stoller & Pollow, 1994). In contrast, only 25 percent of older adults in a Danish sample avoided tobacco (Dean, 1991). Differences in health self-care behaviours by countries would be most usefully addressed with cross-national studies.

Studies generally demonstrated that older adults reported a lack of performance with respect to several health self-care behaviours. Among these

were regular exercise, tension reduction strategies, and risk avoidance behaviours (seat belt use) (Rakowski et al., 1987; Segall & Goldstein, 1986; Stoller & Pollow, 1994). Although data indicated an apparent lack of performance in terms of health self-care behaviours, Kart and Engler (1994) found that 87.5 percent of older adults assessed their global self-care efforts as 'good', 'very good' or, 'excellent'. Furthermore, a discrepancy between older adults' intentions and the actual performance of health self-care behaviours has been observed among community samples (Chappell et al., 1986; Stoller & Pollow, 1994). In one institutional study, nursing home residents' perceptions of their ability for performing health self-care behaviours also appeared somewhat optimistic (Jirovec & Kasno, 1993). Boland (1998) suggested that the commitment of older adults toward health promotion is limited and inconsistent.

To recap, health self-care behaviours often considered in the research include dietary practises, exercise, health risk avoidance, self-examination, regular checkups, and the performance of ADL and IADL. Findings indicated that health self-care behaviours vary in relation to the type of activity and to the geographical location of the sample. Furthermore, self-reported abilities and activities may be somewhat optimistic.

Illness and health self-care behaviours: A dichotomy

The dichotomous relationship between illness and health self-care behaviours has not been clearly established. Chappell et al. (1988) indicated that health and illness self-care scores were not correlated. However, Stoller and Pollow (1994) have determined that as the number of chronic conditions increased, illness and health self-care behaviours have overlapped. Health self-care behaviours aimed at illness prevention for a healthy individual could also be defined as illness self-care behaviours for an individual with chronic illness (Stoller & Pollow, 1994). For example, limiting salt or fat intake is a health self-care behaviour for the healthy individual and an illness self-care behaviour for an individual with cardiovascular disease. This is also true of individuals with chronic renal failure. In the case of individuals undergoing dialysis, illness self-care behaviours such as sticking with a routine therapeutic regime, adjusting their lifestyles and managing abnormal situations become a daily part of one's self-care routine to prevent illness and promote health (Lin, Lu, Wang & Lai, 1998). Hence, the distinction between a health and an illness self-care activity can be contingent on the group being studied. For older adults, many of whom experience chronic illness, the distinction between health and illness self-care

behaviours may not be possible to separate.

Summary: The measurement of self-care.

The measurement of self-care was commonly based on illness and health self-care behaviours. Illness self-care behaviour occurred in response to symptoms. These behaviours are identified as a process that includes consulting lay persons, doing nothing, practising home remedies, administering medications and consulting a physician as a last resort. Health self-care behaviours were aimed at maintaining one's health and preventing illness. As such, health self-care included exercise, dietary management, a balance of rest and activities, socialization, reliance on faith, and risk avoidance. To date, the categorization of self-care into illness and health self-care behaviours continues to be found in the literature. However, with the increasing population of elderly experiencing chronic conditions, the distinction between illness and health self-care is not clearly drawn and may not be meaningful for most elderly who experience chronic conditions.

2.2.1. Correlates of self-care

Much of the research on older adults and self-care has examined the correlates of illness and health self-care behaviours. Studies of self-care and aging have examined the self-care behaviours and their relationship to the following factors: socio-demographic characteristics, mental health status, physical health status, social support and health beliefs. For each factor, attention is directed to both illness and health self-care behaviours. Findings in the research are based on multivariate effects of various independent variables or correlates. Findings derived from multivariate analyses of self-care correlates demonstrate whether or not the magnitude of the effect can be attributed to a single correlate. For the purpose of organization in this empirical review, each correlate of illness and health self-care behaviours is presented in isolation. The lack of consistency with respect to the conceptualization and measurement of self-care practises of older adults has complicated our understanding of the correlates of self-care behaviours.

Sociodemographic characteristics.

AGE

The findings with respect to the correlations between age and illness self-care behaviours have been inconsistent. In some studies, age was not significantly associated with illness self-care behaviours (Ailinger and Dear, 1993; Conn et al., 1991; Fenton et al., 1994; Kart & Engler, 1994; Stoller et al., 1993). However, other studies have indicated that during illness, age was positively associated with the propensity to do nothing, consult lay caregivers, and self medicate. Some consistency existed in that overall, the type of illness self-care behaviours performed by older adults appeared to be more palliative than preventive (Carroll, 1995; Chappell et al., 1988; Dean, 1991; Dill et al., 1995; Iqbal & Castleden, 1997; Stoller et al, 1993).

Some indirect associations between age and specific illness self-care behaviours were identified (Badzek, Hines & Moss, 1998; Carroll, 1995; Dean, 1991; Lukkarinen & Hentinen, 1997; Shu, 1995; Stoller & Pollow, 1995; Strain, 1996; Wang et al., 1998). An indirect association was demonstrated by a group of older adults undergoing coronary artery bypass surgery (Carroll, 1995). The

findings showed that younger individuals performed more illness self-care behaviours. Carroll (1995) speculated that this finding may have been reflective of the physical home environment of relatively younger adults than the actual ability of older adults. Activity levels (walking or climbing stairs) for the group of older adults plateaued during their hospital stay, and it was speculated that the activity level diminished because few of them had stairs in their homes. However, Strain (1996) concluded that younger subjects with coronary artery disease were more likely than older adults to alter their habits to achieve a healthier lifestyle or to focus their efforts on ameliorating the underlying factors associated with heart disease. Another study examining factors related to the self-care of 250 individuals with coronary heart disease showed that age was a correlate of motivation for the performance of illness self-care behaviours (Lukkarinen & Hentinen, 1997). Wang and associates (1998) also determined that age was correlated to self-care illness behaviours of elderly heart transplant survivors. The illness self-care behaviours for these transplant patients included self-medication, exercise, diet control, maintaining clinical visits and infection control post surgery (Wang et al., 1998).

Age was also found to be indirectly correlated with illness self-care in a study to identify factors related to adequate self-care knowledge about

haemodialysis (Badzek, Hines & Moss, 1998). Although 75% of the patients over 65 years of age (n = 142) believed they were well informed about self-care related to haemodialysis, only 14% answered three questions correctly. Older haemodialysis patients were less well informed about self-care strategies compared with younger patients (Badzek et al., 1998).

Ailinger and Dear (1993) tested the illness self-care behaviours in a convenience sample of persons with rheumatoid arthritis. Subjects ranged from 27 to 79 years (Ailinger & Dear, 1993). Age was not significantly correlated with self-care performance scores determined by the Exercise of Self-Care Agency (ESCA) instrument (Kearney & Fleischer, 1979). However, individuals who had illness episodes for longer periods of time performed significantly fewer self-care practises (Ailinger & Dear, 1993). Yu (1995) also suggested that as age increased, the functional ability of older people to care for themselves during illness declined. Hence, the relationship between age and illness self-care behaviours may have been an indirect result of a longer duration of the illness, the occurrence of more chronic conditions, and functional deterioration often associated with age.

Some studies examined the utilization of physician services as an illness self-care behaviour. Older adults reported consulting professional care providers

less often, and reported fewer symptoms to their physicians compared with younger individuals (Stoller & Kart, 1995). In one study of independent older adults, only 7.7 per cent reported all their symptoms during visits with their physician (Stoller & Kart, 1995). Older adults' optimistic health self-care assessments may have predisposed them to believe that they could manage their symptoms without professional assistance (Kart & Engler, 1994). Studies showed that older adults may also have assumed that symptoms of a non-serious nature (arthritis, constipation, incontinence) were inevitable in the face of aging and were not subject to professional intervention (Iqbal & Castleden, 1997; Kart & Engler, 1994). More significant than age may have been the fact that they learned to trust and depend on their own ability to manage based on past experience. Additionally, those who perceived their health to be good , and those who perceived their symptoms as less threatening were more confident in their ability to manage without professional assistance (Stoller & Kart, 1995). A sceptical attitude with respect to the benefit of professional intervention, commonly held by the older adult may also have been a factor in the utilization of professional health care services (Haug, 1986).

Old age has been positively correlated to the specific illness self-care behaviour recognized as 'lay consultation' (Stoller & Kart, 1995; Strain, 1990).

Lay consultation refers to the decision of individuals to turn to their informal network of friends and relatives. The purposes of lay consultation encompassed seeking advise regarding how to deal with a symptom, validating symptoms and comparing illness experiences (Strain, 1989). Friends and family members frequently provided an additional resource regarding treatments for chronic illness that had developed as a result of their own illness experiences (Stoller & Kart, 1995; Ross et al., 1997). Friends of older adults were also more likely to have time to listen to concerns about symptoms and offer advice. On the other hand, Edwardson et al. (1995) found that although older adults often consulted their peers, they were also likely to seek professional health services. In one-third of the cases, friends had not offered advise because they believed their peers were just complaining; or that the symptom(s) were minor, short-term, or age-related (Edwardson et al., 1995; Strain, 1989). Strain (1989) identified that in over two-thirds of the illness episodes examined, the lay advice given was to consult a physician.

Findings with regard to age and health self-care behaviours have been somewhat mixed. Several studies have not found age to be a significant correlate of health self-care behaviours (Clark, 1998; Connelly, 1993; Jirovec & Kasno, 1993; McDermott, 1993; Rakowski et al., 1987; Smits & Kee, 1993). Yet for

some health self-care behaviours, the tendency to engage in health maintenance and preventive behaviours has been reported to diminish with age (Chang, Uman & Hirsch, 1998; Dean, 1991; Schuster et al., 1995). For example, a Danish study reported that tobacco consumption increased with age (Dean, 1991; Stoller & Pollow, 1994). Several investigations also demonstrated that age was inversely correlated to exercise (Dean, 1991; Schuster et al.,1995). In fact, 74 per cent of a sample of independent Danish citizens aged 45 years and older rarely or never engaged in physical exercise (Dean,1991). Other health self-care behaviours including dental visits and compliance with seat belt regulations also decreased with age (Dean, 1991). Chang and associated (1998) found age to be one of the five out of 32 clinical indicators predictive of self-care deficit in 414 clients.

In summary, the relationship between aging and illness and/or health self-care behaviours has not been clearly established. Some of the changes in illness self-care behaviour associated with aging may be related more to other aspects of aging including the physical environment of older adults, the increased likelihood of experiencing a chronic condition, having had the condition longer, and increased functional deterioration. The role of lay consultation for older adults is apparent but does not appear to inhibit professional consultation. Additionally, self-care in old age reflected the ways that people had learned to manage their symptoms

throughout the life span. Variation in health self-care behaviours according to age seem to hold true for particular types of behaviours. A negative relationship was demonstrated between age and specific health self-care behaviours such as exercise, smoking cessation, and regular dental visits. A larger socio-cultural context may be required to further explain the differences in health self-care behaviours that are evidenced for varying age groups.

GENDER

Variation in self-care behaviours related to gender have also been associated with age and socio-economic status. An co-relation exists with gender and the duration and severity of symptoms. Chronic symptoms related to conditions that were not considered severe or disruptive, such as arthritis, inspired the most variation in illness self-care behaviour between the sexes (Strain, 1996). Generally speaking, in early and middle adulthood, women have tended to report more acute and not-fatal chronic conditions than men. At the same time, women visited their physician more often, were more likely to monitor and report symptoms, and took more extensive, prolonged care of their ailments (Lukkarinen & Hentinen, 1998; Musil, 1998; Strain, 1991; Verbrugge, 1985). Women were

also more likely to self-medicate with over the counter prescription drugs (Musil, 1998;Verbrugge, 1985).

When conditions were considered fatal or acute, gender-based differences in illness self-care behaviours were minimized (Penning & Strain, 1994, Strain, 1996). Men in the older adult stage exhibited a higher incidence of serious morbidity than women. Consequently, older men experienced more frequent hospital admissions (Strain, 1991; Verbrugge, 1985). It was not clear whether or not the illness self-care behaviour, namely, 'making the decision to be admitted' was related to the nature of condition, gender differences in willingness to be hospitalized, or differential treatment by physicians (Strain, 1991; Verbrugge, 1985).

In terms of physician visits as a illness self-care behaviour, younger women tended to see more physicians for more non-threatening chronic conditions than men. However, the gender variation for professional consultation became insignificant in older adulthood (Carroll, 1995; Chappell et al., 1988; Verbrugge, 1985). Several explanations were postulated. First, the more serious conditions encountered more frequently by older men than older women provided fewer treatment options other than professional consultation. Women having had more exposure to physicians throughout life than men may have become more sceptical

of physicians in late adulthood (Strain, 1996). Additionally, women's earlier experiences with health may have increased their awareness of their age-related bodily changes and the use of folk remedies (Strain, 1996).

Penning and Strain (1994) found that women report more functional disability than men and receive more assistance for daily personal activities than men. Given the same level of disability, women were more likely than men to receive formal care for heavy housekeeping and yard work; while men relied more on their informal supports for light housekeeping and shopping tasks. As disability increased, men experienced lower subjective feelings of well being associated with the receipt of personal assistance, while women displayed improved emotional well being (Penning & Strain, 1994). In contrast, studies also indicate that women report more depression and anxiety than men (Fenton, 1994; Musil, 1998). Fenton (1994) found that between the ages of 65 and 84, twice as many women reported major depressive episodes. The study did not speculate whether the gender variation in depression was indirectly related to a reduction in capability for performing illness self-care behaviours.

Overall, research has showed that women are called upon more often for lay consultation than men (Edwardson et al., 1995). Women most often provided direct care for the elderly, secondary to evaluating symptoms and providing advise.

Furthermore, women also tended to maintain stronger emotional ties with more people and to practise more lay consultation (Verbrugge, 1985). Although not significant, women (67 percent) were more likely than men (42 percent) to consult their children about their arthritic symptoms (Strain, 1990).

Turning now to health self-care behaviours, women seem more likely to be involved in illness prevention and maintenance of health and well being than men (Carroll, 1995; Chappell et al., 1988; Connelly, 1993; Dean, 1991; Dodd & Dibble, 1993; Rakowski et al., 1987; Stoller & Pollow, 1994). Dean (1991) suggested that women's health self-care behaviours are related to their knowledge about healthy behaviours. Women attended regular check-ups more often than men, and practised more self-examinations as health self-care behaviours (Chappell et al., 1988). Some studies reported that women ate a healthier diet and exercised more regularly than men (Dean, 1991; Connelly, 1993; McDermott, 1994; Stoller & Pollow, 1994). Men recovering from coronary bypass surgery practised fewer health self-care behaviours aimed at prevention than women (Carroll, 1995). The fact that 101 subjects out of 122 persons receiving coronary bypass grafts were men, further supports gender variance in health self-care behaviours. With respect to risk avoidance, men reported consuming twice as much alcohol and smoking almost three times as much tobacco as women despite the known risk of cancer

and heart disease (Dean, 1991; Stoller & Pollow, 1994; Verbrugge, 1985). For the current cohort, the higher lifetime intake by men of tobacco and alcohol compared to women likely contributes to their higher morbidity and mortality from cancer, cirrhosis of the liver, and cardiovascular disease.

Verbrugge (1985) suggested that gender differences were behaviour specific and that compared with men, women did not consistently engage in more health self-care behaviours such as health promotion. As such, women reported greater vitamin use, frequency of brushing teeth, and physical check-ups. However, men were more likely than women to engage in strenuous exercise and have chest x-rays. Verbrugge (1985) also found that men and women engaged in many self-care health behaviours equally (e.g. obtaining adequate rest, eating a balanced diet, adequate fluid intake, and exercising regularly).

In summary, gender differences were evident depending on the specific illness and/ or health self-care behaviour under examination. Women reported practising more self-care behaviours than men in illness and in health. More specifically, women reported utilizing more professional and lay services, treating their symptoms more often, and practising more illness prevention behaviours. As the severity of the condition increased, the variation in the use professional services by men versus women also diminished.

However, findings related to gender variation must also be considered within the context of age, duration and severity of the symptom and social factors. As age increased, gender differences with respect to the illness self-care behaviour described as 'service utilization' diminished (Verbrugge, 1985). Secondly, research revealed that the impact of gender on self-care was more significant for chronic, non-fatal conditions that did not cause pain or prevent performance of daily activities (Strain, 1996). Although the occurrence of chronic illness and functional disability was greater in women compared with men, this difference also decreased with age. Hence, the fact that as men aged they reported having more serious conditions may partially explain the reduced variation in illness self-care behaviours based on gender. Lastly, consideration should be given to the duration of the condition. Often elderly women reported chronic conditions long before their male counterparts. Hence, these women may have had several years to interpret what happened to them, and to learn coping strategies for their symptoms. Men reporting the same condition years later may have utilized different self-care strategies based on their relative lack of experience in managing the new health problem (Strain, 1996).

SOCIO-ECONOMIC STATUS

Generally speaking, socioeconomic status has not been a strong correlate of illness self-care behaviours (Chappell et al., 1988; Connelly, 1993; Jirovec & Kasno, 1993; Kart & Engler, 1994; Rakowski et al., 1987; Stoller et al., 1993). However, income and education have been significantly associated with specific illness self-care behaviours. In terms of the decision to utilize health care services, Strain (1991) found that income was positively related to hospital admissions. Education, defined as the number of years of education completed, was correlated to illness self-care behaviours (Ailinger & Dear, 1993; Dodd & Dibble,1993). Segall and Goldstein (1986) also reported that education was associated with three specific illness self-care behaviours. A university education was positively associated with self-treatment of symptoms, but inversely associated with an increase in self-medication and the use of home remedies. Other studies demonstrated that formal education was positively correlated to specific health self-care behaviours such as minimizing weight gain, restricting salt intake, and participating in regular exercise (Stoller & Pollow, 1994; Rakowski et al., 1987). Badzek and his associates (1998) also found that persons who had an education greater than high school were most likely to perform more illness self-care

behaviours related to their renal dialysis.

On the other hand, older adults with more education reported consuming more alcohol (Stoller and Pollow, 1994). Elderly persons with less education practised more relaxation strategies (Chappell et al., 1988).

In review, the influence of income and education varied according to specific self-care behaviours. Income and education were positively correlated to the illness self-care behaviour such as the utilization of professional services. Education was inversely associated with the use of home remedies and self-medication. Education was also positively correlated to specific health self-care behaviours including adhering to dietary restrictions, and regular exercise. On the other hand, education was inversely correlated to the health self-care behaviour of abstaining from alcohol, and practising more relaxation strategies.

ETHNICITY

Ethnicity refers to the classification of a group of persons with common racial, national, religious, linguistic, or cultural origins or backgrounds (West, 1986). Since much of the self-care research has been carried out in the United States, several studies examined the association between ethnicity and self-care

with a focus on self-care practises of Blacks, Hispanics and Whites. In general, findings have not been consistent. Some investigations found no relationship between self-care and ethnicity or religion (Rakowski et al., 1987; Segall & Goldstein, 1986; Yu, 1995). Others demonstrated an association between ethnicity and illness self-care behaviours (Dean, 1991; DeLaire, 1994; Dill et al., 1995; Jirovec & Kasno, 1993). Ethnicity has been correlated with strategies for coping with illness symptoms, particularly with respect to the use of home remedies (Dill et al., 1995).

In a descriptive study with low income elderly, DeLaire (1994) discovered that although Blacks and Hispanics experienced lower health status, and poorer income throughout their life span, they also received more assistance from family supports during illness compared to Whites. At the same time, the Black and Hispanic older adults expressed greater life satisfaction and morale in later life also associated with increased health self-care behaviours (DeLaire 1994). In Jirovec and Kasno's (1993)study, Black older adults reported higher self-care compared with other residents in a personal care home. They reasoned that these residents reported higher perceptions of self-care as a result of having learned to rely on their own self-care strategies throughout the lifespan.

To recap briefly, research has not conclusively determine the significance of

ethnicity as a correlate of illness and health self-care behaviours. Minority ethnic groups (Blacks and Hispanics) demonstrated an increased propensity for specific illness and health self-care behaviours. Ethnicity may be a context for acceptable self-care patterns and behavioral norms learned throughout the lifespan.

MENTAL HEALTH STATUS

Mental health characteristics have been frequently examined as correlates of illness and health self-care behaviours. Psychological factors such as self-efficacy, depression, anxiety, morale, and self-concept have been examined (Aller & Van Ess Coeling, 1994; Carroll, 1995; Conn et al., 1991; Connelly, 1993; Dodd & Dibble, 1993; Fenton et al., 1993; Gallant & Connell, 1997; Jirovec & Kasno, 1993; Lin et al., 1998; Rakowski et al, 1987; Rogers, Holm, Goldstein, McCue, & Nussbaum, 1994; Smits & Kee, 1992).

Carroll (1995) investigated self-efficacy demonstrated by older adults recovering from coronary artery bypass graft surgery. Self-efficacy expectations represented a personal conviction in one's own ability to practise illness self-care behaviours (Carroll, 1995). Despite the functional limitations of older adults , self-efficacy explained 37 percent of the variance in illness self-care behaviours

(Carroll, 1995). In a study of 233 spouse care givers, Gallant and Connell (1998) reported that lower self-efficacy was inversely correlated to health self-care behaviours.

In terms of other psychological states, Dodd and Dibble (1993) found that persons reporting higher levels of anxiety did more for themselves when they were ill. Other mood states such as depression, anger, confusion, and fatigue had not significantly altered illness self-care behaviours (Dodd & Dibble, 1993). An explanation for the lack of variance was that older adults who were most fatigued, and/or depressed may have been lost to the study (Dibble & Dodd, 1993).

Conn and her associates (1991) examined myocardial infarction (MI) survivors and the effects of depression and anxiety on illness and health self-care behaviours (diet, self-medication, stress management, exercise, and reduced tobacco consumption). Older MI survivors were more depressed than younger respondents as a result of having to manage the stresses of aging and multiple chronic conditions in addition to the MI. The findings demonstrated that in older adults, depression was significantly inversely correlated to health self-care behaviours. Anxiety was not correlated to any of the health self-care behaviours (Conn et al., 1991). Although depression was common in older adults long after the MI, anxiety might have been more prevalent in younger respondents

immediately following the event, prior to this investigation (Conn et al., 1991).

Several studies reported an inverse relationship between depression and self-care (Gallant & Connell, 1997; Williamson & Schulz, 1992; Zwang et al., 1998). Williamson and Schulz (1992) believed that pain and physical illness had less of a negative impact on depression scores than a reduced capacity for health self-care behaviours. Three health self-care behaviours that were most significantly associated with increased depression included eating, shopping, and working on hobbies (Williamson & Schulz, 1992). The influence of functional limitations on depression was much more marked in older adults in the community than for those residing in institutions (Williamson & Schulz, 1992).

In terms of life satisfaction, older adults in a qualitative investigation associated a reduced capacity for illness self-care behaviours with situational unhappiness, remorse, and dissatisfaction (Dill et al., 1995). Perceptions of self-care behaviours were frequently associated with situations and state of mind (Dill et al., 1995). For example, one individual revealed that she had been independent until after her husband's death when she experienced depression and declining health (Dill et al., 1995). Several other authors also determined that self-care was positively correlated to life satisfaction (Craft & Grasser , 1998; Lukkarinen & Hentinen, 1997).

Nursing home residents' health self-care behaviours were positively associated with satisfaction, morale, and quality of life (Aller & Van Ess Coeling, 1995). Studies determined that the happiest older adults reported doing more daily routine self-care performances (Fenton et al., 1994; Ghusn, Hyde, Stevens , Hyde, & Teasedale, 1996). In fact, where nursing home residents had been able to help their peers, they exhibited even greater morale and life satisfaction (Aller & Van Ess Coeling, 1995).

Several studies investigated the relationship between self-concept and self-care (Kart & Engler, 1994; Ip, Chau, Leung, Leung, Foo & Chang, 1996; Smits & Kee, 1992). Self-concept was defined as a person's personal appraisal of themselves with respect to appearance, background, abilities, resources, and attitudes that influenced a person's behaviour (Smits & Kee, 1992). Self-concept was developed as older adults learned to meet the demands of aging aimed at maintaining their personal lifestyle and their psycho-social identities (Kart & Engler, 1994; Smits & Kee, 1992). Findings from several studies suggested that a significant relationship exists between self-concept and self-care (Kart & Engler, 1994; Ip et al., 1996; Smits & Kee, 1992). When physical and social losses resulting from normal aging or illness could be positively assimilated into the older adults' self-concept, then adequate self-care was more likely to be maintained.

In summary, the research has supported the notion that the mental health status of older adults may be significantly associated with illness and health self-care behaviours. The mental health status characteristics that were positively correlated with illness and health self-care behaviours included self-concept, self-efficacy, morale, and life satisfaction. Of particular interest is the negative correlation between depression and self-care. Depression was even more significant than pain or physical illness in terms of self-care performances.

PHYSICAL HEALTH STATUS

The research examined the relationship between self-care and two measures of physical health status. Health status was examined according to older adults' self-reported evaluations of their health and physician reported evaluations of their patients' health status. Older adults' reports of their health status included self-rated health, functional ability, and the number of chronic illnesses diagnosed by their physicians. Physician rated health status was based on physician reported chronic conditions in terms of the frequency, duration, and severity of the symptoms. This review of the correlation between physical health status and illness and health self-care behaviours encompasses older adults' self-evaluations

and physician evaluations of health status.

The relationship between health status and illness self-care behaviours is examined using respondent's self-evaluations (self-rated health, functional ability, and number of chronic conditions); and physician evaluations (frequency, duration, and severity of the chronic condition). The self-rated health indicator simply asks older adults to rate their health compared to others their own age with the response categories "excellent, good, fair, poor, and bad".

Self-rated health has been identified in the literature as being consistently more predictive of mortality, morale, and self-care behaviours than physician rated health or the number of health problems (Idler & Kassell, 1991; Maddox & Douglass, 1973; Mossey & Shapiro, 1982). Furthermore, self-rated health has been reported as being highly correlated to physician ratings of health; more stable than physicians ratings; and a better predictor of future physician ratings (Hooker & Siegler, 1992; Maddox, 1973). Stahl (1983) stated that "although it seems uncomfortably simple, this single-time indicator shows remarkable stability among cultures, across time, and between studies" (p.92).

Strain (1993) has suggested that self-rated health in old age is based on how individuals defined good health. Good health has been defined as (a) functional ability, (b) the absence of symptoms, or (c) general well being. Strain

(1993) examined relationships between older adults' definitions of health and the services they utilized. Better ratings of self-rated health were associated with the use of fewer overall professional health services regardless of how older adults defined good health. However, older adults who defined good health as a feeling of general well being were less likely to use hospital and other health services than those who defined health as the absence of symptoms (Strain, 1993). When symptoms were considered more serious, individuals reported being more likely to have self-treated their symptoms than to do nothing (Chappell et al., 1988); or to have visited their physician more frequently (Strain, 1991). If the scope of self-care includes professional intervention, then self-rated health could be recognized as inversely correlated to illness self-care behaviours. Simply stated, as self-rated health diminishes, individuals practise more illness self-care behaviours such as professional consultation. Some studies also indicated that self-rated health was highly significant in predicting a specific illness self-care behaviour, namely, self-medication (Segall & Goldstein, 1986).

In one study, two specific conditions, namely, arthritis and coronary disease were examined (Strain, 1996). In this investigation, health status was based on older adults' reports of their self-rated health, their perceptions of the seriousness of the condition, and their functional ability (Strain, 1996). Arthritis

sufferers reporting poorer health status were more likely to use a folk remedy than older adults with coronary artery disease who reported poorer health status. Additionally, older adults with arthritis who assessed their health status as poor were more likely to identify the need to make behavioral lifestyle changes than those with coronary artery disease. This study suggests that illness self-care behaviours varies according to the chronic condition and its' severity.

The relationship between the number of chronic conditions diagnosed by a physician and illness self-care behaviours was also examined. Yu (1995), found an inverse correlation between the number of physician diagnosed chronic conditions reported by individuals and the capacity for illness self-care behaviours in a random sample of older adults. Those reporting having experienced a greater number of conditions exhibited increased dependency, and a reduced ability to satisfy their self-care requirements (Yu, 1995). Others also found that the number of diagnoses and distress with symptoms was significantly correlated to self-care(Chang et al., 1998; Lukkarinen & Hentinen, 1997; Wang et al.,1998).

In terms of the correlation between functional ability and illness self-care behaviours, it may be important to recognize the varying definitions of functional ability. Smits & Kee, (1992) referred to functional ability as the physical capacity to fulfil one's role and maintain social involvement. Similarly, Ailinger and Dear

(1993) operationalized functional ability as a person's present sense of self in relation to previously developed human functions. In another study, functional ability encompassed the performance of physical and mental activities (Yu, 1995). Physical performances included sensory functions, mobility, and physical movement, while mental functions included memory, identity, speech, and normal behaviours (Yu, 1995). Where professional intervention was included within the scope of self-care, illness self-care behaviours were positively associated with reduced functional ability.

Older adults with reduced functional ability practised more illness self-care behaviours in terms of physician visits, hospitalization, and overall services (Strain, 1991). Additionally, older adults could assist with certain aspects of illness self-care despite functional limitations (Conn et al., 1995; Hasselkus, 1994). For example, cognitively impaired older adults who were still physically able to self-administer their medications could manage by using timed medication dispensers (Conn et al., 1995).

Smits and Kee (1992) tested the association between functional ability and self-concept. Here functional ability was defined as the ability to maintain one's role. The positive correlation that existed between functional ability and self-concept suggested that healthy attitudes and role management could exist despite

physical disability (Smits & Kee, 1992). If the self-concept remained intact, then older adults' roles in performing illness self-care behaviours were more likely to have been maintained despite reduced functional status (Smits & Kee, 1992).

Studies also examined the relationship between physician reported health status and illness self-care behaviours. Ailinger and Dear (1993) measured health status based on a physician's assessment of joint pain and swelling. The physician's evaluation of health status was not predictive of illness self-care behaviours. More significant was the negative impact associated with the duration of the illness from the date of the initial diagnosis on illness self-care behaviours (Ailinger & Dear, 1993).

Attention will now turn to the associations between health self-care behaviours and self-rated health, physician rated health and self-rated functional ability. In terms of self-rated health, those who believed their health was good practised more healthy lifestyle behaviours such as eating a nutritious diet, exercising regularly, and reducing tension (Chappell et al., 1988; Nicholas, 1993; Stoller & Pollow, 1994).

Nicholas (1993) discovered that those who reported having practised more health self-care behaviours throughout life, perceived themselves as healthier than those who practised fewer health self-care behaviours. It was difficult to

determine whether increased self-care behaviours enhanced health status first, or whether perceived good health resulted in an increased ability to perform more health self-care behaviours.

Stoller and Pollow (1994) considered self-reported physician diagnosed chronic conditions and disability as barriers to health promotion and preventive behaviours. They concluded that healthy people practised different health self-care behaviours compared with those persons diagnosed as having a chronic condition. Poor health undermined the motivation to practise health self-care behaviours, particularly when those practises had not been previously reinforced throughout the life span (Stoller & Pollow, 1994). Conversely other studies reported that poor health did not significantly influence certain health self-care activities. In a regular exercise program, disability was associated with participation (Schuster et al.,1995). Disability is defined as restricted physical or mental functioning resulting from impairments in physical and/or mental functioning that cannot be reduced by professional medical intervention (McDowell & Newell, 1987). Increased concern regarding the number and severity of one's chronic conditions were positively associated with certain specific self-care behaviours such as information seeking and risk avoidance activities (Rakoski et al., 1987).

In terms of the influence of functional ability on health self-care

behaviours, older adults with cognitive or physical impairments displayed a significant reduction in the performance of health self-care behaviours. These activities included regular exercise, eating a balanced diet, maintaining personal hygiene, and managing ADL (Chappell et al., 1988; Conn et al., 1995; Rogers et al., 1994; Schuster et al., 1995; Stoller & Pollow, 1994; Yu, 1995).

The follow-up analysis of the 1999 Manitoba Study of Health and Aging (MSHA-2) also determined that as older adults increased in age, their self-rated health was poorer and they experienced more chronic health problems. At the same time they became dependent in at least one activity of which heavy house work and bathing were most common (MSHA-2 Research Group, 1999). One study suggested that self-rated function may be related to ability for self-care (Greiner, Snowdon & Grenier, 1996). The probability of being able to perform fewer developmental self-care behaviours was greatest with those whose self-rated functional ability was fair or poor. This association was even more consistent than the correlation between self-care behaviours and self-rated health (Greiner et al., 1996).

Another study also demonstrated a positive correlation between functional ability of nursing home residents and their health self-care behaviours. Although the nursing home residents' perceptions of their self-care ability may have

been exaggerated, Jirovec and Kasno (1993) suggested that older adults' self-perceived functional ability to practise self-care health behaviours may have been more predictive of what they really could do for themselves than functional ability scores. Studies showed that elderly residents in institutions with individualised care plans based on self-perceived capabilities did more for themselves, than when care was based on functional ability scores (Jirovec & Kasno, 1993). In contrast, a regression model developed in another study demonstrated that functional ability defined as the ability to be physically active, was the most significant correlation with health self-care behaviours in old age (Yu, 1995).

To summarize, researchers have investigated the correlation between illness and health self-care behaviours and physical health status. Physical status measurements were based on self-evaluations of health status (self-rated health, the number of physician diagnosed conditions reported by older adults and functional ability), and physician rated health status (frequency, duration and severity of chronic conditions). Inconsistencies with respect to self-rated health may be explained in part by older adults' definitions of good health, variations specific to certain chronic conditions, and whether self-care includes professional consultation). The association between self-care and self-rated health varied according to whether health was perceived as general well being or an absence of

symptoms. In general, self-rated health was a strong predictor of illness and health self-care behaviours. Individuals who rated their health as better practised more illness and health self-care behaviours. However, where self-care included the utilization of professional services, an inverse relationship between self-rated health and self-care was demonstrated. For example, individuals who rated their health as good reported utilizing fewer hospital days and other services in illness. This inverse relationship was also more significant where older adults defined good health as general well being rather than the absence of symptoms (Strain, 1993). Illness self-care behaviours varied according to the severity and duration of the condition, particularly where professional intervention was included within the scope of self-care behaviours. While reduced functional ability did not negatively impact illness self-care behaviours, a significant correlation between functional ability and health self-care behaviours was cited (Conn et al., 1995; Strain, 1993, Stollow & Pollow, 1994). Physician rated health considered the number of chronic illnesses diagnosed by the physician, the duration of the chronic condition and the physician's perception of the severity of the symptoms. In general, no significant correlations were identified between physicians' evaluations of the severity of the symptoms, and/ or the number of chronic illnesses in terms of illness self-care behaviours.

SOCIAL SUPPORT

The influence of social support on self-care has frequently been examined in the research. Despite a frequently held assumption regarding the significant impact of social support on illness and health self-care behaviours, findings have been inconsistent. One explanation may be the distinct natures of social support that exist. Previous research on social support has been criticized with defining social support too globally and for inconsistencies in definition and measurement. Barrera (1986) suggested that social support is diverse and multidimensional indicators need to operationalize the different dimensions. Three dimensions of social support measured in this study are derived from Barrera's (1986) conceptualization: social embeddedness, perceived social support, and enacted support.

Social embeddedness refers to the presence of social ties that individuals have to significant others within their social contexts. These linkages do not automatically assume the provision of social support. However, the information is still pertinent as an available tie could potentially serve as a "social support

resource" (Barrera, 1986). The second dimension, namely, perceived social support incorporates perceived availability and adequacy of supportive ties. These indicators do not quantify the number of supporters or the amount of social contact. Instead they determine the individual's perception that adequate support would be available (Barrera, 1986). Lastly, enacted support complements the other measures of social support by assessing what the individuals actually do when they provide support. This includes not only the provision of physical assistance and help during stressful situations, but also social linkages that provide love, esteem, and social affiliation (Barrera, 1986).

While social support encompasses each of these varied dimensions in concert, the self-care research has frequently isolated and measured only a single dimension of social support. For example, Yu (1995) and Nicholas (1993) measured social support by determining whether older adults lived alone or with caregivers. While the quantity of social support living in the same household is identified, this conceptualization fails to measure the availability and perceived adequacy of supportive ties and may not capture meaningful contacts with friends outside the home who provide emotional support and encouragement. Barrera (1986) cautions that social linkages do not guarantee the provision of support.

Rakowski and associates (1987) focused on support provided by family

members only. Here expressiveness and family cohesion was measured by determining quantity of support from family members (living arrangement and number of children and siblings) and perceived adequacy of family support (frequency and satisfaction with family visits). Still, others measured the availability of a more global social support network, that focused on professional care providers, groups or agencies and the variation in types of services they provided (Boland, 1998; Schuster et al., 1995; Stoller & Pollow, 1994). More comprehensive measurement tools considered living arrangements as well as social network characteristics outside the family, to encompass the size and number of weekly contacts and functional components (Dodd & Dibble, 1993; Connelly, 1993, Strain, 1990). Additionally, a qualitative study gleaned information with respect to the quality of the interactions and relationships that shaped illness and health self-care behaviours (Dill et al., 1995).

Despite the variation in findings throughout the literature several significant correlates were identified. Turning first to illness self-care behaviours, Stoller and Pollow (1994) concluded that social support was more predictive of illness self-care behaviours than health self-care behaviours. Dill and her associates (1995) concluded that illness self-care behaviours do not occur in a vacuum and that the relationships within the social network are important factors in shaping symptom

responses in old age. Older adults described their self-care strategies during illness episodes in terms of previous relationships with significant others. Some older adults reported having successfully managed severe pain by practising traditional home remedies taught to them by a family member or close friend (Dill et al., 1995). Those who identified having an adequate social support network practised more illness self-care behaviours, and perceived greater control over their symptoms (Dill et al., 1995). They also reported being more hopeful in their ability to manage their own care in the future. A positive significant correlation was also found between marital status and social support and the illness self-care behaviours of older heart transplant recipients (Wang et al., 1998).

On the other hand in some studies, reduced social contexts were associated with an increase in self-care behaviours (Dill et al., 1995; Dodd & Dibble, 1993). For example, one older adult reported that her physical symptoms worsened after she moved into a lonely apartment following her husband's death. In search of relief for her symptoms, she engaged in the self-care activity of taking a medication for insomnia and arthritic pain (Dill et al., 1996). This was consistent with findings by Dodd and Dibble (1993) that less social support positively influenced specific illness self-care behaviours.

In a study that examined responses to arthritis symptoms, the illness self-

care practise of lay consultation was positively correlated to social embeddedness (the proximity of social ties) and perceived social support (the adequacy and quality of the social support) (Strain, 1990). The investigation demonstrated a correlation between lay care and illness self-care aimed at managing chronic conditions. A majority of the older adults engaged in discussion with their family members, spouses, or friends to express their concerns about their health problem, seek advice, or gather information (Strain, 1990). Conversely, Connelly (1993) discovered an inverse relationship between family and the illness self-care behaviour referred to as dietary management. Connelly (1993) proposed that perhaps people are more responsible when they are alone or perhaps the type of support (reminding about dietary restrictions) may have been perceived as irritating to the older adults. Stoller and Pollow (1994) suggested that the accuracy (quality) of the information provided by supports was more significant that the amount or frequency of the support. Older persons consulted physicians most often when lay contacts were unable to provide them with advise . Moreover, as the number of supports living in the same household decreased the number of consults with professional care providers increased.

Findings with respect to the influence of social support on daily health self-care activities were inconsistent. One study showed that family support was

inversely related to self-care in health (Connelly, 1993). Older adults in good health may have done more for themselves in the absence of family support. However, other investigators reported a positive influence of social support on health self-care behaviours. Yu (1995) established that perceived social support provided by family members ranked fifth as a predictor of health self-care behaviours of older adults. Nicholas (1993) also suggested that health self-care behaviours were significantly positively related to embedded social support (living with others). Although living with others had not necessarily guaranteed adequate social support, persons who lived alone tended to perform fewer health self-care behaviours (Craft & Grasser, 1998; Nicholas, 1993). Boland (1998) determined that social support provided by groups such as parish nurses played a vital role in empowering older adults to practise health self-care behaviours. Rakowski and others (1987) discovered that embedded social support (living with family members) and perceived social support (adequacy and quality of the social support) was only marginally significant in predicting routine certain health self-care behaviours such as maintaining regular health routines, self-examination and physician examination, and risk avoidance.

In terms of specific health self-care behaviours, perceived social support was associated with regular exercise (Schuster et al.,1995). Enacted social

support (type of assistance provided) was measured by examining the health self-care behaviours associated with varied types of support provided by a social support network consisting of health educators, class members, spouses, friends, and family members. Findings showed that the more complex the enacted social support, the more likely it was to offer vigorous support for specific exercise programs (Schuster et al., 1995).

The inconsistency in the social support findings may be an indication that the number of family supports or the frequency of the contacts may not be as important in predicting self-care performance as the significance and the quality of the relationships. Older adults who attributed a high value to their relationships with family members were more effectively encouraged to care for themselves (Segall & Goldstein, 1986; Dill et al., 1995). The quality of the support was also important in terms of the accuracy of the health information reinforced by one's social network (Stoller & Pollow, 1994). Individuals who relied on the news media and formal services for health information practised more health self-care behaviours. However, those who accessed health information from informal/lay supports practised fewer health care behaviours, even when their social contacts worked within the health care field (Stoller & Pollow, 1994).

To summarize, inconsistencies with respect to the relationship between

social support and self-care may reflect the diversity of definitions and measurement of social support. While social support was directly correlated to various illness and health self-care behaviours, some studies suggested an inverse correlation. Older adults living alone and experiencing good health reported having performed more health promotion behaviours in the absence of family support. In relationships where lay and/or professional care providers were perceived by the older adults as reliable, credible, and significant a positive correlation between social support and self-care was reported. These inconsistent findings may reflect a need for a more comprehensive model of social support that considers the quality and the significance of the relationships in addition to the number of supports and frequency of the contact.

HEALTH BELIEFS

Health beliefs have been associated with several concepts and perspectives. Health locus of control (internal, external), scepticism towards professional care providers, belief in susceptibility to illness, learned helplessness, health maintenance beliefs, and perceived barriers to health self-care behaviours have been associated with health beliefs (Connelly, 1993; Dean, 1991; Kart & Engler,

1994; Rakowski et al., 1987; Stoller & Pollow, 1994; Strain, 1991).

Locus of control was depicted as (a) internal health locus of control (health was dependent on an individual's behaviour), or (b) external health locus of control (health status was due to fate, or the control of powerful others such as physicians and other health care professionals) (Wallston & Wallston, 1978). In behaviour-specific studies that examined illness self-care behaviours, internal locus of control was not significantly correlated to self-medication practises or the use of home remedies to manage symptoms (Segall & Goldstein, 1986). Only minimal positive associations were made between locus of control and a specific illness self-care behaviour, such as "self-treatment" (Segall & Goldstein, 1986). Older adults who displayed an external control belief performed the least self-care treatments. Strain (1991) identified that internal locus of control did not predict illness self-care behaviours such as service utilization. However, a positive association between external control and professional consultation was identified (Chappell et al, 1988; Kart & Engler, 1994; Strain, 1991).

Attention now focuses on the impact of locus of control on health self-care behaviours. Although the findings were not conclusive, some studies showed internal locus of control to be positively associated with health self-care behaviours (Connelly, 1993; Rakowski et al., 1987). Those who demonstrated high internal

health locus of control perceived the highest global capacity for health self-care (Kart & Engler, 1994). Conversely, in other studies internal locus of control was unrelated or only mildly predictive of specific health maintenance practises (Dean, 1991). Higher internal locus of control scores were associated with the health self-care behaviour of increasing the amount of fibre in one's diet (Stoller & Pollow, 1994). Although internal locus of control was not significant in terms of health self-care behaviours such as avoiding health risks, it did predict behavioral change with respect to alcohol and tobacco consumption (Dean, 1991; Stoller & Pollow; 1994; Strain, 1991).

Scepticism toward medical/professional services reported by older adults was also cited as a health belief factor associated with the illness self-care behaviour of "service utilization" (Strain, 1991). Sceptical attitudes were predictive of reduced physician visits and other health care services in chronic conditions of longer duration where symptoms were not severe. However, in acute life threatening conditions, the tendency to be admitted to a hospital was not affected by sceptical beliefs held by the older adults (Strain, 1991)

Stoller & Pollow (1994) found that a belief in susceptibility to illness exerted limited influence on health self-care behaviours. The belief in susceptibility to illness was positively related only to the health self-care behaviour of taking

vitamins (Stoller & Pollow, 1994). No consistent pattern for other behaviours was identified.

Learned helplessness is the belief that one cannot not influence the outcome of an event. It may have developed through past experiences with uncontrollable events, teaching individuals that their behaviours did not always predict the outcome of an event. Learned helplessness was inversely associated with individuals' perceptions of their self-care ability to perform illness and health self-care behaviours (McDermott,1993). Learned helplessness may also have affected motivation and cognitive decision making about self-care actions.

Health maintenance beliefs refer to the belief that good health can be achieved through the performance of health promotion activities. Health maintenance beliefs were inversely correlated to illness self-care behaviours (Segall & Goldstein, 1986). The investigators reasoned that individuals who had initiated health maintenance activities prior to illness, may not have engaged as actively in self-care responses after symptoms became evident. Older adults might have decided to consult professional service providers because they believed that they had already done everything within their power to prevent illness (Chappell et al., 1988). The symptoms may have indicated to them that they could do no more for themselves, warranting a professional service. Also, older adults may have

realistically associated diseases such as cancer with heredity, resources, the environment, and chance (i.e. external locus of health control) regardless of maintaining a healthy lifestyle (Stoller & Pollow, 1994). Hence, a difference may have existed between beliefs in susceptibility and the efficacy of health self-care behaviours.

Turning now to health self-care behaviours, a belief in health maintenance was correlated to using a greater variety of formal health care services (Strain, 1991). Health maintenance belief scores reflected the importance that older adults attributed to certain health self-care behaviours (adequate sleep, exercise, socialization, self-examinations, and reliance on faith and prayer) (Chappell et al., 1988; Kart & Engler, 1994; Segall & Goldstein, 1986). However, the majority of the literature agreed that despite a strong belief in health maintenance activities, little impact existed on what people actually did in terms of healthy lifestyle practises (Chappell et al., 1988; Segall & Goldstein, 1986; Stoller & Pollow, 1994). Practising some preventive behaviours might have inadvertently reduced older adults perceived susceptibility for other health risks. For example, Stoller and Pollow (1994) determined that susceptibility was positively related to the frequency of taking vitamins. However, taking vitamins also lowered older adults' perceptions of susceptibility for other symptoms such as constipation for example.

Individuals who had taken vitamins more often were less likely to include fibre in the diet (Stoller & Pollow, 1994).

Lastly, perceived barriers to health maintenance were found to influence the performance of health self-care behaviours. In a group of post retirement adults, a relationship existed between perceived benefits and perceived barriers and exercise (Schuster, et al., 1995). Personal barriers included misconceptions about age-appropriate activity, the utility of exercise regardless of one's age, and inaccurate self-appraisals regarding one's ability to be active. Societal barriers encompassed ageism and the notion that decline in old age was inevitable, thereby, limiting access to exercise programs and facilities (Schuster et al., 1995). Additional barriers included environmental characteristics related to program access (transportation, finances) (Schuster et al., 1995). Hence, even though the subjects believed that exercise was important, the perceived barriers may have prevented them from taking action.

To recap briefly, research on health beliefs and self-care behaviour have examined locus of control beliefs (LOC), medical scepticism, belief in susceptibility to illness, learned helplessness, health maintenance beliefs, and perceived barriers. In most cases, the associations between health beliefs; and illness and health self-care behaviours were not strong. Specific illness self-care behaviours such as self-

treatment were positively associated with internal locus of control. The external locus of control dimensions of "chance" and "powerful others" was more predicative of specific illness self-care behaviours such as service utilization. For common symptoms not considered severe, scepticism about medical professionals was negatively associated with service utilization. Health maintenance beliefs were inversely correlated to illness self-care behaviours, but were not significantly correlated to self-care health behaviours. Factors that negatively impacted on health self-care behaviours included learned helplessness and perceived barriers. A weak positive association was demonstrated between health self-care behaviours and internal LOC, as well as susceptibility to illness.

2.2.2 Limitations in the Research

Much research has focused on the conceptual meaning of self-care and the correlates of self-care. Some inconsistencies exist and some limitations in the research are apparent.

Limitations involve four main issues. Firstly, although some investigators employed a conceptual frame work, inconsistencies between the operationalization of self-care and the framework are evident. The second matter for consideration is

that while self-care is considered a social phenomenon, it is frequently examined according to illness and health self-care behaviours. Consequently, the holistic, socio-cultural context has been minimized with little attention being afforded to the developmental perspective of self-care to encompass these issues. Investigations were generally limited to testing distinct illness or health self-care behaviours rather than a range of developmentally associated practises.

Thirdly, Orem proposes that self-care needs reflect comprehensive holistic needs experienced by humans at any one time. Research is required that examines the three dimensions of self-care (universal, illness, developmental) simultaneously.

Furthermore, based on the overlap between illness and health self-care behaviours of older adults with chronic conditions, it may be necessary to examine illness and health self-care behaviours simultaneously. Lastly, issues related to inaccuracies resulting from relying on recall by older aged study participants have been discussed.

Inconsistencies between self-care frameworks and self-care measurement.

In one study, the measurement of self-care was incongruent with the conceptual framework that guided the study. While theoretical conceptualizations of self-care included professional intervention, self-care measurement tools employed in those investigations excluded professional intervention as a self-care behaviour. For example, Kart and Engler (1994) identified self-care as a multifaceted concept. They stated that self-care encompassed more than self-evaluation and treatment of symptoms. Illness self-care behaviour also empowered individuals to exercise their autonomous decision making capacity with respect to consulting professional care providers (Kart & Engler, 1994). Yet when the illness self-care behaviours were analyzed, the professional care dimension of self-care was disregarded (Kart & Engler, 1994). Professional intervention was not presented as a component of illness self-care behaviour even though older adults had reported utilizing professional care to augment their own self-treatment strategies (Kart & Engler, 1994). Hence, instead of operationalizing illness self-care behaviour to include professional care utilization, self-care behaviours were correlated to professional intervention. Clearly, consistency is needed in terms of the self-care conceptual framework and measurement instruments.

Inattention to the developmental perspective of self-care behaviour.

Differences may exist in illness and health self-care behaviours practised by individuals in the older adult developmental stage compared to self-care behaviours practised by individuals in their previous stages of life. Firstly, developmental stage influences may play a large role in explaining responses to illness symptoms in old age. Older adults practise different self-care illness behaviours than their younger counterparts since older adults often experience a diminishing social support network, reduced resources, and a decreasing level of functional ability.

Self-care illness behaviours are more than a reflection of specific symptoms. Decisions about managing symptoms in old adulthood also reflected a vast number of life experiences deeply rooted in socio-cultural contexts. Older adults make decisions about their self-care behaviours based on these contexts. In a qualitative study about approaches to self-care in late life, participants expressed images of themselves as self-carers in terms of their perceptions of aging and their past experiences (Berman & Iris, 1998).

Based on the literature and Orem's conceptualization of self-care, it is apparent that the developmental perspective plays a significant role with respect to the self-care practises of older adults. Yet, the correlates of illness and health self-care behaviours have been frequently examined without first taking into consideration the baseline behaviours for meeting everyday human needs specific to individuals in the late adulthood stage of development (Haug, 1986; Haug et al, 1989; Holtzman et al., 1987).

Secondly, individual differences exist based on the heterogeneity of aging within the older cohort. Undoubtedly, such a heterogenous population would elicit a multitude of varying interpretations for their symptoms. Symptom responses and illness self-care behaviours in old age varied based on how symptoms were interpreted and the nature of the symptom. Interpretations of the symptom, and the nature of the symptom were also dependent upon the individual's stage of life. Symptoms were evaluated by older adults on the basis of (a) perceived seriousness of the symptom, (b) the attribution of causation of the symptom, (c) the degree of interference with daily routines caused by the symptom, (d) past experiences with the symptom within one's social context, (e) the frequency and duration of the symptom, (f) the number of chronic condition, (g) the duration of the chronic illness following initial diagnosis and (h) the

perceived outcome of the symptom (Ailinger & Dear, 1993; Chappell et al., 1988; Dill, 1995; Edwardson et al., 1995; Kart & Engler, 1994; Stoller & Kart 1995; Stoller et al, 1993; Stoller & Pollow, 1994; Strain, 1991).

In summary, research has not taken into account the older adult developmental stage and the heterogeneity of the elderly population with respect to variations in symptom interpretation. Future investigations might consider examining the illness self-care needs of older adults based on these developmental variations. Longitudinal data might also provide information about the changing self-care practises of older adults in their final stage of life. Research that measures self-care in terms of ability to satisfy needs within a developmental framework would be more pertinent for elderly, in their final stage of life.

Diluting the holistic perspective of self-care by considering illness and health self-care behaviours as distinct.

In the literature, illness and health self-care behaviours have most often been considered to be distinct (Chappell et al., 1988). However, in reality the distinction between illness and health self-care behaviours may become more blurred in older age. Often, with the increase in the prevalence of chronicity in

older adulthood the distinction between illness and health self-care behaviours may be less definitive (Stoller & Pollow, 1994). Self-care activities aimed at maintaining health during early adulthood may have become illness self-care behaviours in the face of long term illness. For example, to older adults experiencing chronic heart disease, health self-care behaviours such as regular exercise, dietary management, reducing stress, and alcohol avoidance and smoking cessation may be recognized as illness self-care behaviours. To facilitate a more holistic perspective of self-care, gerontological research may need to consider the investigation of illness, health and developmental self-care behaviours simultaneously. Measurement instruments that measure these three components of self-care behaviour will need to be developed from a comprehensive framework that recognizes each of these dimensions of self-care simultaneously.

Inaccuracies of self-report methods in gerontological research.

Much of the research on self-care behaviours depends on retrospective reporting by older adults. Often, older adults were asked to recall past illness symptoms and their responses (Kart & Engler, 1994, Dill et al., 1995; Edwardson et al., 1995). This may have resulted in inaccurate reporting of short term bouts of

illness and low grade chronic conditions (Strain, 1990). The perceived seriousness of the illness may have been based on whether long term effects remained, rather than the degree of pain or disruption to routine daily activities. Illness self-care behaviours may have been forgotten if no long term consequences had developed from their illness symptoms.

2.2.3. Summary

Conceptual issues regarding the origin and the scope of self-care have been presented. Self-care is perceived as a traditional characteristic of human beings throughout history. The rise in interest in self-care is likely related to an increase in chronic illness within an ageing society. Self-care and professional care were considered complementary with a tendency to practise self-care first and then to utilize professional care as a last resort.

Self-care was conceptualized and measured as illness self-care behaviours in response to illness symptoms, and as health self-care behaviours aimed at maintaining health and preventing illness. Illness self-care behaviours encompassed the decision to do nothing, to self-treat symptoms, to practise home remedies, to engage in lay consultation, and to take medications. Some researchers included

the decision to consult professional services (Stoller & Kart, 1995; Strain, 1991). Self-care health behaviours entailed the practise of healthy lifestyle habits such as eating a nutritious diet, exercising regularly, relaxing, socializing, seeking health information, and avoiding health related risks. Health self-care behaviours also included the performance of everyday ADL and IADL. Health self-care behaviours aimed at preventing illness also involved attending periodic medical and dental examinations, immunizations, and self-examinations. Much of the research examined self-care behaviours in illness and in health as distinct entities. However, as the prevalence of chronic illness increased in old age, the distinction between self-care in illness and in health became more obscure.

Several self-care frameworks have been employed to examine correlations between illness and health self-care behaviours of older adults and factors associated with the behaviours. In general, the factors correlated with self-care included demographic factors, mental and physical health status, social support, and health beliefs. While multivariate analysis was frequently employed to examine the inter-relationships between the independent variables and self-care, the correlates examined in this review have been presented in isolation.

Demographic characteristics encompassed age, gender, ethnicity and socioeconomic status. In terms of age, younger individuals performed more illness

and health self-care behaviours, with the exception of one of the illness self-care behaviours, namely, lay consultation. As age increased, older adults tended to focus on their symptoms rather than the cause. The purpose was to ameliorate the symptom rather than to confront the actual cause of the symptom. Other findings demonstrated that age did not directly effect illness and health self-care behaviours (Ailinger & Dear, 1993; Conn et al., 1991; Kart & Engler, 1994).

Demographic variables, particularly age and gender frequently demonstrated indirect associations with illness and health self-care behaviours. These indirect relationships are likely influenced by developmental, situational, environmental, and socio-cultural factors, rather than age and gender per se. In terms of gender variation, women had been more likely than men to practise illness self-care behaviours. This, however, was also dependent upon the severity of the illness. Women tended to practise more health self-care behaviours with respect to certain activities, particularly risk avoidance with regard to alcohol and tobacco consumption. Socioeconomic status, and ethnicity were generally not strong correlates of self care.

Mental health characteristics included self-efficacy, depression, anxiety, morale and self-concept. Self-efficacy and self-concept were significantly associated with increased self-care in illness despite functional limitations.

Depression was strongly associated with reduced health self-care behaviours. Qualitative investigation further supported the notion that a reduced capacity for health self-care behaviours was correlated to situational unhappiness.

Physical health in the literature was defined as (a) self-rated health; (b) self-reported symptoms; (c) functional ability; and (d) physician rated health including the number of illnesses, duration, and severity of the condition (Ailinger & Dear, 1993; Strain, 1993; Yu, 1995). Self-rated health was the strongest correlates of illness and health self-care behaviours. Findings showed that when present health was perceived as good, older adults were more likely to practise illness self-care behaviours. Self-rated health was inversely correlated to one illness self-care behaviour, namely, the utilization of professional services. Functional ability was a significant predictor of illness and health self-care behaviours. Where physical activity was conceptualized as a component of functional ability, persons with decreased functional ability practised fewer health self-care behaviours. Yet, where functional ability was defined as the ability to maintain one's role function, the negative impact of reduced ability on self-care was minimized. Physician reported health status evaluations were not correlated with illness self-care behaviours.

Although findings were inconsistent, some studies suggested that social

support was significantly negatively associated with illness self-care behaviours. Older adults tended to do more for themselves when they lived alone. In terms of health self-care behaviours social support was either minimally or negatively correlated. Consideration of certain characteristics of social support, namely, the quality and availability of the support was found to enhance the strength of the positive correlation to self-care in health. Lay consultation was positively associated with two components of social support described earlier (social embeddedness and perceived social support).

Health beliefs encompassed locus of control, perceived susceptibility to illness, degree of scepticism, health maintenance beliefs, and perceived barriers to healthy lifestyles (Chappell et al., 1988; Connelly, 1993; Dean, 1991; Kart & Engler, 1994; Smits & Kee, 1992; Stoller & Pollow, 1994; Strain, 1991). In general, internal locus of control was correlated more strongly with health self-care behaviours than with illness self-care behaviours. Often correlations between LOC and illness self-care behaviours may have been weakened since professional intervention was not included in the measurement of self-care even though self-care was conceptualized as including professional intervention. External locus of control and scepticism aimed at professional care services were correlated more strongly with older adult's decisions regarding their illness self-care behaviours.

Older adults with a high external locus of control were less likely to practise illness self-care behaviours. Scepticism was inversely correlated to the utilization of professional services for non-acute and non-fatal symptoms. In terms of health maintenance beliefs, despite the importance that many older adults attributed to self-care health behaviours, they did not actually perform these behaviours. A possible explanation was that older adults also associated ill health with fate and inevitable decline in old age. Perceived barriers were strongly negatively associated with health self-care behaviours. Perceived barriers of individuals surveyed involved personal perceptions of barriers and environmental restrictions.

Several limitations in the research have become evident. Conceptual issues that remained unresolved ruminated around whether professional care is included within the scope of illness and health self-care behaviours. A broad framework that encompasses an expansive spectrum of self-care activities may be required to resolve this issue and generate more consistent findings. Furthermore a more comprehensive model of self-care that looks at developmental self-care behaviours of older adults in addition to illness and health self-care behaviours may better reflect the holistic nature of self-care.

According to Dill and her associates (1995), the ability for self-care in old age was associated with successful adaptation to developmental changes with

respect to roles, living situations, and social circumstances. Qualitative studies also established the influence of social context and lifetime experiences on self-care abilities (Dill et al., 1995). Additional research may be helpful to test whether a relationship exists between the measurement of one's ability to satisfy developmental self-care needs and the measurement of ability to satisfy total self-care needs. More information with respect to conditioning factors that influence developmental self-care behaviours in old age may also assist health care providers in planning strategies to potentiate the self-care capabilities of older adults, thereby promoting independence and preventing premature institutionalization.

Additionally, the intersection of illness and health self-care behaviours became apparent as older adults experienced increased chronicity. Health self-care behaviours formerly practised in young adulthood have the potential to be classified as illness behaviours aimed at the management of chronic illness symptoms in the later stage of life. More recently, investigators discovered that as the frequency of chronicity increased with old age, the distinction between illness and health self-care behaviours was minimized. From a holistic perspective, it may be more accurate to examine older adults' illness, health and developmental self-care behaviours simultaneously rather than separately.

Orem's model of self-care is a theoretical framework that addresses some

of the gaps identified in the current research. The framework attends to the issue of professional inclusion within the scope of self-care. According to Orem, self-care includes the consultation of professional and formal health care services providing that the individual or family caregivers have initiated the consult. The self-care model also recognized the intersection of the three components of self-care, simultaneously during any one period in time. Orem's (1991) self-care framework depicts the premise that an effective self-care system is based on the capacity to meet illness, health and developmental human needs concurrently. A shift from the focus on illness self-care behaviours to activities aimed at helping elderly individuals to satisfy their developmental needs may further reduce the tendency to medicalize self-care. Gerontological research that examines illness, health and developmental self-care behaviours simultaneously is more likely to establish a comprehensive, holistic self-care knowledge base. This may also support the utility of a multidisciplinary focus to help older adults meet a variety of needs.

3.

Theoretical Framework

The theoretical foundation that guides this investigation is the self-care deficit theory of nursing developed by Dorothea Orem (1991). Since the early formalization of Orem's original self-care framework between 1958 and 1971, several modifications have been developed (Orem, 1991). The framework presented in this chapter reflects Orem's (1991) most recent theoretical model determining that self-care is a human trait that instinctively enables individuals to care for themselves. Figure 3.0 displays graphically the relationships between the key concepts of Orem's self-care model. Orem's key concepts include self-care, therapeutic self-care demand, self-care agency and nursing agency.

Therapeutic self-care demands refer to the self-care needs of individuals to maintain normal human functioning. Self-care needs are organized into three dimensions (universal, developmental, and illness/therapeutic needs). Universal demands include the basic human needs for air, food and water. Therapeutic or illness needs refer to needs related to specific problems with respect to medications, treatments, side effects and diet. Developmental demands refer to the needs of humans with respect to lifestyle adjustments based on one's particular

stage of human development. Self-care agency is simply the capability of humans to practise self-care.

As depicted in the graphic model, Orem determines that a relationship exists between these concepts. Where the self-care system is intact, a relationship exists whereby the self-care abilities of individuals do not exceed their therapeutic self-care demands. When the self-care demands/ needs exceed an individuals self-care agency (capability) a self-care deficit occurs. When a self-care deficit occurs the individual can choose to seek a relationship with the nursing profession referred to by Orem as "nursing agency". The purpose of nursing agency is assist individuals in meeting their self-care demands.

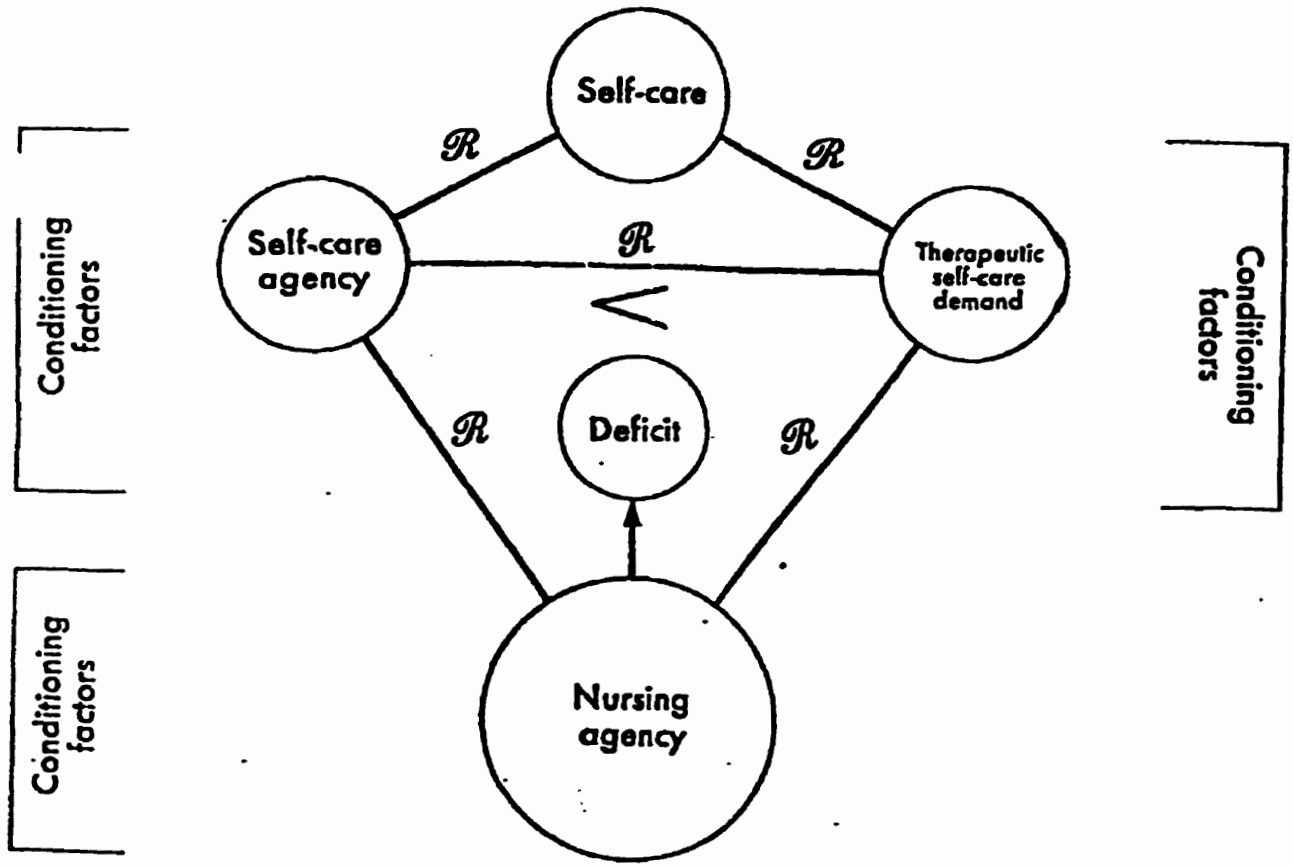

Figure 3.0 Dorothea Orem's theory of self-care deficit.

"<" indicates that self-care needs exceed self-care ability.
"℟" indicates that a relationship exists between the joined concepts.
Orem 1991, p. 64.

A detailed discussion of Orem's framework is presented here in three sections. First, Orem's conceptualization of self-care is identified. In the second section, additional concepts within the self-care framework are defined. These include self-care requisites, conditioning factors, therapeutic self-care demand, self-care agency, self-care deficit, and nursing agency. The third section summarizes Orem' general self-care deficit theory of nursing. Following this presentation several studies have been presented to illustrate the application of Orem's self-care framework. A discussion will follow with respect to the development of the self-care measurement tool, the Self-management Inventory (SMI). The SMI, based on Orem's conceptualization of self-care is employed in this study. To conclude the chapter, two research questions are stated. The first question focuses on the internal consistency between Orem's three components of self-care (illness, health, and developmental self-care behaviours) and the total self-care score comprised of the sum of all three components. The second question examines the correlation between the total self-care score and several conditioning factors as predicted in Orem's framework.

3.0

Self-care

Orem (1991) has defined self-care as a continuous, patterned, deliberate action that mature and maturing humans initiate and perform on their own behalf. These actions are directed by individuals toward themselves or toward their environments to meet human needs for ongoing regulation and maintenance of life, personal health, and well being (Orem, 1991). "Dependent care" refers to self-care activities described above that are performed by responsible adults for socially dependent persons (infants, children, mentally impaired individuals). The focus of this study is on the "independent dimension" of self-care that individuals provide for themselves rather than the "dependent" dimension of self-care whereby families provide direct care for their members. Orem's framework considers self-care as a traditional, human trait which mature adults are responsible to provide for themselves and their dependent family members. In this sense, Orem's definition of self-care falls in the realm of self-care as tradition rather than self-care as a social movement.

Consistent with the WHO definition that was previously cited in Chapter 1, the scope of self-care in Orem's framework is expansive. As such, self-care

behaviours encompass a wide range of activities from lifestyle practices aimed at meeting every day needs in the absence of symptoms to behaviours during illness that include professional consultation (Chappell, Strain, & Badger, 1988; Orem 1991). Orem's conceptualization of self-care thus includes illness and health self-care behaviours, and as well as professional consultation. In addition, Orem's conceptualization includes activities designed to meet human developmental needs throughout the lifespan. Thus, Orem outlines self-care behaviours required to satisfy each of the three spheres of need: illness (referred to as "health deviation requisites"), health (referred to as "universal self-care requisites"), and developmental (referred to as "developmental requisites"). The developmental self-care component has not been duly addressed in the self-care research as a whole.

In summary, Orem's definition of self-care is broad. Orem's model (1991) proposes self-care as the response of humans to their illness, health, and developmental needs. Self-care also includes lay and professional consultation. Furthermore, the model espouses self-care as a traditional form of behaviour.

3.1. Conceptual Definitions

The following concepts within Orem's model were developed to describe and predict the self-care activities of individuals. The major concepts of the model, in addition to the concept of "self-care" include: self-care needs, conditioning factors, therapeutic self-care demand, self-care agency, self-care deficit, and nursing agency.

3.1.0. Self-care Needs: Illness, Health and Developmental Self-care

Self-care behaviours are directed at meeting self-care needs, referred to by Orem (1991) as "requisites". The word 'requisite' is synonymous for the word 'need' and can be used interchangeably. For the purpose of this study, the word 'need' has been most commonly used. Self-care needs refer to the human needs of individuals necessary for normal growth and development, health and well being. Different needs arise in illness, in health, and according to one's stage of human development. The ability of individuals to satisfy their self-care requisites determines the adequacy of their self-care system. Health is not limited to the absence of disease, but consists of physical, emotional, and psychosocial well

being (Orem, 1991). Orem's (1991) model recognizes the following three categories of human need considered essential for well being and normal human functioning: (a) illness needs (referred to as "health deviation self-care requisites"), (b) health needs (referred to as "universal self-care requisites" , and (c) developmental needs (referred to as developmental self-care requisites").

Illness self-care needs.

Illness self-care needs are synonymous with the term "health deviation self-care requisites". For the sake of consistency with the literature and for the purpose of this study, 'health deviation requisites' is referred to as 'illness self-care needs'. Illness self-care needs arise due to illness (Orem, 1991). The framework postulates that specific illness self-care behaviours are required by individuals to alleviate symptoms and to treat illness. Illness self-care behaviours may be necessary at one or more specific times or over a duration of time. Table 3.1 depicts the illness self-care behaviours required to meet illness self-care needs (health deviation self-care requisites).

Table 3. 1

Illness self-care behaviours

1. Develop an awareness of symptoms to enable to seek and secure appropriate professional medical assistance and lay assistance.

2. Cope with, compensate for, and attend to the effects of illness and/ or disability from a psychological, physiological, and developmental perspective.

3. Implement treatment regimes.

4. Recognize and cope with deleterious effects of professional care treatments.

5. Modify one's self-concept to accept oneself as being in need of specific forms of health care based on changes in health deviation self-care abilities.

6. Continue to develop personally to achieve normalacy and optimal quality of life despite the illness.

(Orem, 1991)

Illness self-care needs impact upon the self-care practises of individuals in several ways. First, older adults may have to practise certain illness self-care behaviours such as administering prescribed medical treatments (Orem, 1991). Second, coping with the side effects of treatment may require additional illness self-care behaviours. Third, specific limitations associated with the symptoms may restrict the individual's performance of illness, health or developmental self-care behaviours (Orem, 1991). For example, an older adult with a fractured hip will not

be able to perform health self-care behaviours such as meal preparation or participation in an exercise program. At the same time, developmental needs may affect self-care behaviours during illness. Here a illness self-care behaviour such as self-medication may be curtailed by memory loss or a lack of financial resources frequently experienced in later developmental stages.

Health self-care needs.

Health self-care needs are synonymous with the term "universal self-care requisites". These are basic daily needs that humans experience when they are in good health (Orem, 1991). Table 3.2 depicts health self-care behaviours. Health self-care behaviours are aimed at meeting basic physical and emotional needs to maintain health and prevent illness. Basic physical needs encompass the need for air, water, food, a safe environment, adequate bowel/bladder function, and balance between rest and activity. Daily emotional needs include a balance between social activity and solitude, a realistic self-concept, and the ability to recognize deviations from one's norms. Individuals meet these needs by performing health self-care behaviours throughout various life stages. Where infants and children are unable to perform health self-care behaviours, responsible adults assume the role of

providing 'dependent' health self-care behaviours until the child reaches maturity and is able to provide adequate self-care (Orem, 1991).

Table 3.2

Health self-care behaviours

1. Sufficient intake of air, water, and food. This requisite is achieved by consuming the quantity of each resource required for functioning. As such it also involves making adjustments for consumption based on internal and external factors. Individuals have the responsibility to control over indulgences; and to preserve the integrity of their physiological structure to maximize the metabolism and utilization of their intakes.

2. The ability to manage the process of elimination. This encompasses control over internal and external conditions necessary for adequate bowel and bladder elimination including the maintenance of sanitary conditions.

3. Maintenance of a balance between activity and rest. Individuals need to recognize the need for rest and activity. Included is the ability to regulate environmental stimuli, and to provide an outlet for interests to achieve an optimal sense of well being. Rest/activity patterns are developed according to personal capabilities, interests, values, and culturally prescribed norms.

4. Maintenance of a balance between solitude and social activity to promote personal autonomy, and enduring personal and group relationships. This also encompasses effective management of impulses that potentiate self-centredness, to enhance the person's integrity and regard for the rights of others.

5. Prevention of hazardous situations that endanger human life, functioning, and well being. The goal is to prevent events that lead to the development of hazardous situations, and/or to remove oneself from danger.

6. The promotion of normalacy. This is achieved by developing and maintaining a realistic self-concept, and by recognizing deviations from one's norms. The goal is to maintain and promote integrity.

(Orem, 1991)

Developmental self-care needs.

Orem refers to developmental self-care needs as "developmental requisites". Developmental needs are based on the daily health/universal self-care needs that arise out of specific stages of human development throughout the lifespan. For example, infants have daily nutritional and feeding needs very different from the needs of an adolescent or an elderly individual. Developmental needs are closely linked to health self-care needs particularly in late adulthood. In late adulthood, the ability to effectively satisfy daily health self-care needs is often contingent upon the potential of the individual to cope with the demands brought about by physical and psycho-social changes that occur in the 'old adult' stage of development. Age related conditions may include increased chronicity, reduced acuity of the senses, alterations in metabolism, and reduced functional ability for performing ADL. To illustrate, the health self-care need for nutrition in old age may be complicated by a developmental need associated with reduced functional ability. Consequently, difficulty with meal preparation may impede an older individuals ability to satisfy daily nutritional needs.

Furthermore, developmental needs may also reflect life events associated

with old age. For example, difficulty in meeting one's universal human need for socialization may be associated with an increase in the number of deaths in the elderly individual's social network. The reduced opportunity for social interaction may have been further accentuated by a reduced income or a lack of transportation following the life event of retirement. In old age, developmental requisites elicit actions that ameliorate or minimize the effects of the aging process to maintain normal human functioning.

In summary, according to Orem's model, self-care behaviours are aimed at satisfying the three categories of human needs (illness, health, and developmental self-care needs). Illness self-care needs are the specialized needs of humans when they experience illness symptoms. Health self-care needs are the universal requisites, such as every day physical and psychological needs of human beings. Developmental self-care needs occur as individuals experience challenges associated with their particular stage of human development in the life cycle. The three self-care needs are inter-related as each need affects the integrity of the other two needs within the individual's self-care system. Self-care ability is measured by the degree to which each component need is being met.

3.1.1. Conditioning Factors

Orem's (1991) framework depicts eight categories of internal human and external environmental conditioning factors that influence the self-care ability of persons to satisfy their human needs. Internal factors encompass self-concept, motivation, knowledge, and culturally derived roles and practises. External factors include socio-demographic factors, mental health status, physical health status, social support (family system factors), one's physical indoor and outdoor environment, and health system factors as shown in Table 3.3.

In Orem's model (1991)the conditioning factor of social support is associated with the individual's family system. The focus here is on the proximity and living arrangements of family members. This coincides with Barrera's (1986) dimension of social support referred to as "embedded social support". Health system factors encompass medical treatment modalities and the ability to carry out the treatments.

Generally speaking, conditioning factors are important in terms of their overall influence on the needs experienced by individuals, and on their ability to perform self-care behaviours. The assessment of the conditioning factors that influence self-care is helpful in developing a more holistic oriented plan of care

aimed at maximizing self-care potentials of individuals and ameliorating factors that may negatively impact the performance of self-care. Patients' self-appraisals of the conditioning factors may also impact their self-care performances (Orem, 1991). For example, if individuals perceive their neighbourhood to be unsafe, they may be less likely to exercise by walking out of doors.

Table 3.3 Conditioning Factors (Internal and External)

1. Self-concept regarding one's own perception of self-care ability.

2. Demographic factors such as age, gender, developmental stage, education, and socioeconomic status.

3. Motivation to perform self-care activities.

4. Family system factors involving family members' residency and relationship with the individual.

5. Culturally derived roles and practises. This encompasses patterns of living including activities in which individuals regularly participate.

6. The individual's physical environment indoors and out of doors in terms of safety, and the capability to maximize self-care.

7. Level of knowledge about self-care skills, and self-care habits developed and performed over the life-span.

8. State of health in that disease, injury, and mental or physical malfunctioning may increase the number of self-care activities needed to sustain life or improve health. In addition, illness states may also limit the individual's ability to reason, make decisions, and perform self-care.

9. Health care system factors such as medical treatment modalities, and the ability of individuals to carry out the treatments.

(Orem, 1991)

3.1.2. Therapeutic Self-care Demand

Therapeutic self-care demand encompasses all the self-care behaviours required to satisfy all three requisites (illness, health, and developmental needs). Self-care is therapeutic when it contributes to the prevention, control, or cure of disease; to the regulation of normal development; and to the promotion of health and well being (Orem, 1991). As depicted in Figure 3.1, the component parts of therapeutic self-care demand include (a) the three self-care needs or requisites, (b) the technology required to satisfy the needs, (c) the internal and external conditioning factors that influence the performance of self-care behaviour, and (d) the course of action required to meet the need(s). Figure 3.2. demonstrates the 'systems' approach of the "therapeutic self-care demand" concept. First, the self-care actions within the therapeutic self-care demand require individuals to make assessments for each of the three self-care needs. Second, the technology required to meet the need must be determined. Technologies may reflect a range of equipment involving standard household supplies for home remedies (mustard plasters, garlic) to sophisticated technical equipment (Baxter pumps for intravenous administration, cardiac telemetry monitors). Third, the internal and external conditioning factors that influence human needs and/or a person's ability

to utilize the technologies must be taken into account. Conditioning factors include those presented earlier: socio-demographics, self-concept, knowledge, health status, social support (family system factors), physical environment, and health system factors. Fourth, with the conditioning factors in mind, the self-care requisites and appropriate technology are identified to develop a course of self-care actions. Once these four elements (self-care needs, technologies, conditioning factors, and the course of action) have been successfully implemented, the result is that the "therapeutic self-care demand" has been satisfied. The pronoun "therapeutic" describes the self-care demand since self-care may be well intentioned but not therapeutic (Orem, 1991). The goal of the therapeutic self-care demand is to promote normal human functioning and well being.

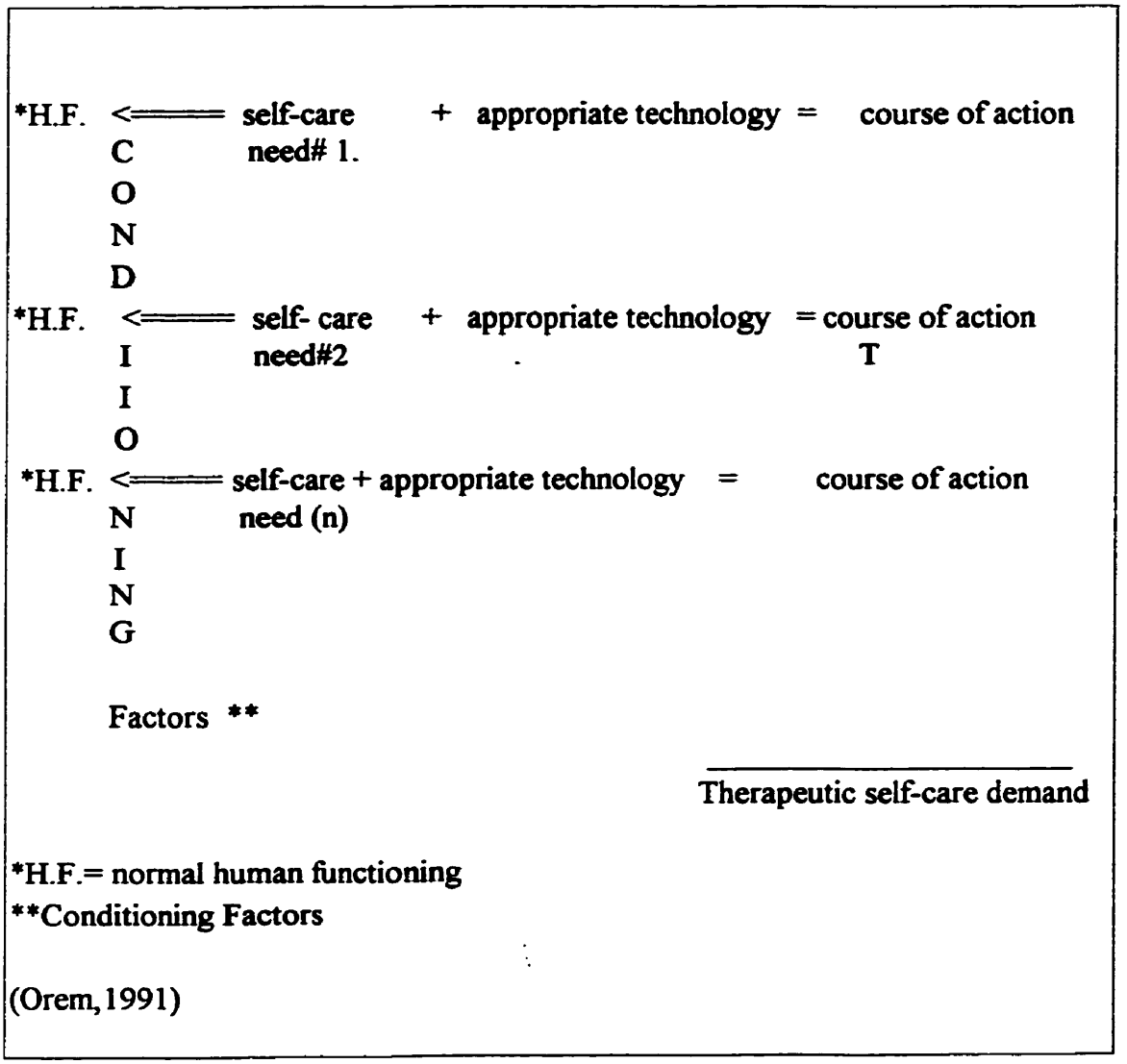

Figure 3.2. A model of therapeutic self-care demand.

In some situations, individuals are not able to perform the full range of self-care behaviours. If mental competence is lacking, self-care can be performed by family members or appointed caregivers (Orem, 1991). These persons act on behalf of the individual to provide dependent self-care. Consequently, they also assume the responsibility for making decisions and carrying out the activities to satisfy self-care requisites. Hence, as long as this support network provided by the family system is adequate the self-care system can be maintained. However, if individuals and/or their care providers are not able to perform the actions, or to make sound judgements then a self-care system no longer exists.

The following illustration describes the health self-care need of "nutrition" and demonstrates the utility of the 'therapeutic self-care demand' configuration. Individuals usually respond to their nutritional needs with health self-care behaviours. They prepare and consume food, and monitor the consumption of food. The method or "technology" required to meet this health need may depend on conditioning factors such as culture, lifestyle habits, knowledge about nutrition, as well as resource availability.

The developmental self-care need for proper nutrition in old age may be complicated by certain age-related losses. Examples include the inability to chew food due to poorly fitting dentures, difficulty swallowing as a result of reduced

saliva production, or a lack of motivation to prepare nutritious meals due to loneliness related to the loss of a spouse. Changes in nutrient need occurs with aging. Older adults require protein rich foods with limited amounts of fats and sugars.

Suppose, an elderly individual experiences difficulty swallowing due to reduced saliva production. Here the health self-care need (basic nutrition) overlaps with a developmental self-care need (reduced saliva). The "technology" may involve the processing of food in a blender or taking medication to enhance saliva production. Once again,"conditioning factors" must be also considered in terms of available resources, available social support (family systems), previous lifestyle habits, cultural factors, motivation, and level of knowledge. Hence, the "course of action" developed for maintaining adequate nutrition may include eating a mechanical soft diet or consulting a specialist in treating dysphagia. If at the same time, the individual experienced illness self-care needs arising from intestinal flu symptoms, the "technology" and the "course of action" might need ongoing adjustment to compensate for reduced nutritional status and potential for dehydration.

Concurrently, the developmental need for adequate socialization in late adulthood may also impact the older adult's capacity for the performance of illness

self-care behaviours. Should the elderly individual live alone, the consumption of fluids might be inadequate in this weakened state, with no one to help prepare meals. This example demonstrates how developmental needs in the older adult stage may impact and intersect with illness self-care needs. Once all the components of therapeutic self-care demand have been considered, the final self-care behaviours or course of action can be planned and implemented. In the example cited, the most appropriate strategy might be the utilization of professional services and admission to a hospital.

3.1.3. Self-care Agency

Self-care agency is the complex capability to satisfy human requirements within existing circumstances (Orem, 1991). Simply stated, it is the capability to carry out one's therapeutic self-care demand. Orem (1991) postulates that humans inherit characteristics that determine their ability to perform self-care behaviours effectively. In Orem's (1991) most recent structural formulation of self-care agency, these human foundational capabilities are cited as ten power components. Power components refer to the properties of individuals that enable them to exercise and develop the ability to manage their self-care and meet their

human needs (Orem, 1991). In general, some of these common capabilities or characteristics of humans include motivation; skill; physical ability; the ability to learn and apply knowledge; and the cognitive ability to reason, to make sound judgements and to perform self-care within one's own situation. Assessment of the power components cited in table 3.4 can help to predict individuals abilities to perform self-care.

Table 3.4 Power Components of Self-care Agency.

1. The ability to remain attentive and persistent in the regulation of internal and external conditions that influence the adequacy of self-care.

2. The ability to judiciously utilize one's physical energy to ensure the continued adequacy of self-care operations.

3. The physical functional control for the successful performance of self-care activities.

4. The mental ability to reason, reflect, and make decisions about the self-care situation and develop strategies to optimize self-care.

5. The motivation for achieving self-care goals for optimal health and well being.

6. The ability to make decisions about self-care actions and bring these actions to fruition.

7. The ability to learn, retain, and apply self-care knowledge.

8. The skill to think, perceive, manipulate, communicate and interpret self-care abilities in relation to ones' requisites; to satisfy self-care demands.

9. The ability to achieve regulatory goals for self-care by reflecting and ordering discrete self-care actions into relationships.

10. The ability to consistently perform self-care activities within one's own context shaped by personal, family, and community factors.

(Orem, 1991)

3.1.4. Self-care Deficit

Self-care deficit refers to a negative relationship between self-care agency and the therapeutic self-care demand. A self-care deficit occurs when self-care agency is low and/or when therapeutic self-care demand is excessive. Should limitations in one's self-care agency exist, then human needs cannot be satisfied even if the needs experienced are within normal ranges. Similarly, if therapeutic self-care demands are extreme, a self-care deficit can exist despite what would normally constitute adequate self-care agency. Self-care deficits, therefore, are dependent upon the components that make up the therapeutic self-care demand and the individual's self-care agency. The self-care framework provides indicators to predict whether a self-care deficit exists as shown in Table 3.5.
Indicators demonstrate when self-care behaviours are ineffective in fulfilling illness, health, and developmental self-care needs. Some indicators include reduced awareness of the impact of the environment on one's self-care ability, inability to recall past self-care strategies, and diminished decision making ability (Orem, 1991).

Table 3.5 Self-care Deficit Indicators

1. The absence of ongoing engagement in self-care activities or the inability to meet self-care requisites effectively. Self-care deficits are associated with a lack of effectiveness and reduced validity of previous self-care practises.

2. A limited or diminished awareness of the environment and its' impact on self-care.

3. The inability to recall past experiences related to regulatory practices.

4. Diminished sound judgement and decision making about self-care related to a lack of knowledge in coping with internal and external conditioning factors.

5. An inability to make self-care adjustments in one or more of the universal or developmental self-care requisites.

(Orem, 1991)

3.1.5. Nursing Agency

Although the concept of nursing agency is not central to this proposed research, it is presented since it is integral to Orem's self-care model. In the event of a self-care deficit, Orem's theory of nursing systems articulates that the individual must make the initial decision to enter into a nurse-patient relationship. Nursing care referred to as "nursing agency" includes acting or doing for another, guiding and directing, supporting, providing a developmental environment, and

teaching. The frequency and type of nursing care that is provided is continually negotiated between the patient and the nurse on an ongoing basis. Individuals' determine the extent of the professional intervention.

Three levels of care provided by nurses are based on patients' appraisals of their therapeutic self-care demands. The three levels of nursing agency depicted in Table 3.6 include (a) the provision of wholly compensatory care, (b) partially compensatory care, and (c) supportive educative care. A wholly compensatory nursing system involves the provision of total direct patient care to persons who require continuous supervision and guidance because of cognitive or physical impairments (Orem, 1991). A partially compensatory nursing system refers to assistance that is provided for persons who are able to perform some self-care behaviours, but who may be limited mentally and/or physically or may be experiencing an elevated therapeutic self-care demand. Here the nurse provides the care that the patient and their family members are unable to do, while encouraging the continuation of what ever self-care capabilities exist. Supportive educative nursing care is provided to patients who are able to perform and should learn to perform self-care, but still require and seek minimal support and educational assistance from the nurse (Orem, 1991). The nurse helps by providing a developmental environment, teaching self-care skills, and guiding the patient in

terms of decision making and behaviour control.

Table 3.6 **Nursing agency**

1.Wholly compensatory care:	Total patient care required by an unconscious patient.
2. Partially compensatory care:	The nurse provides some care, while at the same time, the patient participates in self-care performances as able. For example, a patient recovering from surgery could meet universal requisites but would require nursing assistance for changing dressings.
3. Supportive-educative care:	The patient is able to meet his or her requisites but may need the nurse's support and guidance. For example, a diabetic may need guidance for insulin therapy and additional teaching with respect to diet.

(Orem, 1991)

3.2 Summary of the Orem's Model for Proposed Research

The conceptual framework for this proposed research is Orem's self-care model. Figure 3.0 provides an overview of Orem's model of self-care deficit. The graphic demonstrates that the adequacy of an individual's self-care system is associated with the relationship between one's self-care agency and one's therapeutic self-care demand. If the therapeutic self-care demand is greater than the individual's self-care agency then a "deficit" occurs within the self-care system. In the event of a self-care deficit, the individual may decide to elicit assistance from "nursing agency" to minimize the deficit. The goal is to preserve the self-care system to maintain wellbeing and health. Orem's model also identifies conditioning factors that influence one's self-care agency and therapeutic self-care demand.

The entire model will not be examined and tested. Instead, several interrelated components have been examined and tested using secondary data. Specifically, the notion hat individuals' self-care demands are composed of illness, health, and developmental needs are central to this proposed research. In addition, the role of conditioning factors in relation to illness, health, and developmental self-care needs has been a major focus.

3.3 Application of Orem's Self-care Model in Previous Research

Orem's theory has frequently been employed in the research to examine predisposing factors associated with illness and health self-care behaviours. The studies examined here surveyed convenience samples of independent elderly as well as institutionalized elderly. Most of the investigations were quantitative in nature and employed a descriptive, correlational design.

Jirovec and Kasno (1993) operationalized Orem's basic conditioning factors to predict the self-appraised self-care abilities of 83 nursing home residents. The conditioning factors tested were age, gender, education, race, previous occupation, marital status, social support in terms of the number of children and the frequency of their visits, functional ability, morale, perceptions of fostered dependence in the nursing home, and whether the respondent prescribed to the Medicare versus the Medicaid health system. Self-care was measured using the Appraisal of Self-care (ASA-A) Scale (Evers & Isenberg, 1987). The instrument focuses on health self-care behaviours based on Orem's conceptualization of universal self-care requisites, with minimal reference to illness and developmental self-care behaviours. The scale maintains established construct validity, content validity and internal consistency ($\alpha = 0.85$) (Evers & Isenberg, 1987; Evers,

Isenberg, Philipsen, Senten, & Brouns, 1993). Hierarchial multiple regression analysis results indicated that previous occupation and race were the only significant predictors of self-perceived self-care ability (Jirovec & Kasno, 1993). Those older adults who had been self-employed and were black demonstrated higher self-appraisals of their self-care agency.

Employing a descriptive, correlational design Jirovec and Maxwell (1993) examined the difference between actual choice and desired choice for decision making about 15 ADL items demonstrated by 107 nursing home residents. The relationship between the functional ability of nursing home residents and their perceptions of actual choice versus desired choice within the institutionalized setting was also examined (Jirovec & Maxwell, 1993). Self-care abilities were measured using the ASA-A (Evers & Isenberg, 1987) while functional ability was measured using the Katz (1963) Index of ADL (Jirovec & Maxwell, 1993). A questionnaire was developed to measure residents' perceptions of choice by asking how much choice they would like to have in performing 15 ADL (on a scale of 1 [almost never] to 4 [almost always]). Residents were then asked how much choice they felt they actually had. A *t* test determined that residents desired more choice than they felt they were given. Perceptions of actual choice and desired choice were found to be weakly, positively correlated to functional ability.

Furthermore, the discrepancy between desired choice and actual choice was not related to functional ability (Jirovec & Maxwell, 1993). These findings support Orem's assertion that the individual's functional ability alone should not determine a prescribed level of nursing care, but rather the willingness and capacity for decision making about the level of nursing care should also be recognized as a component of self-care.

Carroll (1995) applied Orem's self-care theory and Bandura's self-efficacy theory to examine the relationship between 'thinking' about illness self-care behaviours following heart surgery, actually 'carrying out' illness self-care behaviours, and self-efficacy expectations. A prospective repeated measures design was used to determine the changes in illness self-care behaviours and self-efficacy expectations before surgery, before discharge and six and 12 weeks after surgery in a convenience sample of 122 elderly subjects (Carroll, 1995). Individuals' estimations about performing their illness self-care behaviours was measured using the Exercise of Self-care Agency Scale (ESCA) developed by Kearney & Fleischer (1979). Cronbach's alpha ranging from 0.79 to 0.85 (Carroll, 1995). The actual performance of illness self-care behaviours was operationalized using Jenkins Activity check list which assessed ten self-reported illness self-care behaviours following surgery (walking, climbing stairs, and general activities)

producing a Cronbach's alpha of 0.53 to 0.92 (Carroll, 1995). Self-efficacy was operationalized using Jenkins Self-efficacy Expectations Scales with a Cronbach's alpha ranging from 0.76 to 0.96 (Carroll, 1995). Regression analysis determined that high self-efficacy expectations at discharge, younger age and increased functional ability before surgery explained 27% of the variance in illness self-care behaviours following heart surgery. Carroll determined that the ESCA did not capture all the dimensions of self-care with respect to the estimation of self-care behaviours and the actual performance of self-care behaviours (Carroll, 1995).

Dodd & Dibble (1993) tested Orem's model by correlating the self-care scores with self-care power components and conditioning factors in a convenience sample of 89 adults undergoing chemotherapy. Self-care was measured using a 40-item instrument developed by Stetz & Dodd (1987). The instrument employed the self-report method to record the self-care behaviours reported by participants to manage five side effects of chemotherapy (nausea and vomiting, mucositis, fatigue, pain and hair loss). The ESCA scale was used to measure the self-care power components. Conditioning factors included demographic data, functional ability, knowledge with respect to chemotherapy, social support, self-efficacy, lifestyle behaviours, and mood states. Multiple regression techniques determined that increased self-care was associated with lower functional ability, lower social

support, higher anxiety, and higher education (Dodd & Dibble, 1990). Functional ability, social support (family system) and years of education accounted for 38 % of the variance in self-care. Two power components were found to be significant in determining illness self-care behaviours. The power component pertaining to one's ability to maintain attention to one's subjective feelings and the power component regarding the ability to exercise requisite vigilance with respect to internal conditions (anxiety, depression, attitudes) explained 9% of the variation in self-care behaviours aimed at managing side effects of chemotherapy (Dodd & Dibble, 1993).

Ailinger and Dear (1993) also employed Orem's self-care theory to test the correlation between the self-care agency and conditioning factors in a convenience sample of 60 older adults from an outpatient clinic suffering from rheumatoid arthritis. Demographic factors included age, education, race, social class, and living arrangement. Other conditioning factors included a physicians evaluation of health including duration of illness, and self-reported functional ability (Ailinger & Dear, 1993). Self-care was measured using the ESCA scale (Kearney & Fleischer, 1979). Physician's evaluations regarding the severity of arthritis in terms of pain, swelling, and condition of the joints was reported using the Ritchie Camp Index (Ailinger & Dear, 1993). The functional ability of individuals with arthritis was

measured using the Health Assessment Questionnaire (Ailinger & Dear, 1993). The findings indicate a significant positive correlation between self-care and education, with a negative association between self-care and the duration of the illness (Ailinger & Dear, 1993). This supports Orem's theoretical assertions with respect to the importance of education and the influence of life experience as a conditioning factor in self-care. Additionally, it also suggests that the self-care deficit theory is applicable to rheumatoid arthritis since chronically ill adults may have unmet needs that may have gone masked as the illness progressed over time (Ailinger & Dear, 1993).

In a quasi-experimental design using a pretest and post test, Folden (1993) tested the effectiveness of a supportive-educative nursing intervention on the perceived self-care ability of individuals after a stroke. Perception of self-care ability was measured using the ESCA scale (Kearney & Fleischer, 1979). Repeated-measures multiple analysis of variance revealed a significant difference between the groups who received the supportive-educative nursing intervention and the control group who did not receive any intervention. The significant increase in the post stroke participants' perceptions of their self-care ability further validates Orem's' theory of self-care with respect to the inclusion of professional consultation within the scope of self-care (Folden, 1993).

One qualitative study used Orem's theory to investigate the perceptions of caregivers of older cognitively impaired persons regarding their ability to administer their medications (Conn et al., 1993). Orem determines that the self-care behaviour of administering one's own medications requires cognitive function and physical ability. Twenty primary caregivers of 20 impaired older adults from a convenience community sample were interviewed using structured and unstructured data collection methods. Unstructured questions encouraged the caregivers to describe the transitions to care giving assistance in terms of events that led them to believe the impaired individual needed assistance, and how the impaired person reacted to the assistance. Structured questions from the Bigg's Elderly Self-care Assessment tool (BESCAT) (Biggs, 1990) were also utilized to measure the caregivers' perceptions of the cognitive and physical ability of the older adult to perform health self-care and illness self-care behaviours. Findings revealed that in 14 out of 20 cases cognitive changes lead to care giving and that the care giving assistance requirements changed over time in conjunction with changing functional abilities (Conn et al., 1993). Conn and her associates (1993) discovered that illness self-care behaviours were negatively correlated to functional ability. In terms of care recipient responses to the care giving transition, seven care recipients were observed to be frustrated, depressed, or angry about

requiring assistance with administering their medications and in response to other functional losses (Conn et al., 1993).

Although causation cannot be determined the study demonstrates the relationship between self-efficacy and illness self-care behaviours. The study supports Orem's model in that an appropriate level of assistance for varying levels of functional ability maximizes self-care agency (Conn et al., 1993).

To summarize, previous studies tested Orem's theory of self-care deficit to examine the relationships between self-care and conditioning factors outlined in the model. Investigations about health self-care behaviours as the dependent variable examined specific behaviours such as the performance of everyday ADL in institutionalized settings (Jirovec & Kasno, 1993; Jirovec & Maxwell, 1993). Orem's self-care model was also utilized to examine illness self-care behaviours related to cardiac surgery (Carroll, 1995; Folden, 1993); arthritis (Ailinger & Dear, 1993); and the side effects of chemotherapy (Dodd & Dibble, 1993); and the ability of cognitively and physically challenged older adults to administer their medication (Conn et al., 1993).

These specialized self-care behaviours were measured using the ASA-A, the ESCA, the BESCAT, the Katz Index of ADL, the Jenkins Activity Checklist, and numerous self-report self-care logs. Consistent with Orem's theory of self-

care, these studies demonstrated that predisposing factors commonly associated with self-care behaviours included race, previous occupation, social support, education, anxiety, length of the duration of the illness, functional ability, degree of cognitive impairment, self-efficacy, and learned helplessness. While specific self-care behaviours were being examined, these tools failed to capture the three essential components of self-care simultaneously as guided by Orem's model. Although each of the sample populations consisted of older adults, little attention was directed at the developmental perspective of self-care, particularly, in the measurement instruments.

3.4 Measuring Self-care Behaviours: The Self-management Inventory (SMI)

In general, self-care has been measured using functional assessments for ADL and IADL, self-care self-report diaries, measurement of a specific self-care activity, and specific self care instruments such as the ASA-A (Evers & Isenberg, 1987) and the ESCA scale (Kearney & Fleischer, 1979). For this proposed research the self-management inventory (SMI) (Snyder et al., 1991) has been used (see Appendix A). The use of the SMI addresses some of the limitations in the research previously discussed.

Traditionally, emphasis was placed on the functional ability of individuals to perform ADL's and hence to satisfy their needs during illness or their daily needs during health. Hence, self-care was measured using functional ADL assessments (Fillenbaum, 1988; Kane & Kane, 1981; Katz, 1983). One of the limitations in measuring self-care using ADL and IADL assessments is the failure to take into account the broad range of self-care performances required to satisfy developmental, emotional, and psycho-social needs particularly in old age (Snyder et al., 1991; Biggs, 1990; Dodd, 1988).

Additionally, behaviour check lists and self-care behaviour questionnaires were employed to reflect the self-care agency of older adults (Dodd & Dibble, 1993). An obvious disadvantage reported in the literature is the inaccuracy of the information based on recall of the older adult and the tendency to remember only more serious symptoms (Dodd, 1988). Self-care logs tend to address this limitation. On the other hand, self-care self-report logs may be predisposed to focus on self-care activities in illness without examining health self-care behaviours and environmental resources that impact self-care ability. While the instruments frequently measure the ability to manage acute illness symptoms they may also tend to overlook the self-care practises of older adults commonly experiencing long term chronic illness and disability. Self-care activities aimed at

managing chronic illness need to measure the ability of the older adult to gain and apply knowledge for the treatment of symptoms; or to establish an adequate support system to postpone institutionalization and maximize quality of life.

Other investigators examined specific illness or health self-care behaviours rather than the overall self-care capabilities of older adults. Specific questions were developed requesting older adults to report on individual behaviours such as exercise, consulting a physician, staying in bed, taking a medication, eating a balanced diet, and others (Dean, 1991; Engberg et al., 1995). These tools were effective in measuring a specific activity, but do not measure overall self-care ability that includes illness, health and developmental self-care behaviours.

Some investigators employed the ESCA developed by Kearney and Fleischer (1979). Although the tool was based on Orem's framework, it emphasized the propensity of individuals for self-care in health and illness (Dodd, 1988; Snyder et al., 1991). The tool fails to provide a comprehensive assessment of the complex self-care activities required to cope with chronicity and to satisfy developmental needs in old age (Carroll, 1995). Additionally, Dodd and Dibble (1993) identified that the tool fails to measure self-care behaviours aimed at the management of specific symptoms.

Several studies cited in the literature (Jirovec & Kasno, 1993; Jirovec &

Maxwell, 1993; Ailinger & Dear, 1993) employed the ASA-A (Evers & Isenberg, 1987) . These studies point out the need for further investigation with respect to the estimation of the psychometric properties of the ASA-A. Ailinger & Dear (1993) identified that the instrument may not totally reflect the multi-dimensionality of self-care agency. Since the instrument measures general dimensions of self-care, correlations were missed in the presence of specific symptoms (Ailinger & Dear, 1993). The ASA-A has also been criticized as having construct validity problems in that severity of disease and social status did not explain a significant amount of variance as proposed in Orem's theory (Geden & Taylor, 1991).

Orem (1991) postulated that developmental needs are the human requirements that arise when individuals must adapt to changes that occur with each new stage of life. Strategies employed previously for meeting developmental demands and the attitudes developed throughout life influenced the self-care patterns of older adults (Orem, 1991; Segall, 1991). Kane and Kane (1981) also recommended that an instrument that measures developmental needs specific to older adults must be sensitive to emotional and psychosocial requirements associated with the last stage of development. Despite the importance attributed to meeting developmental needs in old age, self-care instruments failed to measure

the ability of individuals to meet developmental needs (Dodd, 1988).

Based on Orem's theoretical framework, the recently developed SMI (Snyder et al., 1991) overcomes some of these limitations. Developed by an eight member research team, the SMI has achieved psychometric reliability and validity following data collection in a pilot study by nine staff nurses (inter-rater reliability coefficient r=.75) (Snyder et al., 1991). The pilot study involved a sample population of older community residing adults prior to their discharge from hospital (Snyder et al., 1991). Further validity testing is ongoing. No major problems were reported during four years of testing during post-hospitalization follow-up (Personal communication with M. Snyder, 1995).

The SMI measures all three components of self-care (universal, illness and developmental). Most importantly, it includes the developmental dimension which has been neglected. The instrument provides an objective assessment of physical, emotional, and psycho-social needs specific to older adults in the final life stage. Items related to "developmental self-care needs" measure range of motion, muscle strength, sensory function, and fine motor ability to determine the older adult's self-care ability for managing ADL and IADL routines frequently problematic in older adulthood.

The total self-care score is presented at the ordinal level based on 39 items that

reflect the ability to perform a self-care activity (See Appendix A). The total self-care score is the summation of 39 items, encompassing the three component scores that reflect illness, health, and developmental self-care behaviours of individuals. Four questions focus on illness self-care behaviours, nine questions measure health self-care behaviours, and twenty-six questions are directed at measuring the older adult's capability for performing developmental self-care behaviours. In the SMI, each of the 39 items receive a value of either "1" or "0". A score of "1" point is allotted for each 'yes' answer, while a 'no' answer receives a "0" score. The highest total self-care score possible is 39 points. A higher score represents a greater level of self-care ability demonstrated by the respondent. To enhance the inter-rater reliability of the tool, behavioral/ activity indicators provide an objective determinant of the respondent's self-care capability for each activity. For example, there are four indicators for SMI item # 32 to determine whether the patient is able to take care of his or her nutritional needs at home. The following four indicators assist the evaluator to objectively determine whether the patient is able to meet his or her nutritional requirements: (a) states can obtain foods, (b) states can prepare foods, (c) eats appropriately from all food groups, and (d) feeds self. These objective indicators can then be observed by a registered nurse to confirm that the respondent can perform the specific self-care behaviour (Personal communication

with M. Snyder, 1994). All four indicators must be present to for a score of "one".

3.5. Purpose of the Investigation

This proposed research will examine and test parts of Orem's self-care model using secondary data from a sample of older adults in Manitoba. The first research question examines the internal consistency between the total self-care score and each of three self-care component scores (illness, health , and developmental self-care behaviours). The second question examines self-care correlates presented in Orem's (1991) model as conditioning factors.

This research has been guided by the following two research questions:

(1) Is the Self-Management Inventory (SMI) a reliable and valid measure of the three components of self-care as posited by Orem's Model of Self-care?

(2) What is the relationship between total self-care as measured by the SMI and Orem's conditioning factors of self-care? The conditioning factors are sociodemographic characteristics, namely age, gender, income, and education. The predisposing factors are health status, health beliefs, life satisfaction, depression, and social support (family system factors).

The two questions stated here are graphically depicted in Figure 3.3.

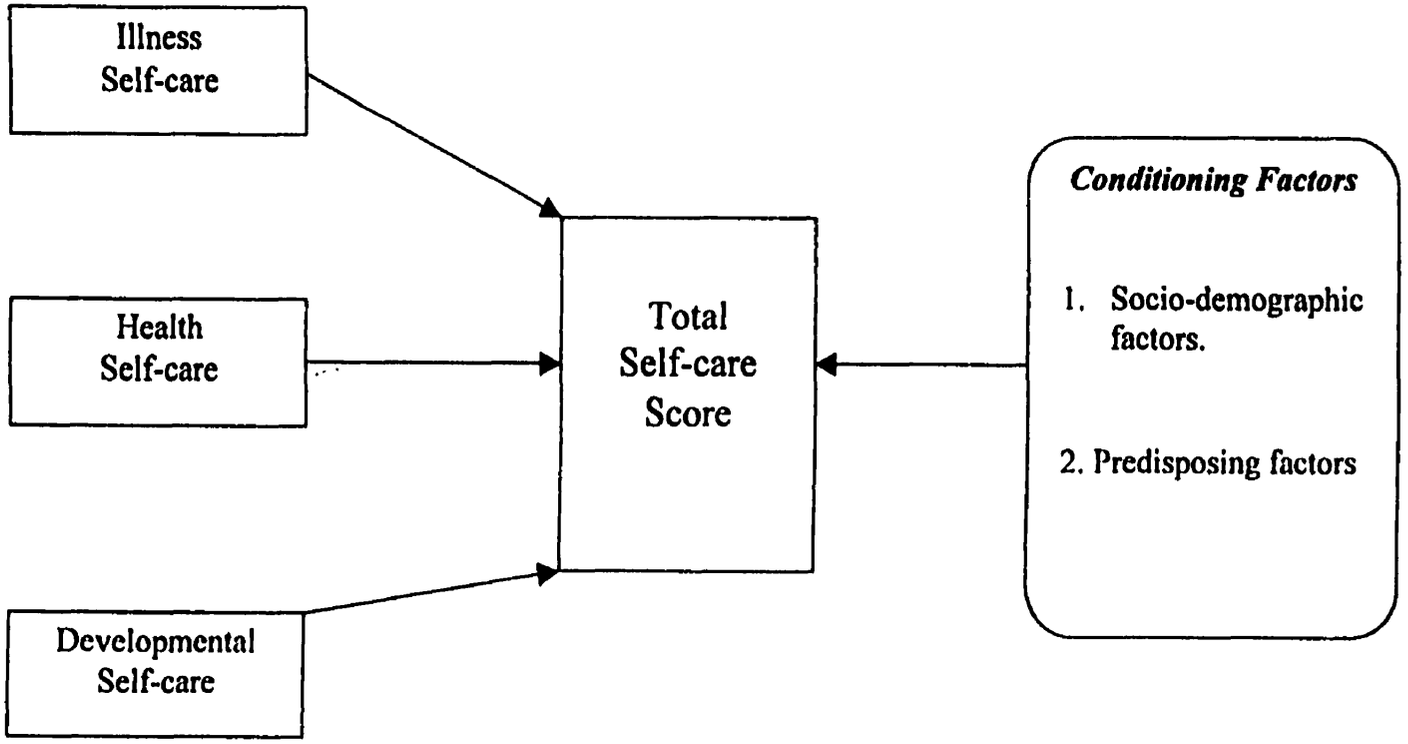

Figure 3.3 Graphic representation of the research questions.

4. Methodology

This research project is a secondary analysis of cross-sectional data. The methodology is described in the following four sections. Initially, attention focuses on the benefits and the limitations inherent in secondary data analyses. The second section provides an overview of the methodology and the sample characteristics of the Winnipeg older adults from the screening interview conducted in the 1991/92 Manitoba Study of Health and Aging (MSHA). The sample for this investigation is comprised of MSHA Winnipeg older adults who were considered to be not cognitively impaired. The generalizability of the Winnipeg sample in this study to the Winnipeg and Manitoba population will be determined. The third section considers how the variables in this investigation will be measured. In the last section, statistical procedures used to analyze and interpret the data are presented.

4.0 Secondary Analysis

"Secondary analysis is any further analysis of an existing data set which presents interpretations, conclusions, or knowledge additional to, or different from, those presented in the first report on the inquiry as a whole and its main

results" (Hukim, 1982, p.1). The use of old data for new research is appropriate for exploring new causal relationships, validating findings from original studies, and theoretical refinement (Liang & Lawrence, 1989). Secondary data analysis can also be used to complement the analysis of freshly collected data, and new research. The following summary highlights some of the advantages and limitations of secondary analysis of data.

4.0.1 Advantages of Secondary Data Analysis

Secondary data analysis offers a potential for saving time, money, and human resources (Hukim, 1982). These economies allow investigators to study issues of importance in a relatively short time frame. The time and effort saved in obtaining funds and gathering new information also enables more time to be spent on theoretical concerns (Hukim, 1982; Hyman, 1972). Secondary analysis reduces the need to carry out new surveys on populations that have a reputation of limited participation in surveys. This is valuable in gerontological research where lower response rates are due to attrition and morbidity (Kane & Kane, 1981).

The wide variety of available topics from general and specialized populations, and the technological advances enabling the storage of machine

readable data further promote the use of secondary data (Hukim, 1982; Kiecolt & Nathan, 1987; Liang & Lawrence, 1989). Large, available data sets may provide information pertaining to nationally representative samples spanning many time periods, or small sub-populations displaying specific characteristics of interest to the researcher. Findings derived from secondary investigations of large data sets may be less sensitive to sampling error, thereby, enhancing the generalizability of the research (Black, 1995). The existence of continuous national surveys also maximizes research efficiency of trend, longitudinal, and cohort studies. Another benefit of secondary data is its timeless nature. Mason, Tauber and Winsborough (1977) state that outdated data may still be pertinent since social situations may not have actually changed over a period of time, or because data collected earlier may shed new light on current issues.

4.0.2 Limitations of Secondary Data Analysis

Despite the advantages of secondary data analysis, it is important to recognize that drawbacks also exist. A major limitation is that previously collected data may not contain the precise indicators that measure the items of interest to the researcher. Specific groups or sub-populations important to a new

study may not have been measured in the original survey. Incomplete information creates a further problem of non comparability of items, particularly when information is analyzed from several surveys in longitudinal or trend studies (Kiecolt & Nathan, 1987). For these circumstances, Kiecolt and Nathan (1987) suggest the use of "creative variable operationalization". This encompasses the use of a theoretical framework to combine items that will represent the concepts to be measured. Alternatively, information not provided in the original data can also be incorporated for analysis in the new investigation from outside the data to be analyzed.

Another limitation stems from a potential lack of information about the original data gathering procedure. This includes documentation about the sample selection, coding, subject criteria, interview method, qualifications of the interviewer, the name of the survey organization, setting, and sequence of survey items (Kiecolt & Nathan ,1987; Liang & Lawrence, 1989). Black (1995) also suggests that errors made in the original surveys may no longer be visible as it may be impossible to differentiate interviewing, coding and keypunching errors. Liang and Lawrence (1989) report that researchers need to carefully select data sets that provide information about data collection so that the quality of the data set can be ascertained. The final report, previous research papers, or personal contact with

the researcher involved in the original data collection are helpful resources. Documentation provided by the code book, and the interview schedule will also enhance the quality of the secondary analysis (Liang & Lawrence, 1989). Accuracy of the data can further be substantiated by conducting descriptive analyses of the relevant items and by comparing frequencies for the data set with those originally reported.

Another possible pitfall is that in longitudinal studies measurements may be worded or approached differently over time. Black (1995) illustrated that questions may have been worded differently in different waves of the Manitoba Longitudinal Study on Aging.

In summary, from a resource perspective, the use of secondary data demonstrates a viable approach for the advancement of research. Secondary data analysis is an accepted practice, particularly for theoretical refinement and the exploration of contingent associations. This research will examine and test components of Orem's self-care model using data from a previous study. Limitations that exist in using this data will be addressed. The original data set contains items and scales with demonstrated reliability, validity and wide use in gerontological research. While not all the measures inherent in Orem's self-care model are available in this data set, a sufficient number exist to examine with

confidence some components of the model. A great deal of information is available on the original data collection protocol both from members of the original research team and from technical reports. The following section will provide an overview of the MSHA.

4.1 1991/92 Manitoba Study of Health and Aging (MSHA): An Overview

The data for this research was extracted from the MSHA, an investigation that formed part of the Canadian Study of Health and Aging (CSHA). The Centre on Aging at the University of Manitoba received funding from Manitoba Health to conduct the MSHA in 1991 and 1992. The purpose was to (a) to estimate the prevalence of dementia among elderly Manitobans, (b) to determine the risk factors for Alzheimers, (c) to examine current patterns of caring for patients with dementia and caregiver burden, and (d) to establish a uniform database with respect to the use of home services for planning and evaluating interventions (McDowell et al., 1994).

Ethical approval of the MSHA was obtained from the Faculty of Medicine Ethics Review Board, University of Manitoba on June 27, 1990. Older adults were contacted from a random list of Manitoba residents 65 years of age and older

as provided by Manitoba Health Services Commission. The names of older adults on the random lists were also stratified by age group and geographic location. Age strata were developed by calculating age as of December 31, 1990 into the following groups: (a) 65 to 74 years, (b) 75 to 79 years, (c) 80 to 84 years, and (d) 85 years and older. Stratified quotas of community residing and institutionalized older adults were solicited from the following Manitoba Health Regions: Winnipeg, Central, Interlake, Westman, Eastman, and Parkland. Older adults from the Norman region included only those residing in Flin Flon and the Pas. Elderly persons from military units and Indian reserves were excluded from the sample.

Respondents received a letter and a brochure explaining the study and the types of questions that would be asked. Interviewers contacted the older adults by telephone or in person. Interviews averaged slightly more than one hour in duration and took place in the respondents' homes. In addition to testing for cognitive impairment, the screening interview elicited additional socio-health related information. The MSHA screening interview schedule for Phase I is presented in Appendix B. Information was obtained regarding sociodemographic characteristics (age, gender, race, cultural background, health region, marital status, living arrangement, size of household, place of birth, education, average monthly household income, occupation of the respondent and/or spouse, and

source of income); and characteristics such as health status, health beliefs, life satisfaction, depression, social support, and service utilization. Older adults who could not be contacted, who were ineligible for the study, or who refused to participate were replaced by another person of the same age, and geographic region.

Data collection.

The screening interview was the starting point of entry that determined the likelihood and/or presence of cognitive impairment using the Modified Mini Mental Exam (3MS) developed by Teng and Chui (1987). The 3MS yields scores between zero and 100, the higher score reflecting maximum cognitive function (Abraham, et al., 1992; Folstein et al., 1975; Teng & Chui, 1987). The 3MS addresses the following domains: orientation, memory, attention, ability to name, follow verbal/written commands, and abstraction and conceptual thinking. The complete 3MS is in Appendix C. Previous research has established the inter-rater reliability of the 3MS, acknowledging its usefulness and validity over other tests (Abraham et al., 1992; Teng & Chui, 1987).

Consistent with the findings of Teng and Chui's (1987) original work, the

cut off point of 78 was selected in the MSHA. Individuals receiving a score of 78 or more on the 3MS were not at risk for cognitive impairment, while those who achieved of score less than 78 were considered to be at risk for cognitive impairment. Participants with a 3MS score less than 78 were eligible to be contacted for the clinical phase of the study.

A total of 2890 community residents, aged 65 years and older were contacted to participate in the phase one screening test. Of these, 1763 elderly respondents participated in the initial screening phase. The refusal rate for the screening interview was 20 percent. Of the 1763 participants, 1421 were screened as having no cognitive impairment (scored equal to or greater than 78 on the 3MS). The remaining 342 participants were screened as having a potential cognitive impairment based on their 3MS scores of less than 78.

4.1.0. Sample Selection

Several authors have determined that differences exist in self-care practises of samples of older adults residing in urban centres compared to those from rural communities (Muchow, 1993; Rabiner et al., 1997). Since variation in self-care practises of urban versus rural older adults is not the focus of this study, the

sample will consist of Winnipeg, Manitoba residents. Hence, the sample for this investigation consists of older adults (≥65 years) residing in Winnipeg who screened negative for cognitive impairment (n= 809).

Access to the MSHA, the screening tool data set was approved by the Centre on Aging following submission of a written proposal identifying the research questions, the variables of interest, the time line for the proposed project, the proposed data analysis survey. Furthermore, although ethical approval was obtained by the Centre on Aging for the MSHA, additional ethical approval to utilize secondary data was required. Ethical approval to utilize the MSHA screening interview in this study was obtained from the Ethical Review Committee of the Faculty of Nursing at the University of Manitoba on February 19, 1998 (See Appendix D).

4.1.1. Sample Characteristics

The sample for this study is described using selected sociodemographic factors and other factors derived from the MSHA Screening interview. The factors include age, gender, education, income, marital status, health characteristic, ethnicity, and physician and pharmacist service utilization. A copy of the interview schedule is appended (Appendix B).

Age.

Age is ascertained in MSHA question #37: "I would just like to check on your birth date again. When were you born?". The continuous age variable has been recoded into the following age groups based on age as of December 31, 1990: "1= 65-69 years, 2 = 70-74 years, 3 = 75-79 years ,4 = 80-84 years, 5 = 84-89 years, 6 = 90 years and older".

Gender.

MSHA page "1# P" elicits information regarding the participant's gender: "State sex of the respondent" (Coded as "male=1, female=2").

Marital status.

Marital status is determined by MSHA #11: "Are you single, married, widowed, divorced, or separated?". For the purpose of describing the sample and determining the generalizability of this sample, marital status has been coded as "0= never married, 1=married or common law, 2=divorced or separated, 3=widowed". However, for the purpose of research question #2, marital status will be coded as a dichotomous variable ("0= never married, widowed or divorced; 1= married or living common law").

Ethnicity.

MSHA questions #4 determines ethnicity: "What is your ethnic or cultural background?" (State French, English, Jewish, Ukrainian etc.). For the purpose of describing the sample in this study, ethnicity was coded as Canadian (0) versus non-Canadian (1).

Education.

Frequencies related to the respondents' level of education was used to describe the sample as well as to make comparisons to determine generalizability of this study sample to the MSHA sample and the general population (see table 5.3). Respondents' levels of education were measured in the MSHA #8(b): "So that means that you completed [select an appropriate category]?" Levels of education were coded in the MSHA as "1= no formal schooling, 2 = some primary school, 3 = finished primary school, 4 = some high school, 5 = completed high school, 6 = some community or technical college or nursing program, 7 = completed community or technical college or nursing program, 8= some university, 9= Bachelor degree, 10 = Masters degree, 11=PhD, 12 = other, 88 = DK". Values for level of education have been collapsed into the following categories: "1= no formal schooling, 2= attended or completed primary school, 3=

attended or completed high school, 4 = attended or completed university including having achieved degrees, 5 = other".

Education was also computed as "years of education" for the final statistical analysis for research question #2. MSHA question # 8(a) asks "How many years of education did you complete?" These values provide a continuous variable depicting the actual number of years and two missing values ("77= refused and 88 = don't know").

Income.

Economic status has been determined using the monthly income indicator specified in the MSHA survey question # 30: "What is the average monthly income for your household, including the old age security payment?" (Coded as "dollar value per month per household, 9997 = refused, 9998= DK, 9999 = MV").

Living arrangement.

Living arrangement was depicted using MSHA question #16: "Do you live here alone?" (yes=1, no=2). If "no"ask for the number of people living with respondents.

Health characteristic.

The health of the older adults in the sample was depicted using the four MSHA items. Three health characteristics that were coded as categorical variables. The first two items include: #39 " How would you say your health is these days?" (coded as "1= very good, 2 = pretty good, 3= not too good, 4 = poor, and 5 = very poor, 9 = missing value") and #41 "For your age, would you say, in general your is excellent, good, fair, poor, or bad?", (coded the same as (#39)). A third MSHA question (#44) asks respondents "How much do your health troubles stand in the way of your doing the things you want to do?" (coded as "1=a great deal, 2= a little, 3 = not at all"). This health characteristic item was recoded to ensure that the direction value of the Likert scale values for health characteristics would be consistent. The Likert scale was coded so that lower values represent better health. The fourth MSHA question (# 47) asks "About how many days during the past month have you been sick in bed at home all or most of the day?" MSHA #47 is a continuous variable and was coded as "number of days and 99=missing".

Service utilization.

An additional sample characteristic was related to the utilization of formal

and professional services. While service utilization has been considered a correlate of self-care in previous research, Orem (1991) determines that the decision to utilize professional services is a form of self-care. Consequently, Orem (1991) identifies availability of services as a conditioning factor, but distinguishes that the decision to utilize the available services is an actual component of self-care. Since Orem considers service utilization to be a form of self-care, it is appropriate to consider service utilization as an item within the self-care scale.

However, the measurement tool (SMI) employed in this study does not capture service utilization. Hence, the decision was made to consider service utilization to describe the sample and as a conditioning factor rather than as an indicator of self-care. MSHA question # 61 ascertains information about 27 services used within the past six months. For the purpose of this study, only the two services used most often were examined. The rationale was that the most commonly used services would provide the most accurate representation of the sample. The two services reported as being used most often within the past six months were those provided by the physician and the pharmacist .

The findings with respect to sample characteristics and the correlations between self-care (dependent variable) and the socio-demographic factors and conditioning factors (independent variables) are presented in section 5.0.

4.2. Measurement

This section provides a detailed account of how the variables in this investigation have been measured. For the first research question, items from the MSHA were matched to items in the SMI. Three sub-scale scores that reflect the components of self-care, namely; illness, health, and developmental self-care behaviours and a total self-care score were calculated. For the second research question, conditioning factors were calculated from items in the original MSHA data set.

4.2.0. Measuring Self-care: Using an Abbreviated SMI

One of the limitations in this analysis of secondary data was that the indicators in the MSHA were not always comparable to those items measured in the SMI. Hence, items from the MSHA survey have been combined to most accurately represent a conceptual link to the SMI items to measure the three self-care dimensions (illness, health, and developmental self-care behaviours). For the purpose of clarity, the MSHA items appear to have been linked directly to

corresponding SMI items. However, the MSHA items have been grouped as a collection of items to most accurately represent the conceptual dimension of self-care being measured. In several cases where one MSHA item corresponds to more than one SMI item, the MSHA item has been linked to all the appropriate SMI items. Despite this conceptual grouping and duplication of items, six SMI items cannot be measured using items from the MSHA data set. Sometimes MSHA items have been used twice to illustrate that the MSHA items do measure the SMI items. However, in analyses the items were entered only once when calculating a total SMI score.

According to Orem's framework, individuals perform self-care behaviours by themselves or with the help of a device to maintain their health and well being while others who are experiencing physical or mental limitations require dependent self-care provided by family members and other responsible persons to maintain health and well being. This study focused on the self-care behaviours that individuals perform on their own or with the help of a device, but without help from formal and informal caregivers.

Since the positive and negative direction of the MSHA and SMI responses vary, the values of the responses have been adjusted accordingly. To illustrate, the coding in the SMI of a participant's "yes" response to indicate that the

developmental demands are being adequately met were parallelled to the Likert values in the MSHA "1= without any help, 2= with some help from a device ONLY".

Coding of the "no" response in the SMI indicating that self-care is inadequate matched the MSHA Likert values from 3 to 5 ("3 = with some help using a person ONLY, 4 = with some help from BOTH a person and a device, 5= unable to do it"). A rating of "1= adequate, 0 = inadequate" in the SMI. Hence, an MSHA response of 1 or 2 yielded a score of 1 in the SMI. Similarly, an MSHA response value of 3, 4, or 5 yielded a score in the SMI of 0.

Also, where the MSHA described the respondents' functioning level as a Likert value of "1 = excellent, 2 = good, 3 = fair, 4= poor, 5 = completely unable", the Likert values of 1 and 2 were considered as "adequate" for the SMI yielding a score of 1. The assumption was that anything less than " good or excellent" would not be considered "adequate". Hence, MSHA values of 3, 4, and 5 were rated as "inadequate", and were recoded being assigned a score of 0.

Additionally, some guidelines were required with respect to an MSHA item taking the form of a multiple response question. For example, MSHA #3MS(5) asks the respondent to state the month and the year. It was decided that in order to be considered adequate for self-care all responses should be correct to yield a

score of 1 in the SMI. In other words, if any answer within a multiple response question was not correct, then a score of 0 was assigned to that item.

It is noted that, while the SMI requires an interviewer to actually observe respondents demonstrating the behaviours, information about the MSHA sample population was ascertained by way of self-report. It was also noted that in the SMI, the three self-care behaviour components were described as "self-care demands". The terms "developmental, illness and health self-care demands" refer to a measurement of the adequacy of a developmental, illness and health self-care behaviours. The three sub-scales are presented in the order in which they were measured in the SMI (Appendix A).

Measuring the developmental self-care dimension.

Twenty-six items within the developmental self-care dimension assess self-reported motor, sensory, cognitive, and psycho-social self-care capabilities of individuals in the older adulthood stage of life. This section will illustrate how developmental self-care indicators from the SMI were matched to MSHA survey items. One of the limitations identified earlier with respect to secondary data was the problem of matching an adequate number of required items with those items

provided in the MSHA data set. Twenty "best matched" items from the MSHA provided adequate information to measure 24 out of the 26 developmental items from the SMI. Four "best matched" MSHA items have been used more than once. Two SMI "developmental" items were deleted because corresponding MSHA items were not available. The 20 "best matched" MSHA items then, were used to develop a scale that conceptually measured 24 items that reflect developmental self-care behaviours.

The SMI measures motor function within the developmental self-care subscale by assessing range of motion, muscle strength, sitting and standing balance, ability to walk, ability to transfer from bed to chair, and fine motor ability (SMI questions 1-7). SMI indicators require respondents to demonstrate to the nurse, their abilities to perform the function being evaluated. The SMI question #1 ascertains range of motion by asking the respondents to "move all limbs". Although the MSHA question #29(p) does not ask a question about moving limbs directly, it does determine if the respondent can do housework (scrub floors, windows and walls). It seemed reasonable to assume that if a respondent in the MSHA reports being able to manage housework, then their range of motion was likely to be adequate.

Similarly, the SMI question #2 regarding muscle strength with the indicator

"moves all limbs against resistance" was matched with the MSHA item #29(r): "Can you do yard work or gardening?". The assumption was that heavier outdoor tasks require muscle strength. While it may appear that the response to this item is biased toward those older adults residing in apartments, the item does ask if the individual "can" do gardening. It does not stipulate that the individual actually "does" do gardening. Furthermore, older adults residing in apartments might have children, friends, or relatives who have gardens and hence an opportunity to demonstrate physical capabilities to carry out the requisite functions of gardening does exist.

SMI question #3 determines whether the respondent's sitting balance is adequate. The indicator for this item requires the respondents to demonstrate their ability to "sit in armless chair, toilet or at the edge of the bed". MSHA question # 29 I. poses a similar indicator " Can you go to the bathroom, commode or outhouse"?

Moving on to SMI item # 4 " Patient's standing ability is adequate" is demonstrated by the indicator "stands by self- or with assistive devices for one minute". As with SMI # 1, this item can also be measured using MSHA # 29(p) which determines whether the respondent can do house work (scrub floors, vacuum, wash windows and walls). It was assumed that an individual must be able

to stand to wash walls and windows.

The SMI item #5 measuring the ability to walk demonstrated by "walks 20 feet by self or with devices" is similar to the MSHA question #29(d): "can you walk?". If respondents reported being able to walk without any help or with some help for item MSHA #29(d), then an additional response was required asking them to report the distance they walk: MSHA #29(dd) "Do you walk out of doors (assisted or unassisted) (1) 1 mile or more, (2) 1/4 mile, (3) 100 yards, (4) 10 yards?" Since any of the distance components in MSHA #29(dd) are of a greater value (distance) than the 20 foot distance item in the SMI, respondents' responses to MSHA #29(dd) will not alter the SMI score. In order to qualify for a score of "one" on the SMI, the individual's response to MSHA #29(d) would have to be a Likert value of 1 or 2. If the response to MSHA #29(d) is 1 or 2, then any response for MSHA #29(dd) of 1 to 4 would not alter the one point from the SMI awarded for the ability to walk adequately.

The SMI item #6 and the MSHA #29 (g) are closely linked and require little explanation. The SMI item #6 evaluates the ability to move from bed to chair, demonstrated as "transfers from bed to chair by self", while the MSHA question #29(g) determines "Can you get in and out of bed?"

The SMI item #7 assessing respondents' fine motor ability demonstrated as

"snaps or buttons clothes, picks up pencil" was addressed by MSHA #29(b): "Can you undress yourself" with responses on a Likert scale ("1=with no help, 2= help from a device, 3= help from a person, 4= help from both a person and a device, 5= unable to do it"). The assumption was that if the individual is able to dress and undress requiring the ability to manage fasteners and zippers, then it was likely that fine motor ability will be adequate.

Continuing on in the developmental dimension of self-care, the SMI evaluated sensory perception using items #8, #9 and #10. These items elicit respondents' perceptions of their vision, hearing, and sensation respectively. The SMI items determine whether respondents can see the interviewer clearly at six feet (#8), whether participants respond to questions asked at a normal volume (#9), and whether they can identify touch in all extremities with their eyes closed (#10). In the SMI, adequate hearing and vision elicits a "yes" response, while inadequate hearing and vision is depicted by a "no" response The MSHA measured vision in #14 and hearing in #15, but no item was found in the MSHA survey evaluating the patient's sensation as in the SMI #10. The MSHA gauges vision and hearing on a Likert scale where "1=excellent, 2=good, 3=fair, 4=poor, 5=completely unable to see/hear". For the purpose of this study, the Likert values of "1 = excellent, 2 = good"in the MSHA were coded as a "yes" response in the

SMI, while the Likert values "3 = fair, 4 = poor, 5 = completely unable to see/hear" were coded as "no = inadequate" in the SMI. In the SMI the "yes = adequate" response was scored as a 1, while the "no = inadequate response" was assigned a score of 0. Hence the Likert values of 1 and 2 received a score of 1 on the SMI, while Likert values of 3, 4 and 5 were assigned a score of 0 on the SMI. This coding was based on the assumption that anything less than excellent or good would not adequately enable individuals to meet their self-care needs.

In terms of cognitive ability, the SMI and the MSHA both use items from the 3MS to measure orientation, memory, and the ability to follow verbal and written commands. The SMI questions #11, #12, #13, #14, #15 paralleled the following MSHA questions: 3MS(5) and 3MS(6); 3MS(2); 3MS(14); 3MS(3); and, 3MS(4) respectively. The MSHA allows partial points for partially correct answers in the 3MS, however the SMI dictates that only a completely accurate response will achieve a "yes=adequate" score on the SMI (Personal communication with M. Snyder, 1994). Hence, only perfect scores in the MSHA were coded as "yes=adequate" responses in the SMI. A completely inaccurate response or even a partially correct answer in the MSHA was coded as "no=inadequate" in the SMI.

The survey questions 3MS(5) and 3MS(6) were combined to answer the

SMI question #11 regarding orientation to time and place. The MSHA question 3MS(5) requires respondents to state the month and year, while MSHA question 3MS(6) determines respondents' perceived location. In the MSHA two points are awarded for the correct month, eight points for the correct year, and one point for the correct location for a total score of 11. A perfect MSHA score of 11 was coded as "1=adequate", while the range of 0 to 10 in the MSHA was coded as "0=inadequate" in the SMI.

The SMI question #12 was linked with MSHA 3MS(2) to determine adequacy with respect to the respondent's memory ability. It requests the person to repeat three words (shirt, brown and honesty) immediately after hearing the words. A perfect score of 9 is obtained when respondents repeat all three words correctly without cues. If a cue is required, only a score of 6 is awarded even when all three words are repeated correctly. Consistent with the scoring process, anything other than a perfect score of 9 elicited a SMI score of 0.

SMI questions #13 measures the ability to follow direction by directing the respondent to fold a paper in half with their right hand and hand it to the examiner. Similarly the MSHA question 3MS(14) directs the respondent to take the paper into their left or right hand, fold it and hand it back. If all three directions are followed a perfect MSHA score of 3 will be recoded into 1 = "adequate" for the

SMI. Any other MSHA scores such as 0, 2, 1 will recoded as 0 = "inadequate" for the SMI.

SMI question #14 and the MSHA question 3MS(3) are identical. Both measure attention ability by asking respondents to spell the word "WORLD" backwards. The MSHA scores the answer from 0 to 5. A perfect MSHA score is 5 while 1 point is deducted for each incorrect letter. The MSHA score of 5 will be recoded as 1 = "adequate" and 0 to 4 will be coded as 0 = "inadequate" in the SMI. A score of 1 in the SMI determines that respondents' ability to follow directions and maintain attention span is adequate.

The SMI question #15 is matched with the MSHA 3MS(4) item which measures long term memory. Five minutes after asking 3MS(2), the respondent is asked to once again recall the three words (shirt, brown, honesty). Once again, a self-care score of 1 is awarded only if all three words are correctly repeated without cuing.

The developmental dimension of self-care gathers information about respondents' ability to communicate. Ability to communicate demonstrated as "makes self understood by speaking, writing, gesturing and make themselves understood" (yes= adequate, no= inadequate) is ascertained in SMI #16 The matching MSHA question is found on the interviewer summary sheet (page 35)

where the interviewer is requested to rate participants' language ability (coded as a range from 1 to 5 where "fluent =5 and major difficulty = 1"). The values in the MSHA scale of "5" and "4" will be coded as "yes= adequate" in the SMI, while ratings of "3", "2", or "1" will be coded as "no=inadequate".

Motivation in the SMI is determined in question # 17 which evaluates respondents' interest in helping with ADL in hospital or doing their own ADL at home ("yes=adequate, no=inadequate"). This question is matched with MSHA #29(c): "Can you take care of your own appearance for example combing your hair or (for men) shaving?" The assumption is made that if respondents maintain their personal hygiene and appearance with or without a device, then their motivation is likely to be adequate. Likert scale values of "1 = with no help, 2 = help from a device" will be coded as "yes = adequate" in the SMI; while the Likert value "3 = help from a person, 4 = help from BOTH a person and a device, 5 = unable to do it" will be coded as "no = inadequate" on the SMI.

Question #18 in the SMI explores respondents' ability to control the use of alcohol. No matching question was found in the MSHA study. SMI# 19 evaluates the ability to cope adequately by asking the participant to identify past coping strategies for handling stressful situations.

Similar with the concept of "emotional coping", SMI #20 asks respondents

to identify whether their emotional state interferes with their self-care activities. Indicators probe participants to express if they feel angry, anxious, depressed, guilty, sad, or fatigued ("yes = no trouble, no = had trouble"). Both SMI items #19 and #20 can be paralleled to MSHA item # 42(q): "Have you had trouble with your nerves in the past year"? ("yes = 1, no = 2"). A "yes" response in the SMI indicating that self-care ability is adequate will be considered equivalent to the answer "no" in the MSHA indicating that the respondent has not had trouble with their nerves.

Adequate social support is also recognized as a developmental need in the SMI. Orem (1991) recognizes "family system factors" as a conditioning factor of self care. Orem's conceptualization of social support is similar to Barerra's (1986) three dimensions of social support. According to Orem's (1991) concept of "dependent self-care", family members assume responsibility for providing care for their dependents. "Embedded" social support pertains to the number of family members residing with the respondent. Embedded social support is not measured in the SMI.

However, perceived social support and enacted support are measured in SMI #21 and #22 respectively. The SMI item #21 asks respondents if they can get help (yes = adequate, no = inadequate). Indicators request specific names and

locations, and expectations they have of caregivers. The MSHA question #19 matches this item: "Most people have one or more individuals they can count on for help in time of need (ie. helps and supports you). Can you think of someone like this in your life? ("yes = 1, no = 2"). In the SMI a "yes = adequate" response elicits a score of 1 , similar to the MSHA where a "yes = 1" in the MSHA. However, in the MSHA the "no = 2" response will have to be coded as "no=inadequate". The SMI question #22 and the MSHA question# 25 both consider emotional support and ascertain whether participants had confidants. In this case the MSHA response is "no=1, yes=2". Hence, the SMI "yes=adequate" response is equivalent to the "yes=2" response in the MSHA, while the SMI "no=inadequate " response is the equivalent of "no=1" in the MSHA. A score of one point has been assigned to a "yes=2" response, while a score of zero has been assigned to a "no=1" response in the MSHA.

Financial well being is determined in SMI questions #23, #24, and #25. The SMI item #23 asks whether the home environment is adequate; SMI # 24 assesses whether money for food, clothing, and housing is adequate; and SMI #25 inquires whether financial resources for health care services, medications, and supplies are adequate. Adequacy is determined by ascertaining whether money is available for food, clothing, and housing; and that no worries are expressed about finances in

the future. Responses to SMI #24, 25, and 26 are coded as yes= adequate, no= inadequate, and 9=no answer given. The MSHA item #32 can be matched to all three SMI items as MSHA #32 determines the overall adequacy of respondents' finances in global terms. MSHA # 32 measures respondents' perceptions of how well they believe their income satisfies their needs based on a Likert scale (1= "very well", 2= "adequately", 3= "with some difficulty" , 4= "not very well" , 5= "totally inadequate", or 9= missing). Since any response lower than "very well" or "adequate" is considered insufficient for the performance of self-care, the MSHA values "1" and "2" were coded as "yes" in the SMI, whereas, Likert values "3", "4", and "5" were coded as "no= inadequate" in the SMI.

Last in the developmental section, SMI # 26 requests elderly respondents to discuss their access to transportation for medical appointments and for grocery shopping (yes = adequate, no= inadequate). The MSHA item # 29(k) asks "can you get to places out of walking distance" (coded on a Likert scale as 1= without help, 2= with some help from a device, 3= with help from a person, 4=Handi transit, 5=unable to do it). Likert scale values "1" and "2" were coded as "yes=adequate" in the SMI; while MSHA Likert values "3", or"4", and "5" were coded "no=inadequate" in the SMI.

Table 4.0 depicts the 20 "best matched" MSHA items which have been

matched to the 24 SMI self-care developmental items. Six of the self-care developmental items identified in the SMI were not utilized for this study as they were not comparable to items in the MSHA.

Table 4.0

SMI Items Matched to MSHA Items to Measure Developmental Self-care Behaviours

SMI developmental items	Best matched MSHA items*
1. Patient's range of motion is adequate. (Moves all limbs). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4, or 5 in MSHA).	29(p). Can you do your house work (eg. scrub floors, vacuum, windows and walls)? Likert (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.
2. Patient's muscle strength is adequate. (Moves all limbs against resistance). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4., or 5 in MSHA).	29(r). Can you do yard work and/or gardening? Likert (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.
3.Patient's sitting balance is adequate. (Patient sits in armless chair or toilet) Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3,4 or 5 in MSHA).	29(i). Can you go to the bathroom, commode or outhouse? Likert (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.
4. Patient's standing ability is adequate. (Stands by self or with assistive devices for one minute). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3,4 or 5 in MSHA).	29(p). Can you do your housework (e.g. scrub floors, vacuum, windows and walls)? Likert: (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.

Table 4.0 Continued

SMI Items Matched to MSHA Items to Measure Developmental Self-care Behaviours

SMI developmental items	Best matched MSHA items*
5.Patient's ability to walk is adequate. (Walks 20 feet by self or with devices). Yes = adequate (coded as 1or 2 in MSHA). No = inadequate (coded as 3,4 or 5 in MSHA).	29(d). Can you walk? Likert: (1) with no help, (2) help from a device, (3)help from a person, (4) help from a person and a device, (5) unable to do it.
6. Patient's ability to move from bed to chair is adequate. (Transfers by self). Yes = adequate (coded 1 or 2 in MSHA). No = inadequate (coded as 3, 4, or 5 in MSHA).	29(g). Can you get in and out of bed? Likert: (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.
7. Patient's fine motor ability is adequate. (Snaps or buttons clothes, picks up pencil). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4, or 5 in MSHA).	29(b). Can you dress and undress yourself? Likert: (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.
8. Patient's vision with or without glasses is adequate. (Counts examiner's fingers at 6ft. distance). Yes = adequate (coded as 1 or 2 in MSHA). No= inadequate (coded as 3, 4, or 5 in MSHA).	14. How is your eyesight (with glasses or contacts if you wear them)? Likert: (1)excellent, (2) good, (3) fair, (4) poor, (5) completely unable to see.
9.Patient's hearing is adequate. (Responds to questions asked at normal volume). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3,4, or 5 in MSHA).	15. How is your hearing (with a hearing aid if you wear one)? Likert: (1) excellent, (2)good), (3) fair, (4)poor, (5) completely unable to hear.

Table 4.0 Continued

SMI Items Matched to MSHA Items to Measure Developmental Self-care Behaviours

SMI developmental items	Best matched MSHA items*
10. Patient's sensation is adequate. (Identifies touch in all extremities).	No similar question was found in the MSHA.
11.Patient's orientation is adequate. (States month, year, and place accurately). Yes = adequate (coded as 2[month], 8[year], and 1[place] in MSHA). No = inadequate (coded as 1 or 0 [month]; 4, 2 ,or 0 [year]; and 0 [place] in MSHA).	3MS(5). What is the month? (2 = Accurate; (1, 0) = Inaccurate. What is the year?(8) =Accurate; (4, 2, 0) = Inaccurate. 3MS(6). Are we in a hospital (clinic), or a store, or a home? What is the address here? (1) = accurate, (0) = not accurate.
12. Patient's short term memory is adequate. (Repeats three words after hearing them 3 times. Patient informed that he/she will be asked to name these items later). Yes=adequate (coded as 9 in MSHA) No = inadequate (coded as 0-5 in MSHA).	3MS(2). I am going to say 3 words for you to remember. Please repeat them after I have said all 3. (9) = perfect score on all 3 words with no cues, (6)= perfect score with cues, (0-5)= requiring multiple choice as a cue or missing some or all the words completely.
13. Patient's ability to follow direction is adequate. (Direct patient to take paper in right hand, fold in half, hand to examiner. If hemiparetic or left handed, may use right hand). Yes = adequate (coded as a score of 3 in MSHA). No = inadequate (coded as score of 2, 1, or 0 in MSHA).	3MS(14). Take this paper with your left/right hand, fold it in half, and hand it back to me. (3) = all directions are followed, (2) = 2 directions are followed, (1) = 1 direction is followed, (0) = none of the directions are followed.

Table 4.0 Continued

SMI Items Matched to MSHA Items to Measure Developmental Self-care Behaviours

SMI developmental items	Best matched MSHA items*
14. Patient's attention ability is adequate. (Spells "WORLD" backward accurately). Yes = adequate (coded as 5 in MSHA). No = inadequate coded as 0 to 4 in MSHA.	3MS(3). Would you spell the word "WORLD" ? Can/ Can't. Now please spell "WORLD" backwards. (5) = all letters were correct, (4-0)= number correct.
15.Patient's recall is adequate. (Recall's items in #12 after 5 minutes. Yes = adequate (coded as 9 in MSHA). No = inadequate (coded as 0-6in MSHA).	3MS(4). What three words did I ask you to remember earlier. (9)= perfect score on all 3 words with no cues, (6)= perfect score with cues, (0-5) = requiring multiple choice as a cue or missing some or all the words completely.
16.Patient's ability to communicate is adequate. (Makes self understood by speaking, writing, gesturing). Yes = adequate (coded as 5 or 4 in MSHA). No = inadequate (coded as 3, 2 or 1 in MSHA).	Interviewer summary sheet. Language ability: Please rate the language ability of the respondent (in the language of the interview). Likert scale (5) = completely fluent to (1) = major difficulty.
17.Patient expresses interest in self care. (Helps with ADL's in the hospital, or expresses interest in caring for self at home). Yes=adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4, or 5 in MSHA).	29(c). Can you take care of your own appearance , for example combing your hair, and (for men) shaving? Likert: (1) with no help, (2) help from a device, (3) help from a person, (4) help from a person and a device, (5) unable to do it.
18. Patient's ability to monitor /control use of alcohol or other substances is adequate.	No similar question found.

Table 4.0 Continued

SMI Items Matched to MSHA Items to Measure Developmental Self-care Behaviours.

SMI developmental items	Best matched MSHA items*
19. Patient's ability to cope is adequate. (Identifies coping strategies for handling stressful situations. Provides examples from past) Yes = adequate (coded as 2 in MSHA). No = inadequate (coded as 1 in MSHA).	42(q). In the past year have you had trouble with your nerves. (1) = yes, (2) = no.
20. Patient's emotional state does not interfere with self-management. (Reports no disruptive emotional state. Is not feeling anxious, angry, depressed, guilty, agitated, sad, fatigued, uneasy). Yes = adequate (coded as 2 in MSHA). No = inadequate (coded as 1 in MSHA).	42(q). In the past year have you had trouble with your nerves. (1) = yes, (2) = no.
21. Patient's support system for carrying out self-care activities is adequate. (States has available help, is able to name and locate the person(s), discusses expectations of the caregiver). Yes = adequate (coded as 1 in MSHA). No = inadequate (coded as 2 in MSHA).	19. Most people have one or more individuals they can count on for help in time of need (ie. helps and supports you). Can you think of someone like this in your life? (1) = yes, (2)= no.
22. Patient has adequate sources of emotional support. (States has someone with whom he/she can discuss feelings). Yes = adequate (coded as 2 in MSHA). No = inadequate (coded as 1 in MSHA).	25. Do you receive emotional support from anyone or not? That is, do you have someone who you confide in, talk to about yourself, your concerns, etc.? (1) = no, (2) = yes.

Table 4.0 Continued

SMI Items Matched to MSHA Items to Measure Developmental Self-care Behaviours

SMI developmental items	Best matched MSHA items*
23. Patient's home environment is adequate. Yes = adequate (coded as 1 or 2 in MSHA). No=inadequate (coded as 3, 4, 5 in MSHA).	32. How do you think your income and assets currently satisfy your needs? Likert: (1) = very well, (2) = adequately, (3)= with some difficulty, (4) = not very well, (5) = totally inadequate, (9) = missing.
24. Patient's financial resources post-discharge are adequate. (States money available for food/clothing/housing). Yes = adequate (coded as 1 or 2 in MSHA). No=inadequate (coded as 3, 4,5 in MSHA).	32. How do you think your income and assets currently satisfy your needs? Likert: (1) = very well, (2) = adequately, (3) = with some difficulty, (4) = not very well, (5) = totally inadequate, (9)= missing.
25. Patient's financial resources are sufficient for health care services /medications/ supplies.(States money is available for food/clothing/house. Not worried about finances for future). Yes = adequate (coded as 1or 2 in MSHA). No=inadequate (coded as 3, 4, 5 in MSHA)	32. How do you think your income and assets currently satisfy your needs? Likert: (1) = very well, (2) = adequately, (3) = with some difficulty, (4) = not very well, (5) = totally inadequate, (9)= missing.
26.Patient's access to transportation is adequate. (States transportation available for medical appointments/ groceries. Ask how he/she will travel). Yes= adequate (coded as 1 or 2 in MSHA). No=inadequate(coded as 3, 4, 5 in MSHA).	29(k). Can you get to places out of walking distance? Likert: (1) = without help (can travel alone on bus, taxi, drives car), (2) = with some help from a device, (3) = help from a person, (4) = Handi transit, (5) = unable to do it.

Note *Twenty "Best Matched MSHA Items" have been used to develop a scale that conceptually examines 24 SMI developmental behaviours of MSHA respondents. MSHA Items have been linked directly to the SMI items in table 4.0 only as a means to illustrate how the connections evolved, but not to suggest that the associations between the items are specific.

Measuring the illness self-care dimension.

According to the SMI, "therapeutic demands" refer to self-care illness behaviours aimed at managing symptoms (Snider et al., 1988). Four questions in the SMI measure respondents' ability to perform self-care illness behaviours to satisfy their therapeutic needs (#27,#28,#29, and #30). The SMI item #27 determines respondents' knowledge about medications demonstrated as "state names/ purpose of medication and OTC drugs taken". The SMI item #28 measures ability to take medications appropriately demonstrated as "describe your method for remembering to take medications, how to obtain refill, and who to call if side effects occur". The SMI item #29 evaluates the ability to perform special treatments/therapies related to the use of tube feedings, respiratory therapy, colostomy care, blood sugar monitoring, IV therapy. Lastly, the SMI item #30 depicts the ability to follow a special diet demonstrated as "state the purpose of your diet, and the lists of food not allowed". (For each of the four items, yes=adequate/no= inadequate).

The "best matched" MSHA item # 29(s) was used to answer SMI questions # 27 and SMI question #28. The MSHA item #29(s) evaluates respondents' abilities for taking their medicine on a Likert scale ("1= without any help, 2 = with help from a device, 3 = with help from a person, 4 = with help from both a device and a person, 5 = unable to do").

The assumption is that if participants are able to take their own medications, then they will be knowledgable about the name of the medication, how to administer the medication, and how to refill the medication. Consistent with Orem's dichotomous conceptualization of self-care and dependent self-care; the MSHA Likert values "1= without any help, 2 = with help from a device" will be coded as "yes= adequate" in the SMI; while the values "3 = with help from a person, 4 =with help from both a device and a person, 5 = unable to do it" will be coded as"no = inadequate". No MSHA questions were matched with the SMI questions # 29, or #30.

Attention is drawn to SMI#29 regarding the ability to perform special treatments. It is noted that some of these treatments (IV therapy, respiratory therapy, and tube feedings) may be more relevant for acute illness episodes, while older adults are more likely to report chronic illness and disability. The SMI question #29 may not be applicable to this group of elderly living independently in the community. As table 4.1 shows, one "best matched" MSHA item conceptually parallels the SMI illness self-care dimension.

Table 4.1

SMI Items Matched to MSHA Items to Measure Illness Self-care Behaviours

SMI illness self-care items	Best matched MSHA items*
27. Patient's knowledge of medications is adequate. (States names/purpose of medication/OTC drugs prior to hospitalization). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4, 5 in MSHA).	29(s). Can you take your own medicine? Likert: (1) = without any help, (2) = with help from a device, (3) = with help from a person, (4) = with help from a person and a device, (5) = unable to do it.
28. Patient's ability to take medication is adequate. (Describes method for remembering to take medications, how to obtain refill, who to call if side effects occur.) Yes = adequate (coded as 1 or 2 in MSHA). No=inadequate (coded as 3, 4, 5 in MSHA).	29(s). Can you take your own medicine? Likert: (1) = without any help, (2) = with help from a device, (3) = with help from a person, (4) = with help from a person and a device, (5) = unable to do it.
29. Patient's abilities to perform treatments or special therapies (tube feeding, colostomy care, blood sugar monitoring, IV therapy) is adequate.	No similar question was found.
30.Patient's knowledge of a special diet is adequate. (states purpose of diet and lists foods not allowed).	No similar question was found.

Note * One "Best Matched MSHA Item" has been used to examine two of the four SMI illness self-care behaviours of MSHA respondents. MSHA Items have been linked directly to the SMI items in table 4.1 only as a means to illustrate how the connections evolved, but not to suggest that the associations between the items are specific.

Measuring the health self-care dimension.

Health self-care behaviours encompass a range of self-care behaviours that persons do to maintain their health and well being. Health self-care behaviours encompass the performance of daily activities carried out by individuals to promote their health and prevent illness. Orem (1991) refers to this dimension of self-care as "universal self-care" but for the purpose of this thesis, these behaviours will be referred to as "health self-care behaviours".

The SMI posited nine questions (#31 to #39) to assess self-care health behaviours related to pulmonary function, nutritional status, elimination, and safety. Seven of the nine SMI questions correspond to the "best matched" MSHA items that look at functional assessment and the number of chronic conditions. In the self-care health dimension, each "best matched" MSHA item has been paralleled with a SMI item only once.

The SMI question # 31 evaluates respiratory function asking respondents if they can perform ADL or walk 20 feet without becoming short of breath ("yes= adequate, no=inadequate"). Meanwhile, the MSHA question #42(j) asks whether participants had experienced chest problems ("1= yes, 2=no"). Here, the "yes" responses in the MSHA must be coded as "0= inadequate" in the SMI.

SMI # 32 determines respondents' nutritional needs in terms of their ability to eat

and prepare meals, shop and choose foods from all food groups appropriately. The corresponding question in the MSHA is #29(o): "Can you prepare your own meals?" ("1= no help, 2=with help from a device, 3=with help from a person, with help from a device and a person, 5= unable to do it"). Likert values 1 and 2 were coded as "1= adequate" in the SMI, while the Likert values 3, 4, 5 will be coded as "0 = inadequate".

The SMI item #33 assesses whether urine function is adequate ("yes=adequate, no =inadequate") while MSHA #42(l) questions whether kidney trouble has been experienced ("1=yes, 2= no"). Urine continence is assessed in the SMI question #34 "Patient is continent of urine." (coded as "yes = adequate, no = inadequate)", and by MSHA #42(m) "Do you ever loose control of your bladder?" (coded as " 1= yes / incontinent, 2 = no/no incontinence").

Similarly, SMI #35 assesses bowel function; which corresponds to MSHA #42(k): "have you had trouble with your stomach or digestive system?" ("1= yes, 2= no"). The SMI question # 36 determines if bowel control is adequate ("yes = 1, no = 2"). This is matched to the MSHA question 42(n) stated as "do you ever loose control of your bowels?" (coded as "1= yes, 2= no"). For SMI #33, #34, #35, and #36, "yes" responses in the MSHA are depicted as 0 or no in the SMI.

No matching MSHA question was found for SMI # 37 regarding activity level. The question asks if daily schedules include physical activity and periods of rest.

Questions # 38 and # 39 in the SMI pertain to safety. SMI #38 asks if the individual can physically remove themselves from danger or can call for help. This was linked to MSHA # 29(j) "Can you use the telephone?" (coded as "1= without any help, 2 = with some help from a device only, 3= with some help using a person only, 4 = with some help from both a person and a device, 5= unable to do it"). Likert values 1 and 2 in the MSHA will be coded as "1= adequate" in the SMI, while values 3, 4 and 5 will be coded as "0 = inadequate" in the SMI. The premise is that if participants report being able to use the telephone by themselves or with the help of a device, then they could call for help.

The SMI #39 assesses the participant's environment in terms of whether lighting is adequate, stairs rails are present, locks exist, and the presence of smoke detectors (coded as "1 = adequate, 0 = inadequate"). No matching MSHA item was found.

The MSHA items matched to SMI self-care health items are shown in Table 4.2. Two of the nine original SMI self-care health items have been omitted because they could not be paired with survey items from the MSHA.

Table 4.2
SMI Items Matched to MSHA Items to Measure Health Self-care Behaviours

SMI health self-care items	Best matched MSHA items*
31. Patient's pulmonary function is adequate. (Performs ADL's without SOB/ Walks 20 ft. without SOB). Yes = adequate (coded as 2 in MSHA). No = inadequate (coded as 1 in MSHA).	42(j). In the past year, have you had chest problems (i.e. asthma, pneumonia, T.B., emphysema, bronchitis, breathing problems)? (1) = yes, (2)=no.
32. Patient is able to take care of nutritional needs. (States can obtain and prepare foods, eats from all food groups, and feeds self). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4, 5 in MSHA).	29(o). Can you prepare your own meals? Likert: (1) = no help required, (2) = with help from a device, (3) = with help from a person, (4) = with help from a person and a device, (5) = unable to do it.
33. Patient's urinary function is adequate. (Free of dysuria/frequency/ urgency. Urine output is adequate). Yes = adequate (coded as 2 in MSHA). No= inadequate (coded as 1 in MSHA).	42(l). In the past year have you experienced kidney trouble. (1) = yes, (2) = no.
34. Patient is continent of urine. (Does not wet bed, keeps bed/clothing dry). Yes= adequate coded as 2 in MSHA. No=inadequate coded as 1 in MSHA.	42(m). Do you ever lose control of your bladder?(ie. pass water when you don't intend to?) (1) = yes; (2) = no.
35. Patient's bowel function is adequate. (Free of diarrhea/constipation) Yes = adequate (coded as 2 in MSHA). No = inadequate (coded as 1 in MSHA).	42(k). In the past year, have you had trouble with your stomach or digestive system. (1) = yes, (2) = no.

Table 4.2 Continued

SMI Items Matched to MSHA Items to Measure Health Self-care Behaviours

SMI health self-care items	Best matched MSHA items*
36. Patient is continent of stool. (Keeps bed and clothing clean). Yes= adequate (coded as 2 in MSHA). No=inadequate (coded as 1 in MSHA).	42(n). Do you ever loose control of your bowels? (Do you ever lose stool when you don't intend to?). (1) = yes, (2) = no.
37. Patient's level of activity is adequate. (States daily schedule includes physical activity/rest. "How do you spend your day?" Has stamina).	No similar questions found.
38. Patient's skill for self-preservation is adequate. (Can physically remove self-from danger, recognizes dangerous situations, can call for help). Yes = adequate (coded as 1 or 2 in MSHA). No = inadequate (coded as 3, 4, 5 in MSHA).	29(j). Can you use the telephone? Likert: (1) = no help required, (2) = with help from a device, (3) = with help from a person, (4) = with help from a device and a person, (5) = unable to do.
39. Patient's environment is safe for self-care. (Adequate lighting, locks on doors, stair rails, smoke detectors).	No similar question was found.

Note *Seven "Best Matched MSHA Items" have been used to develop a scale that conceptually examines nine SMI health self-care behaviours of MSHA respondents. MSHA items have been linked directly to the SMI items in table 4.2 only as a means to illustrate how the connections evolved, but not to suggest that the associations between the items are specific.

SMI items not used.

The MSHA data paralleled 33 out of 39 items from the SMI. MSHA data was comparable to 24 of the 26 developmental questions, two of the four illness related questions, and seven of the nine universal self-care questions. In general, SMI items that could not be linked to MSHA data pertained to self-care items related to sensation (touch), self-control in alcohol use, ability to perform treatments and special therapies, knowledge about special diets, adequacy of activity/ rest, and the maintenance of a safe home environment.

Considering that 6 SMI items could not be used, the question arises whether the validity of the SMI tool for measuring self-care agency can be maintained. The following argument provides support for using the 33 item SMI for this study. Although not all of the SMI items were measured using the MSHA data, information pertaining to respondents' ten power components are none the less available in the MSHA data. According to Orem (1991) properties of human beings referred to as "power components" enable individuals to meet their self-care needs. These properties are listed in table 3.4, as the ten power components. Six of the ten power components (power components#1, #4, #5, #7, #8, and #9) cited by Orem (1991) involve cognitive functioning (the ability to reason, make

decisions, perceive needs, establish goals, and to learn and apply self-care knowledge). Although not all the SMI items can be matched to a specific MSHA question, conceptually, the MSHA items that remain are comparable to the SMI items which measure cognitive functioning and reasoning. The MSHA items ascertain information about respondents' abilities to follow direction (3MS(14)), remain attentive (3MS(3)), recall words after a period of time (3MS(4)), determine strategies to cope with stress (#42(q)), and whether or not respondents have someone with whom they can discuss emotional needs (#25). Therefore, it appears that comparable information from the MSHA may be elicited to satisfy Orem's conceptual interpretation of the items although specific items could not be matched.

Additionally, power components in Orem's (1991) model also reflect functional status. Examples include power component #2 cited as "the ability to utilize one's energy so that self-care activities can continue", and power component #3 cited as "physical functional control for successful performance of activities". The majority of the MSHA questions that were appropriate matches for these components within the SMI were derived from ADL questions developed by the Older American Resources Study Project (OARS) (Fillenbaum, 1988). The OARS-ADL instrument is reported as one of the most widely used tools for

community based research (Kane & Kane 1981). Reliant upon the self-reports of independent older adults or their caregiver, the OARS scores individuals' ability to perform ADL's (bathing, dressing, eating, grooming, walking, toileting, continence, and walking). The scale also measures IADL's such as using the telephone, accessing transportation, ability to shop, do housework, and manage medication and finances. The majority of the functional abilities assessed in the OARS are also found in the MSHA. These items include information pertaining to the following functional abilities: house work (#29(p)), yard work (#29(r)), vision (#14), hearing (#15), access to transportation (#29(k)), bladder continence (#42(m)), financial management (#38), and meal preparation(#29(o)).

Power components #5 and #10 refer to motivation and social context. These two components were addressed by MSHA items #42(q) and #25. Although not all the SMI questions were matched per se, the MSHA survey ascertained comprehensive information about each of the power components and each conceptual dimension identified in Orem's framework. The point is that although not all of the SMI items could be linked to MSHA items, conceptually the MSHA items that were matched to the SMI have addressed the ten power components and each of the three conceptual groupings.

4.2.1. Measurement of Conditioning Factors

To review briefly, research question #2 examines whether a relationship exists between the total self-care score as measured by the SMI and Orem's conditioning factors of self-care. Selected factors include age, gender, marital status, level of education, monthly income, living arrangement, health characteristics, utilization of physician services within the past six months and utilization of pharmacist services within the last six months. The measurement of these characteristics has been discussed previously in Section 4.1.1.

Other conditioning factors include health status, life satisfaction, health beliefs, depression and social support. Measurement of these conditioning factors based on Orem's model of self-care will be described in this section.

Health status.

The measurement of health status has been based on self-rated health measures as well as respondents' perceptions of how severely their symptoms restricted their activity. MSHA#39 asks respondents "How would you say your health is these days?" Values were coded on a Likert scale where"1= very good, 2 = pretty good, 3 = not too good, 4 = poor, and 5 = very poor". The MSHA

question #41 ascertains information about respondents' perceptions regarding their health in general and in the long term: "For your age, how would you rate your health in general?" Values were coded on a Likert scale where "1= excellent (never prevents activities), 2 = good for your age (rarely prevents activities), 3 = fair for your age (occasionally prevents activities), 4 = poor for your age (very often prevents activities), 5 = bad for your age (health troubles of infirmity all the time prevents most activities, or requires confinement to bed), 6 = NR". The information in parenthesis was read only when respondents required more information to answer the question. MSHA #44 ascertains "How much do your health troubles stand in the way of your doing the things you want to do?" (coded as "1= a great deal, 2= a little [some], 3=not at all").

Life satisfaction.

MSHA items #50 (a) to (l) measure life satisfaction using a modified version of Andrew and Whithey's (1976) "terrible-delightful" scale. Ten items elicit responses about life satisfaction in terms of health, finances, family relations friendships, housing, religion, self-esteem, transportation, recreation and life in general. Two items, in Andrew and Whithey's initial scale were deleted in the

MSHA study. The item "paid employment" was omitted since 95% of the sample as unemployed. The item "living partner" was excluded as 49% of the sample were widowed, divorced or had never been married. A Cronbach's alpha of 0.76 was reported for the 10 item life satisfaction scale for the MSHA sample (MSHA Research Group, 1995).

The responses are coded by using a nine point Likert scale where "1 = terrible, 2=very dissatisfying, 3 = dissatisfying, 4 = mixed, 5 = satisfying, 6 = very satisfying, 7=delightful, 8 = no opinion/ not applicable/can't remember/ no comment, 9 = missing response". Scale scores are obtained by adding the individual item scores and dividing the sums by the total number of valid responses. Higher scores are interpreted as being more satisfied with life (Andrew & Whithey, 1976).

Health beliefs.

Three sub- scales of health beliefs were created in the MSHA sample using 19 items from MSHA question # 48. Fourteen of the 19 items were derived from 3 widely used scales (Friedson, 1961; Lau & Ware, 1981; Wallston, Wallston, Kaplan, & Maides, 1976). The remaining five items were derived statements used

in other studies (Segall, 1987; Segall & Goldstein, 1989). A factor analysis indicated agreement for the 19 items across three sub-scales for the total MSHA sample (MSHA Research Group, 1995). The three sub-scales that emerged in the MSHA sample included external control/ chance, internal/ self-control and medical scepticism.

The external health locus of control (EHLOC) sub-scale for the MSHA sample consisted of the following four indicators that measure external control due to chance: #48(a) "Getting well is often a matter of chance." (Lau & Ware, 1981); #48(f) "People who never get sick are just plain lucky." (Lau & Ware, 1981; Wallston et al., 1976); #48(j) "Good health is largely a matter of good fortune." (Lau & Ware, 1981; Wallston et al., 1976); #48(s) "No matter what I do, if I am going to get sick, I will get sick." (Wallston, et al., 1976).

The internal health locus of control sub-scale (IHLOC)in the MSHA included the following four items: #48(c)"People's ill health results from their own carelessness." (Lau & Ware, 1981; Wallston et al., 1976); #48(k) "People who take care of themselves stay healthy." (Lau & Ware, 1981); #48(o) "Whenever I get sick it is because of something I've done or not done." (Lau & Ware, 1981; Wallston et al., 1976) and #48(p) "When I feel ill, I know it is because I have not been getting the proper exercise or eating right." (Wallston et al., 1976).

Medical scepticism is an additional health belief that parallels the dimension of "external locus of control by powerful others". Respondents' opinions were sought regarding the control they perceive their physicians to have over their health. Medical scepticism has been supported in the literature as a health belief that influences self-care behaviours of individuals. The following six items measured the degree of scepticism in the MSHA sample: #48(b)"I have some doubts about some things doctors say they can do for you." (Friedson, 1961); #48 (d)" I believe in trying out different doctors to find out which one I think will give me the best care " (Friedson, 1961); #48(e): If you wait long enough you can get over most sicknesses without going to the doctor." (Friedson, 1961); #48(h): "Some home remedies are still better than prescribed drugs for curing sickness." (Friedson, 1961); #48(i): "A person understands his or her own health better than most doctors." (Friedson, 1961); and #48(l): "Doctors often tell you there's nothing wrong with you, when you know there is." (Friedson, 1961) (MSHA Research Group, 1995).

MSHA respondents were asked to rate how strongly they agreed or disagreed with each of the health belief statements on a five point Likert scale coded as "1= strongly disagree, 2=disagree, 3=undecided, 4= agree, and 5= strongly agree". A higher score in any one of the three sub-scales indicates a

stronger belief in that respective dimension.

Depression.

Depression is measured using the Centre for Epidemiological Studies Depression scale (CES-D) (Radloff, 1977) designed for use in the general population. The CES-D scale was designed to measure symptoms associated with clinical depression. The scale has also demonstrated the ability to discriminate between community-residing older adults and those from inpatient psychiatric units (Williamson & Schulz, 1992).

The CES-D asks respondents to rate the following 20 items pertaining to their emotional feelings: #49(a) "I was bothered by things that usually don't bother me", (b) "I did not feel like eating; my appetite was poor", (c)"I felt that I could not shake off the blues even with help from my family", (d) " I felt that I was just as good as other people", (e) "I had trouble keeping my mind on what I was doing", (f) "I felt depressed", (g) I felt that everything I did was an effort", (h) "I felt hopeful about the future", (I)" I thought my life had been a failure". (j) " I felt fearful", (k)"My sleep was restless", (l) "I was happy", (m) "I talked less than usual", (n) "I felt lonely", (o) "People were unfriendly", (p) "I enjoyed life", (q)"I

had crying spells", (r) "I felt sad", (s) "I felt that people dislike me", and (t) "I could not get going".

Respondents were asked to rate the frequency of their emotional feelings on a five point scale where "0 = rarely or none of the time (less than 1 day), 1 = some or a little of the time (1-2 days), 2 = occasionally or a moderate amount of time (3-4 days), 3 = most of the time (5-6 days), and 9 = missing". Four MSHA items were also recoded to ensure that the positive/ negative direction of the Likert scale remained consistent for all the CES-D items. Scores range from 0-60 with higher scores reflecting more depressive symptoms and reduced motivation. The "zero" value indicated that the respondent had reported not experiencing any depressive symptoms. Likert values of less than 16 suggested that the extent of symptoms reported by the respondents was not indicative depression (Radloff, 1977). A Cronbach's alpha of 0.85 was reported using the CES-D for the MSHA sample (MSHA Research Group, 1995).

Social support.

Several common dimensions of social support have been suggested in the literature review (See section 2.1.1). These include social embeddedness (the quantity of social support), perceived social support (perceived availability and adequacy of supportive ties), and enacted social support (a measure indicating the nature of the assistance provided) (Barrera, 1986). Orem's theory directs that self-care illness and health behaviours may be strongly correlated to the support available from family members living within the home. A concept similar to Orem's view was conceptualized by Barrera as social embeddedness. The concept of embeddedness employed for this study will be described here.

Social support (embeddedness) will be examined using five items. The five items include (a)marital status, (b)whether respondents live with their spouse, (c)whether respondents lived alone, (d) the number of persons living with respondent and (e) the size of respondents' total social support network.

Three of the items will be coded as dichotomous variables: (a) MSHA #11: marital status ("0 = never married, divorced, separated, widowed; 1=married or common law"), (b) MSHA #16: whether or not spouses live with respondents ("0= spouse not living with respondent, 1 = spouse living with respondent") and (c)

MSHA #16: whether or not respondents live alone ("0 = lives alone, 1= does not live alone").

Two items were coded as continuous variables. One item depicts the number of persons living with respondents. If respondents reported not living alone, they were requested in MSHA #16 to "state the names of all the people who live here and how they are related to you". The second continuous variable depicts the size of respondents' total social support network. This item has been calculated by adding the number of persons residing with respondents, derived from MSHA #16 and the number of persons within respondents total social support networks not living with respondents. Persons not living with the respondents are determined from MSHA questions #51 to #60. These items ascertain the number of sons, daughters, relatives, neighbours and friends not living with respondents.

To conclude, the methods and tools that operationally measure the construct variables have been presented. In the following section, the procedure for analyzing the data is presented.

4.3 Procedure for Data Analysis

The procedure for data analysis will be described in four sections. First, the procedure for describing the sample using selected variables will be discussed. Secondly, generalizability will be examined comparing the sample (n=809) which does not include cognitively impaired respondents to the MSHA Winnipeg sample and the Winnipeg population which does include cognitively impaired respondents.

The third section involves research question #1: Is the SMI a reliable and valid instrument to measure the developmental, health and illness dimensions of self-care as depicted in Orem's model? Section three will describe the method of analysis used to examine the SMI in terms of validity and reliability. Additionally, a self-care indicator consisting of two items has been determined based on the SMI for the MSHA study sample.

The fourth section involves research question # 2: What is the relationship between self-care as measured by the SMI and Orem's conditioning factors? Factors encompass age, gender, marital status, education (years), monthly income, living arrangement, health characteristics, utilization of physician services in the past six months, utilization of pharmacist services in the past six months, health status, life satisfaction, health beliefs, depression and embedded social support.

4.3.0. Descriptive Characteristics

Frequencies used to describe the sample with respect to selected variables have been discussed in Section 4.1.1. The variables used to describe the sample included age, gender, marital status, ethnicity, level of education, monthly income, living arrangement, health characteristic, ethnicity, utilization of physician services and utilization of pharmacist services.

Age, monthly income, and one of the health characteristic item "days spent in hospital" are presented as continuous variables. Dummy variables have been generated for gender ("0 = male, 1=female"), living arrangement ("0 = lives alone, 1= does not live alone"), ethnicity ("0 = Canadian, 1 = non-Canadian"), utilization of physician services within the past six months ("0 = no physician services used, 1= physician services used") and utilization of pharmacist services within the past six months ("0 = no pharmacist services used, 1 = pharmacist services used).

Three variables; namely marital status, education and health status characteristics are categorical. Coding for these variables has been presented in section 4.1.1. Findings for these descriptive characteristics will be presented in Section 5.0 .

4.3.1. Generalizability of the Sample

Comparisons of frequencies of selected descriptive characteristics were made between the study sample, the MSHA Winnipeg sample, and the Winnipeg population. Selected characteristics include age group, gender, level of education, annual income and living arrangement.

4.3.2 Research Question # 1: Is the SMI a reliable and valid instrument to measure the Developmental, Health and Illness Dimensions of Self-care posited by Orem's Model of Self-care?

According to Carmines and Zeller (1990), measurement is the process of linking abstract concepts to empirical indicators or observable responses. In this case, measurement focused on the relationship between the self-reported behaviours of 809 MSHA respondents and the concept of self-care.

Validity and reliability are properties of measurement instruments that address whether or not measures represent the theoretical concept (ie. self-care). Validity concerns the relationship between the concept and the indicator. In other words, does the item or tool measure what it is claimed to measure? Procedures

employed to examine relationships between items, sub-scales and a cumulative scale include a median split, chi-square test of independence, Pearson's r and Kappa's coefficient of concordance.

Reliability refers to the degree of consistency of the tool. Reliability of the measurement scale has been examined using Kudar Richardson's reliability coefficient (K-R 20). Additionally, cluster analysis procedures have been employed to examine whether the items cluster within Orem's theoretical sub-scales.

Frequencies.

To begin, frequencies for the items from the MSHA that best matched the items from the SMI were examined. Frequencies for three sub-scales consisting of the individual best-matched items were also reviewed. The sub-scales were developed according to Orem's three dimensions of self-care (developmental, health and illness self-care). Then frequencies for a cumulative scale consisting of each of the 16 individual self-care items was calculated.

Examination of the relationships between the self-care sub-scales and the cumulative scale scores based on the correlation of median values.

A median split for items was carried out. Self-care items were examined by dividing the sample into two groups. The division was based on where the median falls in relation to being able to perform the self-care behaviour coded as 1 = "adequate performance".

The next step involved recoding the frequencies into dummy variables to determine the number of respondents who rated their self-care ability as above or below the median number of items. The final outcome of the analysis determined the frequency of respondents who reported that their self-care abilities fell below the median number of self-care items and those whose self-care ability was rated as being above the median number of items.

Determining whether or not respondents' self-care ability in one self-care dimension is correlated to their self-care ability in another self-care dimension or in their total self-care ability.

A chi-square test of independence was calculated for the self-care sub-scales and the cumulative self-care scale. The purpose of the chi-square test of independence is to test the null hypothesis that two categorical variables are independent (Hassard, 1991). If the null hypothesis can be rejected, then this supports the assumption that individuals who fall below the median in one of the self-care sub-scales are likely to fall below the median in another sub-scale or in the cumulative scale. This provided additional evidence of correlation.

Examination of relationships between individual self-care items and sub-scales of the self-care scores.

Associations between the individual self-care items as well as across the self-care sub-scales were tested employing two statistics, namely the Pearson's product moment r correlation coefficient and a Kappa coefficient of concordance.

Pearson's r was used to determine the correlation or degree of association

between individual items and also between self-care sub-scale scores. The absolute value of r takes on the limits from "minus one" to "plus one". The sign of the correlation coefficient (- or +) defines the direction of the relationship. A strong relationship can be either negative or positive. As the strength of the relationship decreases, the absolute value of r moves closer to a zero value. The absolute value of r indicates the strength of the linear relationship where "zero" equals "no relationship".

A linear relationship can be shown by using a scatterplot. A scatter diagram is a graphic plot of two measurements (ie. variables) on a vertical and a horizontal axis. Correlation is evident when the intersection of the absolute values for two variables takes the shape of a strait sloping line in either direction. Where no strait sloping line exists (eg. a curve or random scattering of values) then the strength of the association is considered to be minimal or non-existent. The correlation coefficient should be used only to summarize the strength of the linear relationship. Additionally, a scatterplot is important for examining correlation coefficients (Hassard, 1991).

Generally, a Pearson correlation coefficient is not the appropriate procedure reserved for categorical data (Hassard, 1991). Kendall's tau or Spearman's rank correlation coefficients are alternate statistical procedures that are most

appropriate for data that is neither interval nor ratio and does not follow a normal distribution (Hassard, 1991). For large samples, Pearson's r becomes uniformly most powerful relative to Kendall and Spearman statistics. Given the size of the sample a decision was made to employ a Pearson's' r correlation coefficient.

The relationship between the individual items, the sub-scales and the total self-care scale was examined. A Pearson's r was calculated for each sub-scale. The purpose is to determine the degree of internal consistency within each of the sub-scales. If the items measured by the SMI are associated with each other, this will support the consistency inherent in the SMI tool. Associations will be considered significant if a minimum correlation co-efficient of 0.30 is determined ($p= 0.05$) (Nunnally, 1996). Bivariate scatter plots were also used to illustrate relationships.

In terms of the Kappa coefficient of concordance, Kappa value was calculated for the items that demonstrated a significant correlation in the Pearson's r calculation. A Kappa coefficient of concordance sorts out specific responses of individuals to determine whether agreement exists regarding their responses to other items (Norusis, 1993). For example, a Kappa test of congruence could determine whether an individual reporting adequate self-care ability to do housework would also have reported adequate access to transportation. A Kappa

coefficient value of 0.30 ($p \leq 0.05$) or more will be considered adequate in demonstrating a significant correlation.

Examination of the internal consistency of the developmental self-care sub-scale, the health self-care sub-scale and the cumulative self-care scale.

Internal consistency or homogeneity of the items within the SMI was further tested using the Kudar Richardson procedure(K-R 20). Similar to and an antecedent of Cronbach's alpha, the K-R 20 procedure examines the degree to which the items in a tool measure the same concept or characteristic (Carmines & Zeller, 1990). The K-R 20 is a test for dichotomous responses, while Cronbach's alpha measures the internal consistency of items with more than two values.

In theory, K-R 20 coefficients range from zero to one. Values closer to one indicate greater internal consistency. A value of "one" denotes perfect internal consistency, while a value of "zero" depicts no internal consistency. A negative coefficient value can occur when items are not positively correlated, thereby violating the reliability model. In general however, for a tool to be considered reliable, a level of 0.7 or higher is acceptable. It has been suggested that values as

low as 0.5 might be acceptable in socio-behavioral research (Hassard, 1991). For the purpose of this study, a level of 0.7 will be used.

Examination of the individual self-care items to determine whether they fall into Orem's distinct theoretical categories.

A cluster analysis was performed to sort the SMI items into similar categories. In cluster analysis, similar standardized data (M= 0, SD = 1) are grouped according to the distances between the observations. This distance is referred to as the "Euclidean distance coefficient" (Romesburg, 1984). One of the simplest techniques for deciding which variables should be combined is called the "nearest neighbour technique". It is a stepwise procedure whereby the first two variables combined are those that have the least distance between them. Then a new variable with the least distance between it and the previously developed two item cluster is formed. Hence, a new cluster consisting of three variables emerges. However, rather than the third variable clustering with the original pair, a second cluster could have been formed from the third variable and another variable. These two variables would have merged to form the second cluster if their distance

coefficient is less than the distance between the original two- item cluster and the third variable. At every step, another variable is added to existing clusters and a new cluster is formed, or two existing clusters are merged based on the shortest distance (Norusis, 1993).

A diagram commonly used to represent the cluster analysis of data is a dendogram. A dendogram displays the variables being combined and the distance between the variables on a scale of 1 to 25. The scale is not an actual distance value, but preserves the ratio of distance between steps (Norusis, 1993).

For the purpose of this study, a hierarchical cluster analysis has been employed to examine how the 16 self-care behaviours are grouped. The clustering of the 16 items into Orem's theoretical dimensions of self-care (developmental and health self-care) lends further support to the validity of the items used to measure self-care. If the 16 items do not fall into two distinct clusters, internal consistency is still supported if the Euclidian distance between the 16 items is small. Large distances between the variables would indicate a lack of internal consistency. Dendograms have also been presented to demonstrate the findings derived from the cluster analysis. Frequencies for the emerging dependent variable have been determined. The intention was to develop a self-care scale in research question #1 to comprise the dependent variable for research question #2. The self-care

indicator that emerged consisted of two items. It was coded as a dichotomous variable (0= being unable to do one or both of the tasks and 1= being able to do both of the tasks).

In conclusion, the statistical analyses determined whether or not the individual MSHA items matched to items from the SMI fell into Orem's distinct sub-scale. A self-care score based on a cumulative scale and/ or sub-scales would have been indicative of internal consistency and would have comprised the dependent variable for research question #2. In research question #2, correlations between the emerging dependent variable and Orem's conditioning factors have been examined.

4.3.3 Research question #2: What is the relationship between the Total Self-care Score as measured by the SMI and Orem's Conditioning Factors?

The second research question examined the relationship between the self-care indicator and selected sociodemographic factors and conditioning factors identified in Orem's model of self-care. Analysis of research question #2 involved a sequence of processes. The steps have been explained in this section.

Frequencies have been calculated for the independent variables.

Additionally, Cronbach's alpha coefficients have been computed for the scales and sub-scales to determine internal consistency for this sample. The next step involved creating a correlation matrix for two purposes: (a) to examine the relationship between the dependent variable and the independent variables and (b) to examine the inter-item correlations between the independent variables. Further correlation between the dependent variable and the dichotomous variables is examined using the chi-square statistic. Similarly, a *t*-test has been employed to examine correlation between the dependent variable and continuous independent variables. Independent variables found to be significantly correlated to the dependent variable have been brought forward for multivariate analysis using logistic regression.

Frequencies.

Frequencies have been reviewed for the individual items and/or scales that measure the independent variables. Where individual items comprise a scale or sub-scale, internal consistency has been examined using K-R 20 coefficients.

A self-care indicator consisting of two items was derived from research question and comprised the dependent variable. This indicator was coded as a

dichotomous variable ("0 = self-reported inability to adequately perform each of the two items, 1= self-reported ability to adequately perform both items").

In terms of the independent variables, selected characteristics also used earlier to describe the sample include age, gender, marital status, years of education, monthly income, health characteristic, living arrangement, the utilization of physician services within the past six months and the utilization of pharmacist services with in the past six months. Coding for these variables has been described earlier in section 4.1.1.

Additional conditioning factors include health status, life satisfaction, health beliefs, depression and social support (embedded). These factors are discussed here in detail.

Health status is measured using three items, namely (a) "how is your health these days?", (b) "in general, how would you rate your health for your age?", and (c) "how much does ill health interfere with daily activities?" Coding has been described earlier as well.

Life satisfaction has been measured using ten items from the "terrible-delightful scale" depicted in the MSHA in #50 (a to l). The original "terrible - delightful scale consisted of 12 items. For the purpose of this study life satisfaction responses were coded for 10 items rather than 12. The two deleted

items included: MSHA items #50 (d)satisfaction with paid employment and #50 (g) satisfaction with one's living partner. The rationale was that 95% of the sample were unemployed and 49% were widowed or not married. The ten items have been coded on a Likert scale ranging from "1= terrible to 7= delightful". A scale consisting of ten items generated a value range from 10 to 70. Higher scores indicated a higher degree of satisfaction.

The life satisfaction scores generated by the MSHA data revealed a large number of missing values (n=687). Older adults were frequently reluctant to share their satisfaction for up to four items. Three areas with a low response include satisfaction with living partner (n=422), religion (n=731) and finances (n=796). Given the propensity of respondents to commonly disregard these three questions, life satisfaction scale scores were pro-rated using a cut off of up to four missing answers. In other words, if older adults answered at least six of the ten questions in the scale then their scores were pro-rated for further analysis. If respondents failed to answer four or more questions, then their scores were excluded from further analysis. The lowest possible value for the range of individual life satisfaction items could be "six" rather than "ten".

The method used to pro-rate the scales on SPSS involved several steps. The first step was to determine the number of missing values for the sample using the

"count" function. Then the total number of questions was subtracted from the number missed to determine the actual number of items that were answered. The value of the score was computed only if the number of missing values was four or less. Then to average the values of the remaining items, the sum of the total possible values for all 10 items (including the missing values) was divided by the number of items that were actually answered. The average was then multiplied by ten to determine the pro-rated values of the ten item life satisfaction scale. Based on this pro-rated calculation, only one respondent answered less than four life satisfaction questions (n=808).

Additionally, a Cronbach's alpha has been computed to determine the internal consistency of the life satisfaction scale for this study sample. The Cronbach's alpha coefficient was computed before and after pro-rating the life satisfaction scores. Where the difference after pro-rating was negligible, the coefficient that reflects the reliability of the instrument prior to pro-rating was used.

In terms of the health belief variable, 19 items derived from three widely used scales were employed to measure health beliefs of the respondents in the MSHA sample. The three health belief sub-scales that emerged in the MSHA included EHLOC, IHLOC and medical scepticism. A factor analysis indicated

agreement for the 19 items across three sub-scales for the total MSHA sample. However, the Cronbach's alpha coefficients computed for EHLOC (α =0.62), IHLOC (α=0.60) and medical scepticism (α=0.55) for this study sample were below the accepted value. Therefore, to maximize the internal consistency of the health belief items for the sample in this study, only items derived from one widely used health belief scale were examined.

Consequently, the Health Locus of Control Scale (HLOC), an eleven item health belief scale has been employed for this study (Wallston, Wallston, Kaplan, & Maides, 1976). Six of the eleven items in the HLOC were utilized in the MSHA. The six items measure EHLOC and IHLOC. The EHLOC items employed in this study will include: MSHA#48(f): "People who never get sick are just plain lucky." (Wallston et al., 1976); #48(j): "Good health is largely a matter of good fortune." (Wallston et al., 1976) and #48(s): "No matter what I do, if I am going to get sick, I will get sick." (Wallston, et al., 1976).

The IHLOC items include: #48(c):"People's ill health results from their own carelessness." (Wallston et al., 1976); #48(o): Whenever I get sick it is because of something I've done or not done." (Wallston et al., 1976) and #48(p): "When I feel ill, I know it is because I have not been getting the proper exercise or eating right." (Wallston et al., 1976).

Responses have been coded on a Likert scale where 1 = strongly disagree, 2 = agree, 3= undecided, 4= agree, 5 = strongly agree. A higher score in each component indicates a stronger belief in that dimension. Frequencies have been computed for each item separately. Additionally, frequencies for two sub-scales reflect the EHLOC and IHLOC scores as well as a six item composite HLOC scale score have been determined. Scores for individual HLOC items range from 1-5, while scores reflecting the two sub-scales with three items range from 3 to 15. The score for the six item HLOC scale will range from 6 to 30.

Based on Orem's model it was evident that all six individual HLOC items can be conceptually linked with self-care. Additional analysis was required to make a decision with respect to whether or not the HLOC scale and/ or sub-scales could be entered into the model or if individual HLOC items should be entered into the model separately. This involved consideration with respect to internal consistency of the sub-scales (EHLOC and IHLOC) and the HLOC scale. A Cronbach's alpha coefficient were computed for the six item HLOC scale and each of the three-item sub-scales to determine the reliability of the HLOC scale and sub-scales for this sample. Where alpha coefficients for the HLOC scale and/or HLOC sub-scales were below the acceptable value ($\alpha = 0.75$), the sub-scales were not considered for the model.

In terms of the depression variable, a 20 item CES-D scale employed for this sample was recoded assigning a value range on a Likert scale of zero to three for each item. Recoding and values of items in the CES-D scale have been discussed earlier in section 4.2.1.

Frequencies for the CES-D score indicates that 27 respondents did not answer all the items in the CES-D. Similar to the life satisfaction scale, the CES-D scale values were pro-rated. In the case of the CES-D, however, only two items were frequently missed: (a) MSHA #49d: "I felt that I was just as good as other people"(n=799) and (b) MSHA#49h: "I felt hopeful about the future" (n=798). If respondents missed more than two items, their CES-D scores were excluded.

Similar to the life satisfaction scale, the Cronbach's alpha was computed for two sets of CES-D scores, namely the coefficient before pro-rating and the Cronbach's alpha coefficient after pro-rating. Where the variance between the two coefficients was negligible, the coefficient determined prior to pro-rating was accepted.

It was decided that conceptually, in terms of self-care whether or not the older adult reported having experienced symptoms was most indicative of depression. Since, the CES-D score value was of limited interest, depression was examined as a dichotomous variable. The coding of the dichotomous variable was

based on the CES-D cut off value of 16. Scores below 16 indicated that symptoms did not suggest depression (Radloff, 1977). Those who scored less than 16 on the CES-D were assigned a value of "0". Scores of 16 or greater were coded as "1" suggesting that depressive symptoms did exist.

The concept of social embeddedness was also considered. Social embeddedness referred to the physical presence of social ties that individuals have to significant others (Barrera, 1986). Social embeddedness does not assume the provision or the adequacy of social support. Nonetheless, conceptually social embeddedness is still important information as the presence of an available tie is considered to be a potential social support resource (Barrera, 1986). Orem (1991) also directs that self-care is strongly correlated to the actual number of persons living with the individual and the size of the individual's social support network. The five measures of social embeddedness were identified earlier in section 4.2.1. To recap, the five social support items include (a) marital status, (b) whether or not respondents live with their spouses, (c) living arrangements, (d) the number of persons living with respondents and (e) the size of respondents' total social support network.

Frequencies for marital status, living with a spouse and living alone have been coded as dichotomous variables. Frequencies related to the number of

persons residing with respondents and the size of the respondents' social network were calculated as continuous variables. To determine the size of the social support network, the "count" function of SPSS was employed to calculate all those living with the respondent (MSHA #16) and all those persons not living with the respondent (MSHA #51(a), 52 (a), 53, 56 (a), 57 (a), 58(a), 59 (a) and 60 (a)). This included sons, daughters, spouses, relatives, neighbours and friends. Outliers will be coded as missing values.

Only variables with frequencies that demonstrate more than five percent variability were considered eligible for multivariate analysis. Additionally, Cronbach's alpha coefficients for scales and sub-scales were also calculated to determine internal consistency for future logistic regression analysis.

Examination of the relationships between the dependent variable (house work/yard work) and the independent variables (Orem's conditioning factors).

Pearson's r correlation coefficients were examined to determine whether or not a significant relationship existed between the dependent variable and the independent variables (age, gender, marital status, years of education, monthly income, utilization of physician services within the past six months, utilization of

pharmacist services with the past six months, health status, life satisfaction, depression and social support (living with a spouse, living alone, number of persons living with respondents and the number of persons in the respondents' social support network). Items that failed to demonstrate a significant association with the dependent variable were not brought forward for logistic regression analysis. Significance was determined using a p-value of less than 0.05.

Examination of the inter-item correlations between the conditioning factors to identify redundant variables.

Inter-item Pearson's r correlation coefficients between individual items was also examined to determine whether or not variables were redundant. A significant inter-item correlation demonstrating a correlation coefficient value greater than r= 0.75 suggested that the items were measuring the same concept (Nunnally, 1996). If redundant items were entered into the regression analysis this may have influenced the association between the other independent variables and the dependent variable. Hence, where the two or more items were considered redundant, only one of those items was entered into the logistic regression model analysis.

Caution was also exercised with respect to the potential for multi-collinearity where high inter-item correlation between individual independent variables existed. While high inter-item correlation may suggest that two items measure the same concept, it may also suggest that one of the highly correlated items might have been explaining the variability of the other independent variable. A high degree of multicollinearity might have affected the extent to which an independent variable explained the variation of the dependent variable. Hence a dependent variable may vary indirectly as a result of the impact amongst highly correlated independent variables.

Where high inter-item correlation suggestive of multi-collinearity existed, Chi square and *t*-test analyses were conducted for dichotomous and continuous variables respectively. Chi-square and *t*-test analyses were used to determine whether a relationship existed between highly correlated independent variables to the extent that one of the independent variables might impact the strength of the relationship between the other independent variable and the dependent variable. If upon examination of a Chi-square using cross tabulation, the "count percent" values within each category for each dichotomous variable were highly similar, then multi-collinearity was not likely to be an issue. Where the *t*-statistics indicated that the means of highly correlated independent variables were similar

when cross referenced to the third highly correlated item, multi-collinearity was also unlikely.

Multi-collinearity has been further monitored by examining the value of the estimated logistic regression coefficients of the independent variables at each step when a new variable has entered the model. A high degree of multi-collinearity was determined if the estimated coefficients of the independent variables previously entered into the model varied radically (e.g. doubled, moved by more than two standard deviations) each time a new independent variable entered the model. This is discussed in more detail in the upcoming section pertaining to logistic regression analysis.

Examination of the relationships between the dependent variable and the independent dichotomous variables.

A chi-square statistic has been generated by way of cross tabulation to examine the relationships between the dependent variable and the dichotomous independent variables. The dichotomous independent variables include gender, utilization of physician services/pharmacist services, depression, and three social support indicators (marital status, living with a spouse and living alone).

The measure of association of two items is based on a chi-square statistic. The chi-square statistic assumes that no relationship between the two variables exists (ie. null hypothesis). A large chi-square statistic provides evidence against the null hypothesis suggesting that a relationship between the variables does exist. How large the chi-square statistic needs to be to reject the null hypothesis can be determined from a table of chi-square values. The values in the table are also based on the accepted level of significance that is, the p-value. The p-value is the probability that the chi-square value obtained is a result of chance (Shott, 1990). For the purpose of this study the accepted level of significance was $p < 0.05$. Where the p-value for the chi-square test fell below 0.05 this indicated that the that the chi-square statistic was not a result of chance and the null hypothesis was not accepted.

A phi-coefficient modifies the chi-square statistic for nominal data for a large sample (Norusis, 1993). Since the values of the independent variables and dependent variables are nominal, a phi coefficient was calculated.

Examination of the relationships between the dependent variable and the independent continuous variables.

A *t* test has been employed to examine the relationship between the dependent variables and the independent continuous variables. Continuous independent variables include age, years of education, three health status indicators (health these days, health for your age and the amount of interference of daily activities due to ill health), six health belief items, life satisfaction, and two items related to social support (number of persons residing with the respondent and the total size of the respondents support network). The values of the t-statistic that reject the null hypothesis can be determined from a table of *t* values. Results of the *t*-test are based on a confidence interval of 95% about the mean, and degrees of freedom ranging from 625 to 795. A *t*-value of greater than 1.960 ($p < 0.05$) suggests a statistically significant relationship (Shott, 1990).

Examination of a regression model of self-care to determine the impact of the independent variables on the dependent variable at the multivariate level.

Depending on the bivariate relationships, the final step for research question #2 involved logistic regression analysis of items significantly correlated to the dependent variable.

Certain assumptions used for multiple regression techniques may be violated when the dependent variable is dichotomous. These include (a) the assumption of normality and (b) that predicted values cannot be interpreted as probabilities (Norusis, 1993). The logistic regression model, unlike linear regression analysis, does not assume that the distribution is normal or that variances are equal. Therefore, logistic regression is an appropriate multivariate technique to examine a dichotomous dependent variable. A regression model examines collinearity amongst the dependent and the independent variables.

Logistic regression is also used to determine probability coefficients that enable prediction about the effect that a change in the independent variable will make on the dependent variable. The expected probability or likelihood is the factor by which the ability for the dependent variable depicting is likely to change when an independent variable in the model is increased by one unit. A p-value of

0.5 is the accepted limit for the likelihood or probability that the event will occur.

The forward stepwise selection method of logistic regression analysis has been employed for this study. The forward stepwise method begins with a model containing only the constant. Logistic regression analysis is a procedure that examines each of the independent variables to determine whether they met removal criteria for insertion into the model.

In forward stepwise selection, a residual chi square statistic is calculated from the Wald score statistic. The purpose of the residual chi-square statistic is to determine whether variable selection for the model should continue. The residual chi-square statistic tests the null hypothesis that all the variables not in the model are not correlated and all coefficients are zero. If the observed level of significance is small thus rejecting the null hypothesis, variable selection for the equation should continue. If the observed level of significance is large, then one accepts the null hypothesis and variable selection should cease.

The Wald statistic was used for removing variables from the model in the forward step method. As stated earlier, the Wald statistic has a chi-square distribution and tests the null hypothesis that a variable's logistic coefficient is 0. The null hypothesis is accepted when the significance level of the Wald statistic is greater than .05 (Norusis, 1993). Independent variables that are not significantly

correlated to the dependent variable will not be selected for entry into the model.

Determining the strength of the contribution generated by the independent variables in the model.

The independent variables that have been selected for the model were examined in terms of the strength of the contribution of each variable to the model. This was determined by considering the value of the "R" statistic generated for each item entered into the model. The "R" statistic represents the partial correlation between the dependent and the independent variables. As such, the "R" statistic indicates the contribution that each independent variable makes to the model. R values range from -1 to +1. The accepted positive or negative R value of -0.5 or is used to determine correlation within a significance level of $p < 0.05$ (Norusis, 1994).

Also of interest is the "Exp (B)" coefficient generated for each independent variable entered into the model. The Exp (B) coefficient depicts the factor by which the dependent variable is impacted when the independent variable is increased by one unit. Additionally, the logistic regression coefficient for each independent variable has been used to generate an equation for the model.

Testing the model.

A classification table was employed to determine how well the model fits the data. A classification table compares the extent to which an independent variable predicts the variability of the dependent variable compared to the actual observed frequencies of the dependent variable. Each time an independent variable is added into the model, the classification table determines the percentage of the study population for which the independent variable correctly predicted the dependent variable. The final "percent correct" predicted after all the independent variables have been entered into the model will indicate how accurately the model predicted the ability for self-care (ie. house/yard work).

4.3.4 Summary

In conclusion, the statistical analyses for this study have been presented. The methods employed included a description of the sample and the determination of the generalizability of this sample. Also presented in this section was the process for answering the research questions #1 and #2. Research question #1 focused on measuring self-care for this sample using a self-care measurement tool based on Orem's model of self-care. In the second research question, the methods for examining the relationship between self-care and the conditioning factors posited by Orem have been discussed.

5. Research Findings

Research findings are presented in chapters five, six, and seven. Chapter five consists of a detailed description of the sample. Frequencies and measures of central tendency for the selected socio-demographic variables will be presented. Additionally, the generalizability of the sample to the MSHA Winnipeg sample and the Winnipeg population have also been discussed in Chapter 5. Findings with respect to research questions #1 and #2 are reported in Chapters six and seven respectively.

5.0 Socio-demographic Characteristics of the Sample

The sample for this study has been described using selected factors derived from the MSHA screening interview. These included age, gender, marital status, ethnicity, level of education, monthly income, living arrangement, health characteristics, the utilization of physician services within the past six months and the utilization of pharmacist services within the past six months.

Age.

Table 5.0 displays the frequencies of the respondents ages in groups(n=809). Respondents ranged from 65 years through to 101 years of age (mean=75.1 years). The majority of the respondents were between ages 65 to 79 (75.9 %) years, while 24.1 % were 79 years and older.

Table 5.0 Socio Demographic Characteristics: Age (n=809)

	n	%
Age in years		
65 to 69	208	25.7
70 to 74	164	20.3
75 to 79	242	29.9
80 to 84	101	12.5
85 to 89	78	9.6
90 +	16	2
Totals	809	100.0
M = 75.1 years SD= 7.8 years Mdn= 75.0 years		

Gender.

As shown in table 5.1, 61.0% of the 809 respondents were women and 39.0% were men.

Table 5.1 Socio-demographic Characteristics: Gender (n=809)

	n	%
Gender		
Male	309	39.0
Female	500	61
Totals	809	100.0

Marital status.

As shown in table 5.2, 6.4% of the sample reported never having been married (n= 809). Just over half were married or lived common law (52.4 %, while 3.5% reported being divorced or separated. Widowed respondents accounted for 37.7% of the sample.

Table 5.2 Socio-demographic Characteristics: Marital Status (n=809)

	n	%
Marital status		
Never married	52	6.4
Married/common law	423	52.4
Divorced /separated	28	3.5
Widowed	305	37.7
Totals	808	100.0

Note. Totals do not equal 809 due to missing values.

Ethnicity.

Ethnicity has been coded as Canadian versus non- Canadian. Of the 760 who responded, 352 were Canadian (46.3%) while 408 reported a variety of ethnic origins (53.7%).

Level of education.

As shown in table 5.3 the majority of the respondents (99.6 %) reported having attended some formal schooling (n= 809). Only 0.4% reported not having attended any formal school. The majority reported that they had attended or

completed primary school (19.0%) or high school (52.1%). Almost one-quarter (27.7 %) stated that they had attended college or university and/or achieved one or more degrees. Also, 2.6% reported having attended other educational institutions.

Table 5.3 Socio-demographic Characteristics: Levels of Education (n=809)

	n	%
Education		
No formal schooling	3	0.4
Attended primary school	62	7.9
Completed primary school	87	11.1
Attended high school	261	33.2
Completed high school	148	18.9
Attended some college	37	4.6
Completed college	84	10.4
Attended some university	39	4.8
BA	47	5.8
MA	9	1.1
PHD	8	1.0
Other	21	2.6
Total	806	100.0
M= 5.12 SD=2.31		

Note. Totals do not equal 809 due to missing values.

Monthly income.

In terms of monthly income of those who did report (n=637), average monthly incomes ranged from $200 per month to $10,000 and higher (mean= $1869 per month). Monthly incomes ranging from $200 to $1000 were reported by 31.6% of the respondents. The most common range of monthly income earned by 42.4% of the sample ranged from $1001 and $2000 monthly. Of those who responded, 16.9% reported earning between $2001 and $3000 monthly. In this sample, 9.3% of the respondents stated that they earned more than $3001 to $10,000 dollars monthly.

Older women tended to report that they were not aware of their monthly income resulting in 172 missing values (23% of the sample). Due to the large number of missing values, this income variable will be used only to describe the sample and to examine the generalizability of this study sample to the MSHA sample and the general population.

Table 5.4

Socio-demographic Characteristics: Average Monthly Income (n= 809)

	n	%
Average monthly income		
≤ 1000	201	31.6
$1001 to $2000	269	42.4
$2001 to $3000	108	16.9
$3001 to $4000	28	4.4
$4001 to $5000	13	2.1
$5001 to $9000	14	2.2
$10,000+	4	0.6
Total	637	100.0
M = $ 1868.89		
SD = $ 1457.78		
Mdn=$ 1500.00		

Note. Totals do not equal 809 due to missing values.

Living arrangement.

As shown in table 5.5, 42.2% of the sample reported living alone. Of those who did not live alone, 48.7 % lived with one person, 6.3% lived with two persons and 2.7% of the sample lived with three persons.

Table 5.5 Living Arrangement (n=809)

	n	%
A) Living arrangement		
Live alone	341	42.2
Live with someone	468	57.8
Totals	809	100.0
M=.58 SD= .49 Mdn. = 1.00		
B) Number of persons living with respondent		
Living alone	341	42.2
One person	394	48.7
Two persons	51	6.3
Three or more persons	23	2.7
Totals	809	100.0
M = .80 SD = 1.69 Mdn = 1.00		

Health characteristic: Health these days.

Health characteristics were measured using four individual items. Respondents were asked to rate their own health in terms of (a) health these days, (b) health for their age, (c) how much health troubles stood in the way of daily activities and (d) the number of days during the past month spent sick in bed.

The majority of the respondents consistently reported having good health. Frequencies for MSHA #39 revealed that 3.5% of the respondents reported that their health was "poor or very poor" (see table 5.6). Approximately one fifth (19%) stated that their health was "not too good". The remainder (78%) considered their health to be "very good or pretty good" (n=807).

Table 5.6 Health Characteristic: "How is Your Health These Days?" (n=807)

	n	%
Health these days		
Very good	198	24.5
Pretty good	429	53.2
Not too good	152	18.8
Poor	25	3.1
Very poor	3	0.4
Totals	807	100.0

M = 2.02
SD = 0.77
Mdn = 2.00

Note: Totals do not equal 809 due to missing values.

Health characteristic: "How is your health for your age?"

Responses to MSHA # 41 regarding rating their health in general for their age indicated that 71.9% believed their health was "excellent" or "good". As table 5.7 shows, 23.9% considered their health to be fair for their age, while 4.2% stated that their health was poor or bad for their age(n=799).

Table 5.7 Health Characteristic: "How is Your Health for Your Age?" (n=809)

	n	%
Health for your age		
Excellent	184	23.0
Good for your age	391	48.9
Fair for your age	191	23.9
Poor for your age	30	3.8
Bad for your age	3	0.4
Totals	799	100.0

M = 2.10
SD = 0.80
Mdn = 2.00

Note: Totals do not equal 809 due to missing values.

Health characteristic: "How much do health troubles stand in the way?"

Table 5.8 depicts responses to MSHA question #44: How much do health troubles stand in the way of your doing the things you want to do? Approximately one-fifth of the respondents (20.6%) stated that their health stood in the way "a great deal", 33.0% said their health stood in the way "a little" and 46% said their health did not interfere "at all" (n=809).

Table 5.8

Health Characteristic: "How Much do Health Troubles Stand in the Way ?"

(n=806)

	n	%
Health troubles stand in the way		
A great deal	166	20.6
A little	266	33.0
Not at all	374	46.4
Total	806	100.0
M = 1.75		
SD = 0.78		
Mdn = 2.00		

Note: Totals do not equal 809 due to missing values.

Health characteristic: "How many days have you spent sick in bed?"

In terms MSHA question # 47, respondents reported spending from 0 to 30 days in bed (mean =.3 days). The sample for this study spends little time ill in bed as 94.3% reported spending 0 days in bed (see table 5.9). This health characteristic item related to the number of sick days spent in bed during the past month has been deleted from further analysis due to a lack of variability.

Table 5.9

Health Characteristic: "How Many Sick Days were Spent at Home in Bed?"

(n=809)

	n	%
Sick days in bed		
0	762	94.3
1 to 3	27	3.4
4 to 7	12	1.5
8 to 30	7	.8
Totals	808	100.0
M = 0.29		
SD = 1.92		
Mdn = 8.00		

Note: Totals do not equal 809 due to missing values.

Service utilization.

The services most frequently used by the sample are those of a general practitioner and a pharmacist. As shown in table 5.10, 73.1% of the respondents reported using the services of a physician at least once in the past six months, while 26.9% had not. The services of a pharmacist were utilized by 70.4% of the sample, with 29.6% reported not having used pharmacist services (n=809).

Table 5.10 Service utilization in past six months (n=808)

	n	%
Utilization of services in past six months		
Used physician services	591	73.1
Did not use physician services	217	26.9
Totals	808	100.0
Used pharmacist services	569	70.4
Did not use pharmacist services	239	29.6
Totals	808	100.0

Note: Totals do not equal 809 because of missing values.

To summarize, the sample for this study consists of adults aged 65 and older who are not cognitively impaired and who reside independently in the community in Winnipeg, Manitoba (n=809). The majority are female, aged 74 to 79 years of age. Half of the sample is married while over one-third are widowed. Approximately half of the sample reported being Canadian, while ethnic status for the other half was coded as "non-Canadian". The majority of the respondents attended or completed high school, with almost one-third having attended college. Average monthly incomes for 42% of the sample ranged from between $1,000 and

$2,000 monthly. In terms of living arrangements, 42.3% live alone while 48.7% lived with one person. In general, approximately 72% or more of the respondents in this sample consistently reported that their health was good or excellent (in general these days and for their age). A similar majority reported that their health troubles did not stand in the way of things they wanted to do and that they did not spend time in bed or in the hospital due to ill health. In terms of services, the majority of the respondents (approximately 70%) utilize medical services such as physicians and pharmacists.

5.1 Generalizability of the Sample

Comparisons have been made in order to determine whether or not this study sample is comparable to the MSHA Winnipeg sample and to the general Winnipeg population. The characteristics that have been compared include age group, gender, level of education, annual income, and living arrangements. All characteristics are depicted for non-institutionalized elderly with the exception of the age distribution. Age groups for the Winnipeg population include institutionalized elderly and non-institutionalized elderly. Age distributions for the non-institutionalized Winnipeg population were depicted in two age groups (i.e.

65-74 years of age and 75 years of and over). This would have impeded comparisons of the six age groups between the three samples (i.e. 65 to 74 years, 70-74 years, 75-79 years, 80-84 years, 85-89 years, 90 years and over).

The participants in the MSHA were 65 years and older living independently in an urban or rural community in Manitoba, with varying levels of cognition. The sample for this study however, consists of urban Winnipeg residents who were screened as having no potential for cognitive impairment (i.e. achieved a 3MS score $\geq$ 78). This may explain some of the differences between the study sample, the MSHA Winnipeg sample, and the Winnipeg population.

Table 5.11 compares the age groups for the study sample, the MSHA Winnipeg sample and the Government of Manitoba's data for the Winnipeg population. Age distributions for the Winnipeg population include institutionalized and non-institutionalized elderly. The study sample is similar to the MSHA Winnipeg sample with the exception of those respondents aged 85 years and older.

The 85 year and older age group in the MSHA was over sampled to ensure sufficient numbers of persons in that age group. The proportion of the MSHA Winnipeg sample aged 85 years and older was 16.1%. In the study sample and in the Winnipeg population respectively, 11.6 % and 9.9% of the respondents were "85 years of age and older". One possible explanation is that more of the older

MSHA Winnipeg participants may have screened as exhibiting a potential for cognitive impairment compared to younger age groups. This may explain why the study sample has fewer persons over 85 than those in the MSHA Winnipeg sample.

Table 5.11 Comparison of Age Groups 65 Years and Older (1991).

	Study sample		MSHA Winnipeg sample		Winnipeg population	
Age groups	n	%	n	%	n	%
65-69 years	208	25.7	224	22.7	25,805	31.8
70-74 years	164	20.3	189	19.2	20,590	25.3
75-79 years	242	29.9	278	28.1	16,540	20.4
80-84 years	101	12.5	137	13.9	10,230	12.6
85-89 years	78	9.6	123	12.4	5,460	6.7
90+ years	16	2.0	37	3.7	2,640	3.2
Totals	809	100.0	988	100.0	81,265	100.0

Source for the study sample:
Secondary data from MSHA. Centre on Aging , University of Manitoba.

Source MSHA Winnipeg sample:
MSHA Research Group. (1995). MSHA Final Report. (Table B1, p 240). Centre on Aging , University of Manitoba.

Source for Winnipeg population:
Manitoba Bureau of Statistics (1994). Seniors in Manitoba: A Statistical Profile 1991. (MBS94-8) (Table 1, p. 6). Government of Manitoba.

Table 5.12 depicts gender comparisons of non-institutionalized persons aged 65 years and older for the study sample, the MSHA Winnipeg sample and the Winnipeg population. Gender distribution within the sample is consistent with the MSHA sample and the population. That is, approximately 60% are women and 40% are men.

Table 5.12 Gender Comparisons (1991).

	Study sample		MSHA Winnipeg sample		Winnipeg population	
Gender	n	%	n	%	n	%
Male	310	38.2	387	39.0	30,715	40.2
Female	499	61.8	605	61.0	45,760	59.8
Totals	809	100.0	992	100.0	76,480	100.0

Note: Figures for the Winnipeg population do not add to totals due to random rounding.

Source for the study sample:
Secondary data from MSHA. (1995). Centre on Aging , University of Manitoba.

Source for MSHA Winnipeg sample
MSHA Research Group. (1995). MSHA Final Report. (Table B1, p. 240; Table D1, p.249). Centre on Aging , University of Manitoba.

Source for Winnipeg population:
Manitoba Bureau of Statistics (1994). Seniors in Manitoba: A Statistical Profile 1991. (MBS94-8) (Table 1, p. 6). Government of Manitoba.

Table 5.13 compares the level of education for the sample, the MSHA Winnipeg sample and the Winnipeg population aged 65 years and older. Approximately ten percent of the respondents in the cognitively intact study sample reported having obtained more high school and university education when compared to those in the MSHA Winnipeg sample and the Winnipeg population. The fact that more of the respondents in study sample completed high school and university is supported in that 20% more of the MSHA sample and 13% more of the Winnipeg population completed primary school. While all three groups are non-institutionalized, one of the distinctions is that none of the respondents in the study sample are at risk for cognitive impairment. The higher level of education exhibited by the study sample may suggest a correlation between education and higher 3MS scores.

Table 5.13 Comparisons of Education Level for Ages 65 Years and Older (1991).

	Study sample		MSHA Winnipeg sample		Winnipeg population	
Education	n	%	n	%	n	%
Less than grade 9	152	18.9	415	42.5	25,385	33.2
Grades 9-13	409	50.8	380	39.0	29,450	38.5
University & non-university	245	30.3	180	18.5	21,635	28.3
Totals	806	100.0	975	100.0	76,480	100.0

Note: Totals for the study sample do not equal 809 due to missing values.
Totals for the MSHA Winnipeg sample do not equal 992 due to missing values.
Totals for the Winnipeg population do not equal 76,480 due to missing values.
Figures for the Winnipeg sample do not add to the total due to random rounding.

Source for the study sample:
Secondary data from MSHA.(1995). Centre on Aging , University of Manitoba.

Source for MSHA Winnipeg sample:
MSHA Research Group. (1995). MSHA Final Report. (Table B1, P.241). Centre on Aging, University of Manitoba.

Source for Winnipeg population: Manitoba Bureau of Statistics (1994). Seniors in Manitoba: A Statistical Profile 1991. (MBS94-8) (Table 2, p. 8). Government of Manitoba.

In terms of annual income, a larger percentage of the study sample reported having an annual income over $15,000. Compared to the MSHA Winnipeg sample and the Winnipeg population respectively, approximately 6% and 13% more of the

sample have annual incomes over $15,000. The larger annual incomes reported by the sample may also be linked to the propensity of this group for higher education and higher MMSE scores compared to the MSHA sample and the Winnipeg population. These comparisons are depicted in Table 5.14.

Table 5. 14 Comparisons of the Annual Income and Average Annual Income (1991).

	Study sample		MSHA Winnipeg sample		Winnipeg population	
Annual income	n	%	n	%	n	%
Under $15,000	263	41.3	362	47.9	41,610	54.9
$15,000 and up	374	58.7	392	52.1	34,150	45.1
Totals	637	100.0	754	100.0	75,760	100.0

Note: Totals for the study sample do not equal 809 due to missing values.
Totals for the MSHA Winnipeg sample do not equal 992 due to missing values.
Totals for the Winnipeg population do not equal 76,480 due to missing values.

Source for the study sample:
Secondary data from MSHA (1995). Centre on Aging, University of Manitoba.

Source for MSHA Winnipeg sample: MSHA Research Group. (1995). MSHA Final Report. (Table B1, p. 242). Centre on Aging, University of Manitoba.

Source for Winnipeg population:
Manitoba Bureau of Statistics (1994). Seniors in Manitoba: A Statistical Profile 1991. (MBS94-8) (Table 13, P.24; Table 14, p.26). Government of Manitoba.

In terms of living arrangement for the three non-institutionalized samples, 1.9% more of the MSHA Winnipeg sample lives alone compared to the sample (See Table 5.15). Perhaps fewer well elderly respondents in the sample are widowed. Compared to the Winnipeg population, 7.7% of the study sample lives alone. It may be that respondents in the sample are cognitively intact and therefore, more likely to be able to live alone than respondents in the Winnipeg sample that includes elderly with cognitive impairment.

Table 5.15 Comparison of Living Arrangements (1991).

	Sample		MSHA Winnipeg sample		Winnipeg population	
	n	%	n	%	n	%
Living alone	341	42.2	433	44.1	26,010	34.5
Live with someone	468	57.8	548	55.9	49,395	65.5
Totals	809	100.0	981	100.0	75,405	100.0

Note: The total for the MSHA Winnipeg sample does not equal 992 due to missing values.
The total for the Winnipeg population does not equal 76,480 because only private households were considered. Private Households refer to persons residing in a private dwelling who do not have a usual residence elsewhere in Canada.
Persons residing in institutions were not included in any of the figures.

Source for the study sample:
Secondary data from MSHA. Centre on Aging , University of Manitoba.

Source for the Winnipeg MSHA Sample:
MSHA Research Group. (1995). MSHA Final Report. (Table B1, P. 242). Centre on Aging , University of Manitoba.

Source for Winnipeg population:
Manitoba Bureau of Statistics (1994). Seniors in Manitoba: A Statistical Profile 1991. (MBS94-8) (Table 14, p. 26). Government of Manitoba.

To summarize, the representative nature of the sample for this study to the MSHA Winnipeg sample and the Winnipeg population is characteristic specific. The sample is more consistent with the Winnipeg population in terms of age. Unlike the MSHA Winnipeg sample where respondents over the age of 85 were over-represented, the age distribution of sample for this study matches that of the general population. In terms of education, a greater portion of the study sample have achieved university education than the MSHA Winnipeg sample and the Winnipeg population. For annual income and living arrangement, the sample is more similar to the MSHA Winnipeg sample than the Winnipeg population. The sample reports a higher annual income than that of the Winnipeg population. In the study sample, 42.2% of the respondents live alone compared to 34.5% the Winnipeg population.

These findings may reflect the variation between the three groups with respect to cognitive impairment. Participants in the study sample include only those persons who are cognitively intact, while the MSHA Winnipeg sample and the Winnipeg population include persons with cognitive impairment. The absence of cognitive impairment in the study sample may explain why the study sample demonstrates the following distinctions: (a) a smaller proportion in the 85 year old and over age category, (b) a higher level of education, (c)higher annual income and

(d) a higher proportion of persons living alone. The larger incomes reported by the sample may also be related to their reported level of education. Concurrently, the comparatively greater education reported by this sample may also be associated with the better MMSE scores since the sample consists of only those who achieved MMSE scores greater than 78. Based on these analyses, caution is warranted with respect to the generalizability of the findings.

6. Research Findings: Research Question #1

In this chapter, findings for research question #1 are reported. Research question #1 asks: Is the SMI a reliable and valid measure of the three components of self-care as posited by Orem's model of self-care? The following calculations for individual items, the sub-scales, and the total self-care score are presented: (a) frequencies, (b) median split frequencies, (c) chi square test of independence, (d) Pearson's r correlations, (e)Kappa coefficient of concordance, (f) Kudar Richardson's test of reliability and (g) cluster analysis.

6.0 Frequencies

Frequencies have been determined for the individual MSHA best matched items paralleled to select SMI items. A review of the resulting frequencies indicated the need for two revisions.

The first revision involved recoding the items that examine memory. MSHA respondents' short term memory abilities were determined using question 3MS(2) while their long term memory ability was ascertained using question 3MS(4).

To recap briefly, the MSHA question 3MS(2) requests respondents to repeat three words, namely "shirt, brown, honesty" immediately after hearing the words repeated by the interviewer three times. Five minutes later, respondents are asked to recall the words again (3MS(4)). In both cases, a perfect score of nine is obtained when respondents repeat all three words correctly without cues. A score of six is awarded when all three words are correctly recalled following one verbal cue from the interviewer. If more than one cue is required, scores of less than six are awarded. Initially, the decision had been made that if any cues from another person were required then self-care would be rated as "inadequate" resulting in a score of "zero". This coding method was revised and is describe here.

Upon analysis it was noted, that for most self-care behaviours, 90 to 99% of the sample demonstrated adequate self-care ability, with the exception of "recall". According to the initial calculation, only 37% of the respondents in this sample demonstrated adequate recall. This discrepancy necessitated a rethinking of the definition of "adequate" for the recall items. Upon reflection, it seemed reasonable that an individual requiring one cue to accurately recall three unrelated words could still demonstrate adequate recall ability. Hence, the coding for the "recall" item was re-revised.

Consequently, for the MSHA questions 3MS(2) and 3MS(4), a score of six

to nine was recoded as "1=adequate". This enabled respondents to achieve a self-care score of "one" even if the respondent required one cue in order to repeat the three words. Regardless of whether they required a cue, as long as respondents correctly recalled the three words their self-care in terms of memory was considered adequate. An SMI score of "0=inadequate" was awarded for an MSHA score of five or less in cases where the respondent required multiple cues or if words were missed.

The second revision resulted from the limited variability of the data. Frequencies of several items demonstrated less than 5% variability. For several items, 95% or more of the responses from the sample were rated as having "adequate" self-care ability. Given those proportions, the data would have been difficult to analyze in terms of comparisons and correlations. Items where 95% or more of the sample reported being capable of "adequate" self-care ability were deleted from the analysis so that demonstration of associations would be possible.

Initially, a total of 28 MSHA best matched items from Tables 4.0, 4.1 and 4.2 were recoded to reflect the SMI measurement tool involving developmental, health and illness self-care sub-scales. Items that were deleted are shown in table 6.0. These include nine of the 20 developmental self-care items, one illness self-care item, and two of the seven health self-care items.

The illness sub-scale consisted of only one item, namely, "the ability to take medications". Since 98.3% of the sample was identified as having adequate ability to perform the illness self-care behaviour, the illness subscale has been excluded from further analysis.

Table 6.0

MSHA Items Removed from Further Analysis with < 5% variability (n=809).

Self-care behaviours	Adequate self-care	
	n	%
Developmental Self-care Items		
Sitting balance	787	97.3
Ability to walk	795	98.3
Ability to get out of bed	808	99.9
Ability to dress	801	99.0
Orientation to time and place	791	99.1
Short term memory	791	97.5
Language ability	784	97.2
Takes care of appearance	807	99.8
Support system for help	786	97.2
Illness Self-care Items		
Take own medications	795	98.3
Health Self-care Items		
Control of bowels	767	94.9
Self-preservation/ use of the telephone	799	98.0

Note: Totals do not equal 809 due to missing values.

To summarize, for this study, one of Orem's three self-care sub-scales has been deleted. The illness self-care sub-scale has been eliminated from the remainder of the analysis. The remaining two sub-scales are comprised of an eleven item developmental component and a five item health self-care dimension.

The developmental sub-scale value ranges from 0 to 11 while the health self-care sub-scale score ranges from 0 to 5. The range values are based on the fact that in the SMI each item is valued at either "0 = inadequate" or "1 = adequate". The final scale was created by calculating the cumulative total self-care score. The total self-care score scale is determined by generating a cumulative total of the 16 items from the developmental and health self-care sub-scales. The value of the total self-care score scale ranges from zero to 16. Frequencies for the sub-scales and the cumulative self-care score sub-scale have been calculated.

The frequencies illustrated in table 6.1 pertain to the 16 individual MSHA items that parallel Orem's developmental and health self-care behaviours as measured by the SMI tool. Frequencies for the self-care items showed that for all items at least 70.5 % of the sample is able to adequately perform the task, with the exception of the yard work item. For yard work, only 60.5 % of the respondents reported having adequate ability. Twenty-five to forty percent of the respondents reported limitations for the following developmental items: yard work, eyesight,

emotional support, light housework and hearing.

Frequencies for the five health self-care items show that for all items at least 73.6 % of the sample reported adequate self-care. The most problematic self-care health items were related to digestive function (26.4%) and respiratory function (20.0%). Meal preparation was least problematic (6.7%) (see Table 6.1).

Table 6.1
Frequencies for Individual Developmental and Health Self-care Items (n=809)

	adequate		not adequate	
	n	%	n	%
Developmental self-care items				
Yard work/ muscle strength	482	60.5	315	39.5
Eyesight	570	70.5	238	29.5
Emotional support	585	72.3	224	27.7
Heavy house work/ range of motion	598	74.0	210	26.0
Hearing	604	74.9	202	25.1
Spell word backward/ attention	626	78.5	171	21.5
Nerves / ability to cope	636	78.7	172	21.3
Recall 3 words	680	84.1	129	15.9
Income	718	89.1	88	10.9
Follow directions	728	90.3	78	9.7
Transportation	740	91.5	69	8.5
Health Self-care items				
Respiratory function	647	80.0	162	20.0
Digestive function	595	73.6	213	26.4
Bladder function	721	89.5	85	10.5
Kidney function	723	89.7	83	10.3
Meal preparation	755	93.3	54	6.7

Note. If totals for (n) scored adequate and (n) scored inadequate do not equal 809, the remainder represent missing values.

Developmental and health self-care sub-scales have been created by calculating the cumulative scores for each component. The developmental self-care sub-scale score ranged from two to 11 points, while the health self-care sub-scale score ranged from zero to five points.

As table 6.2 shows, 16.5% of the sample reported having adequate self-care ability for all developmental self-care items. No respondent indicated having inadequate self-care ability for all developmental self-care items. Frequencies are calculated for respondents only where no missing values existed. The mean number of developmental self-care abilities was 8.2. The median was 8 items (n = 809).

Table 6.2 Developmental Self-care Sub-scale Frequencies. (n=809)

	n	%
Developmental sub-scale score/number of items reported by respondents as having adequate self care ability		
2 of 11 items	1	.1
3 of 11 items	4	.5
4 of 11 items	12	1.6
5 of 11 items	28	3.6
6 of 11 items	59	7.6
7 of 11 items	87	11.2
8 of 11 items	128	16.5
9 of 11 items	155	20.0
10 of 11 items	171	22.1
11 of 11 items	129	16.7
Totals	774	100.0
M = 8.2 items Mdn = 8.0 items		

Note. Totals do not equal 809 due to missing values. Respondents had to have answered all questions to be included in the score.

Frequencies for health self-care items are displayed in table 6.3. Results show for one individual within the sample all five health self-care items were scored as "inadequate". The results indicate that 51.1% of the sample scored a rating of "adequate" for all health self-care behaviours. The mean for adequate health self-care was 4.3 items. The median number of items was four items.

Table 6.3 Health Self-care Sub-scale Frequencies (n=809)

	n	%
Health self-care sub-scale scores/number of items reported by respondents as having adequate self care ability		
0 of 5 items	1	0.1
1 of 5 items	10	1.2
2 of 5 items	30	3.7
3 of 5 items	105	13.2
4 of 5 items	247	30.7
5 of 5 items	411	51.1
Totals	804	100.0

M = 4.3 items
Mdn = 4.0 items

Note. Totals do not equal 809 due to missing values. Respondents had to have answered all questions to be included in the score.

Frequencies for the cumulative self-care score for developmental and health self-care behaviours have been computed. The total self-care score of this scale is depicted in table 6.4. The cumulative score ranges from 3 to 16. The table shows that the majority of the sample scored a rating of "adequate" self-care for a range of 12 to 15 items. Five percent of the respondents were rated as "adequate" for all self-care items. The average number of self-care behaviours performed by the respondents that were rated as "adequate" is 12.5. The median number of self-care items is 13.0 (n = 770).

Table 6.4 Total Self-care Scale Frequencies (n=809).

	n	%
Total self-care scale score/number of items reported by respondents as having adequate self-care ability		
3 of 16 items	1	.1
6 of 16 items	9	1.2
7 of 16 items	15	1.9
8 of 16 items	27	3.5
9 of 16 items	43	5.6
10 of 16 items	58	7.5
11 of 16 items	75	9.7
12 of 16 items	113	14.7
13 of 16 items	128	16.6
14 of 16 items	129	16.8
15 of 16 items	133	17.3
16 of 16 items	39	5.1
Totals	770	100.0
M = 12.5 items Mdn = 13.0 items		

Note. Total does not equal 809 due to missing values. Respondents had to have answered all questions to be included in the score.

6.1 Examination of the Relationships between the Self-care Sub-scales and the Cumulative Scale Scores based on the Correlation of Median Values

A median split method was performed on the developmental and health sub-scales as well as the cumulative total self-care scale. Table 6.5 depicts the median for each sub-scale and the cumulative scale as well as the frequencies for each median. Based on a total of 774 responses in the developmental sub-scale, 51.3% of the sample is rated as below the median of eight developmental self-care items. Simply stated, 51.3% of the sample performed less than 8 developmental self-care items. For the sample, 48.7% rated themselves as having "adequate" ability to perform developmental behaviours for more than 8 out of 11 items.

For the health self-care scale, based on a median of 4 items, 48.9 % of the sample were below the median, while 51.1% were above the median (n = 804). The total self-care scale is based on 770 responses with a median of 13 items. The cumulative score indicated that the self-care ability of 60.9% of the respondents were below the median, while 39.1% were scored as being able to score more than the 13 behaviours.

Table 6.5. Median Split Frequencies (n=809)

	Below median		Above median	
	n	%	n	%
Developmental self-care sub-scale	397	51.3	377	48.7
Mdn = 8				
Health self-care sub-scale	393	48.9	411	51.1
Mdn = 4				
Total self-care scale	469	60.9	301	39.1
Mdn = 13				

Note: Totals do not equal 809 due to missing values. Respondents had to answer all questions to be included in the score.

Determining whether respondents self-care ability in on self-care dimensions is correlated to their self-care ability in another self-care dimension or in their total self-care ability.

A chi-square test of independence has been computed to examine whether the self-care sub-scales and cumulative scales are independent. The test determines whether respondents whose self-care ability in one sub-scale is related to their performance in another sub-scale or scale. The test assumes that

respondents' developmental self-care abilities are not correlated to their health self-care ability or their total self-care score. The high values of the chi-square statistic ($p = 0.00$) suggest that the items within the sub-scales and the cumulative scale score are strongly associated (see table 6.6). Pearson's correlation coefficients provide additional support for this as shown later in this chapter.

Table 6.6 Chi-square Test of Independence (n=809)

	Health self-care sub-scale		
	Below median	Above median	Total
Developmental self care sub-scale			
Below median	250	146	396
Above median	124	250	374
Total	374	396	770

Chi-square = 69.2 , *df* = 1, p = .00 (2-tailed)

	Total self- care-scale		
	Below median	Above median	Total
Developmental self care sub-scale			
Below median	228	0	228
Above median	168	374	542
Total	396	374	770

Chi-square = 305.9 , *df* = 1, p = .00 (2-tailed)

	Health self-care sub-scale		
	Below median	Above median	Total
Total self-care scale			
Below median	192	36	228
Above median	182	360	542
Total	374	396	770

Chi-square = 164.6 , *df* = 1, p = .00 (2-tailed)

Note: Totals do not equal 809 due to missing values. Only respondents who answered all 16 items are included here (n = 770).

6.2. Examination of the Relationships between Individual Self-care Items and Self-care Sub-scales and the Cumulative Self-care Scale Scores

Pearson's r correlation coefficients have been calculated to determine the strength of the relationships between individual items, sub-scales and the cumulative total self-care scale scores. Based on a power calculation of 80% for five percent variation, a correlation coefficient of .3 or more is considered significant. Any lower correlation coefficients cannot be considered significant based on the large sample size (Hassard, 1991).

Developmental self-care sub-scale.

Three significant relationships emerged in the developmental self-care sub-scale (see table 6.7). The three correlated pairs of items include:

(a) house work and yard work ($r = .60$, $p<.01$),

(b) house work and the ability to access transportation ($r = .36$, $p < .01$) and

(c) yard work and the ability to access transportation ($r = .32$, $p < .01$).

Table 6. 7 Pearson's r Correlation Matrix: Developmental Self-care Sub-scale Items.(n= 809)

Developmental self-care sub-scale items	1	2	3	4	5	6	7	8	9	10	11
1. Yard work/ muscle strength	--	.28**	-.06	***.60*** **	.11**	- .02	.27**	-.01	.07*	.08*	***.32*** **
2.Eyesight	.28**	--	.04	.23**	.24**	.03	.19**	.06	.02	.00	.12**
3. Emotional support	-.06	.04	--	.01	.07	.04	-.02	.04	.04	.06	.03
4. Housework/ range of motion	***.60*** **	.23	.01	--	.17**	-.01	.28**	-.04	.01	.08*	***.36*** **
5.Hearing	.11**	.24**	.07	.14	--	.05	.07	.01	.09*	.03	.08*
6. "WORLD"backward/attention	-.02	.03	.04	-.01	.05	--	.01	.15	.07*	.06	.01
7. Nerves/ ability to cope	.27**	.19**	.02**	.28*	.07**	.01	--	.00	.07*	.11*	.17**
8. Recall 3 words	-.02	.06	.04	-.04	.01	.15**	.00	--	.02	.00	-.07
9. Income	.07*	.02	.04	.01	.09	.07	.07*	,02	--	.00	.06
10.Follow directions	.08*	.00	.06	.08*	.03	.06	.11	.00	.00	--	.05
11.Transportation	.32**	.12**	.03	.36**	.08*	.01	.17**	-.07	.06	.05	--

** Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
Note. (n) will vary depending on missing values.

As mentioned earlier a Kappa coefficient of concordance allows the comparison of two correlated self-care items for the same individuals (Norusis, 1993). For example, is the respondent who has been rated as being able to do house work also rated as able to do yard work? Since the Kappa statistic normalizes the difference between the items, a Kappa value of "zero" would identify that there is no congruence of self-care items across individuals. On the other hand, a Kappa value of "one" provides supporting evidence that congruence does exist between items (Norusis, 1993).

Looking at the relationships that exist within the developmental self-care sub-scale the following Kappa values were computed.

(a). Ability to do house work and yard work: Kappa = .57 (SE = .03, p = .00);

(b) Ability to do yard work and ability to access transportation: Kappa = .21 (SE = .03, p = .00) and (c)Ability to do house work and ability to access transportation: Kappa = .30 (SE = .04, p.=.00).

These findings suggest that of the three correlated pairs, those respondents who were rated as being able to perform yard work were also most likely to have been reported as being able to perform house work and access transportation. The correlations were weak, even though they were significant (p= .00). However, as stated earlier, coefficients of less than .3 cannot be considered significant based on

the large sample size (Hassard, 1991). Hence, acceptable levels of congruence exist between respondents who could do their house and yard work and those who could do their house work and access transportation.

Examination of the correlation between individual health self-care items.

Person's correlation coefficients for the health self-care items were insignificant as evidenced by the low correlation coefficient (see table 6.8). Since no relationship emerged, a Kappa test of congruence was not performed.

Table 6.8 Pearson's r Correlations between Health Self-care Items (n=809).

	Respiratory	Digestive	Bladder	Kidney	Meal Prep
Health self-care items					
Respiratory	-----	.17**	.09*	.13**	.08*
Digestive	.17**	-----	.16**	.07*	.03
Bladder	.09**	.16**	-----	.23**	.01
Kidney	.13**	.07*	.23**	-----	.06
Meal preparation	.08*	.03	.01	.06	-----

**Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed).
Note. (n) varies for each item based on missing values.

Examination of the correlation between developmental and health self-care items.

Table 6.9 depicts a Pearson's correlation matrix for items from the developmental self-care sub-scale and items from the health self-care sub-scale. Two significant associations emerge: (a) the ability to do house work and the ability to prepare meals ($r = .32$, $p < .01$) and (b) the ability to access transportation and the ability to prepare meals ($r = .33$, $p < .01$).

Table 6.9 Pearson's r Correlation between Individual Items in the Developmental Self-care and Health Self-care (n=809).

	Health self-care items				
	Respiratory	Digestive	Bladder	Kidney	Meal prep.
Developmental items					
Yard work	.26**	.19**	.14**	.12**	.28**
Eyesight	.16**	.13**	.17**	.11**	.10**
Emotional support	-.03	-.09**	-.08*	.02	.01
Housework	.22**	.12**	.16**	.11**	***.32*****
Hearing	.10**	.05	.09**	.11**	.13**
"WORLD" spell	.05	-.09**	.02	-.01	.01
Nerves	.13**	.20**	.18**	.14**	.04
Recall 3 words	.04	.03	-.02	.00	.01
Income	.05	.05	.05	.04	.03
Follow directions	.06	.02	.04	.13**	.03
Transportation	.12**	.09**	.10**	.04	***.33*** **

**Correlation is significant at the .01 level (2-tailed).
*Correlation is significant at the .05 level (2-tailed)
Note. (n) will vary due to missing values of individual items.

The value of the Kappa measure of congruence for the meal preparation item and the house work item (i.e. .24, SE = .04, p = .00) was below the accepted level. The Kappa value for the ability to prepare meals and the ability to access

transportation also demonstrated limited significant association at .32 (SE = .06, p = .00). This suggests that those individuals in the sample who could prepare their own meals were more likely to be able to access transportation.

Examination of the relationships between developmental self-care, health self-care and the cumulative self-care scale score.

Sub-scales for developmental self-care and health self-care items have been developed. The range for the developmental scale is zero to eleven, while the score for health self-care ranges from zero to five. Similarly, a cumulative total self-care score was also computed with a range of 0 to 16. Associations between these sub-scale scores and the cumulative scale have been examined. Some strong correlations emerged. The correlation coefficient between (a) health self-care and developmental self-care sub-scales was .36 ($p < .01$), (b) health self-care and cumulative self-care sub-scale was .68 ($p < .01$) and (c) the cumulative self-care scale and the developmental self-care sub-scale was .93 ($p = .01$).

Nunnally (1996) states that where correlation coefficients are greater than .75, the items are potentially redundant and interchangeable. The correlation coefficient of .93 suggests that the cumulative self-care scale and the

developmental self-care sub-scale are so closely related that both provide the same information about the sample. This is not surprising as the majority of the items in the cumulative score are derived from the developmental sub-scale. Hence, it was reasonable to delete either the developmental sub-scale or the cumulative scale from the matrix. The decision was made to delete the cumulative self-care score scale leaving two distinct sub-scales, namely developmental and health self-care.

The lower correlation between the developmental and the health sub-scales ($r = .36$, $p < .01$) suggests that the items in the sub-scales measure distinct concepts. This lower correlation supports the importance of recognizing developmental self-care abilities as a component of self-care.

At the same time, the positive direction of the relationship between the sub-scales suggests that as the respondents' ability to perform developmental self-care behaviours increased, their ability to perform health self-care behaviours may also increase. The scatterplot in Figure 6.0 demonstrates that no clear linear relationship exists between developmental and health self-care sub-scales. The relationship ($r = .36$ ($p < .01$) is evidenced by the "cornering" displayed in the scatterplot.

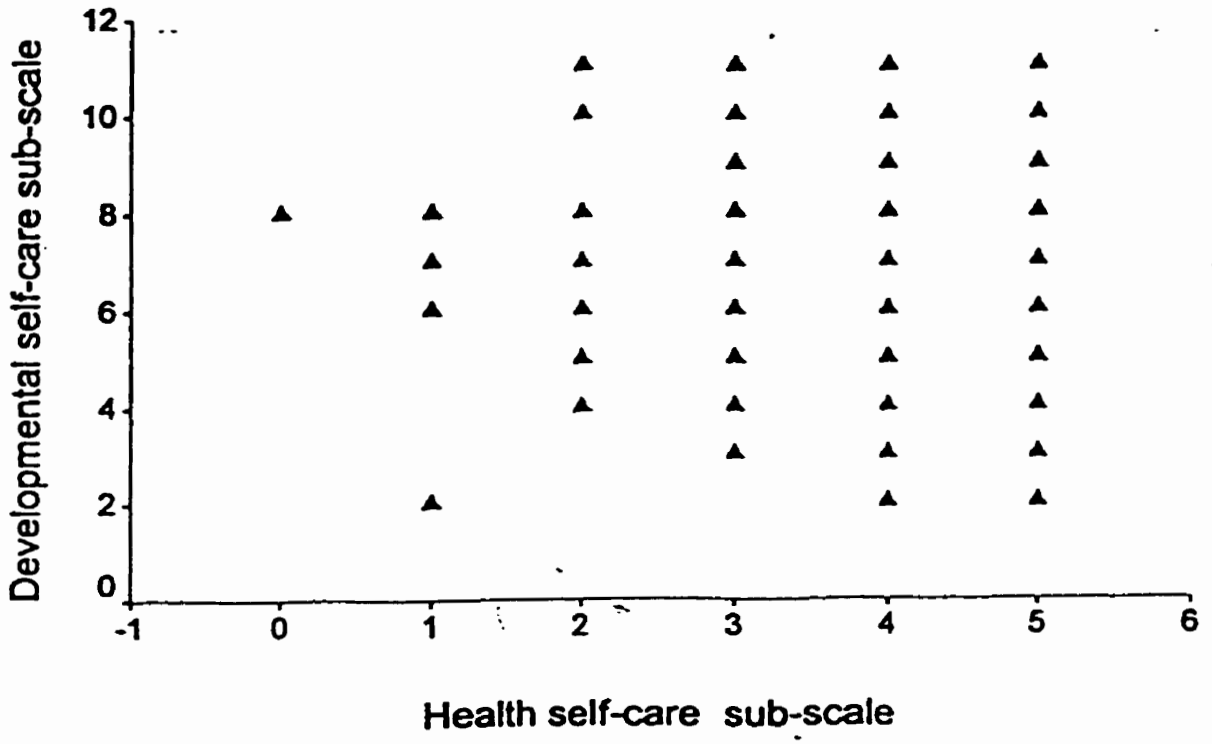

Figure 6.0.

Scatterplot: The relationship between developmental and health self-care

6.3 Examination of the Internal Consistency of the Developmental Self-care Sub-scale, the Health Self-care Sub-scale and the Cumulative Self-care Scale

In the next step, reliability testing for internal consistency was performed using the Kuder Richardson's reliability procedure. While Cronbach's alpha examines internal consistency of items with more than two values, Kuder Richardson's procedure tests internal consistency of scales with dichotomous variables. K-R 20 co-efficients were calculated for the 11 items within the developmental self-care sub-scale, the five items within the health self-care sub-scale, and for all 16 items that together comprise the total self-care score. For the purpose of this research, a K-R 20 coefficient of .7 is used as the lower acceptable limit.

Developmental self-care sub-scale.

A low K-R 20 coefficient of 0.52 for the 11 developmental items is consistent with what could be expected given the low degree of correlation between the developmental items demonstrated earlier in table 6.9 (see table 6.10). While the reliability coefficient is not dramatically increased by deleting any of the

11 items, a slightly higher K-R 20 coefficient can be achieved by deleting three developmental items. The three items include (a) emotional support (K-R 20 = .54), (b) memory recall of three words (K-R 20= .54) and (c) attention span /spell "world" backwards (K-R 20 = .53).

Two developmental behaviours that have the largest positive impact on the reliability coefficient of the developmental sub-scale score are (a) the respondent's ability to do yard work and (b) the ability to do housework. As the table demonstrates, if the item for yard work were deleted the K-R 20 coefficient would decrease to .43. The same coefficient reduction would be evident if the item depicting respondents' abilities to do heavy housework was deleted.

Table 6.10 K-R 20 Coefficient Values for the Developmental Self-care Sub-scale

	K-R 20 =.52 K-R 20 if item deleted
Developmental self-care sub-scale	
Yard work	.43
Eyesight	.46
Emotional support	.54
Housework	.43
Hearing	.49
"WORLD" spell	.53
Nerves	.47
Recall 3 words	.54
Income	.52
Follow directions	.52
Transportation	.48

The health self-care sub-scale.

Previously, the Pearson's r for health self-care sub-scale items suggested that no inter-item correlations existed. The low K-R 20 coefficient (.37) further supports this finding (see table 6.11). There is little improvement in the reliability coefficient when any of the five individual items are deleted. The increase in the K-R 20 coefficient is negligible (.39) when the health self-care behaviour related to

the ability to prepare meals is deleted. If the self-care items related to respiratory function and bladder function were deleted, the health self-care sub-scale would be even less reliable. If either of these two items is deleted, the K-R 20 coefficient would be reduced to .29 in each case.

Table 6.11
Reliability Analysis for the Health Self-care Sub-scale: K-R20 Coefficient.

	K-R 20 = .37 K-R 20 if item is deleted.
Health self-care sub-scale items	
Respiratory function	.29
Digestive function	.31
Bladder function	.29
Kidney function	.30
Ability to prepare meals	.39

Reliability testing: Cumulative self-care scale.

When all 16 variables were considered simultaneously, the K-R 20 coefficient alpha was .60. It should be noted that as the number of items in a reliability analysis increase, the K-R 20 value will also increase. Even so, the overall low K-R 20 coefficient is indicative of a lack of internal consistency. Table

6.12 shows the K-R 20 coefficient when items are deleted. Similar to those items identified for the individual sub-scale items, it appears that K-R 20 value would only be marginally improved by deleting the following items: emotional support (K-R 20 = .63), attention/spell "world" backwards (K-R 20 = .62) and memory recall (K-R 20 = .61).

Table 6. 12
Reliability Analysis for all Items in the Total Self-care Scale: K-R 20 Coefficient

	K-R 20 coefficient = .60 K-R 20 if item deleted
Total self-care scale items	
Yard work	.53
Eyesight	.56
Emotional support	.62
Housework	.54
Hearing	.58
"WORLD" spell	.62
Nerves	.56
Recall 3 words	.61
Income	.60
Follow directions	.60
Transportation	.58
Respiratory function	.58
Digestive function	.59
Bladder function	.59
Kidney function	.59
Meal preparation	.58

6.4 Examination of Self-care Items to Determine if they fall into Orem's Distinct Theoretical Categories

A cluster analysis provided additional support regarding the limited correlation between items and Orem's theoretical sub-scales. Findings are displayed using tables and dendograms for the two sub-scales and then for the cumulative total self-care score scale.

Developmental self-care sub-scale.

In table 6.13, items within the developmental self-care sub-scale are grouped according to their Euclidean distance coefficients. Usually, clustering is stopped as the increase between two adjacent steps becomes large (Norusis, 1993).

It appears that while the developmental items are not far apart, they are not linked closely together. Two main clusters emerge however. The first cluster consists of the following three developmental variables: (a)ability to follow commands, (b) ability to access transportation and (c) satisfaction with income.

The second cluster consists the following two developmental variables (a) yard work and (b) house work.

The first clustering of the three items (a) the ability to follow directions, (b) the ability to access transportation and (c) satisfaction with income is inconsistent with the low inter-item correlation determined. The low correlation between three items was demonstrated previously (see table 6.7). Additionally, reliability testing revealed that the K-R 20 value (.52) was not affected when the items related to income satisfaction and the ability to follow directions were deleted (see table 6.10).

The second cluster, comprised of the "house work" and "yard work" items reflects stronger correlation and higher K-R 20 coefficients (see table 6.13 and figure 6.1).

Table 6. 13 Euclidean Distance Coefficient Values for the Developmental Self-care Sub-scale Items

Stage	Items combined	Euclidean distance
1.	Ability to follow command with adequate transportation	120.0
2.	Satisfaction with income merged with cluster in step # 1	133.0
3.	Yard work merged with housework	150.0
4.	Memory recall merged with cluster developed in step #2	176.0
5.	Ability to cope merged with cluster developed in step #4	197.0
6.	Attention ability merged with cluster developed in step#5	211.2
7.	Hearing ability merged with cluster developed in step #6	234.0
8.	Cluster developed in step #3 merged with vision	247.0
9.	Emotional support merged with cluster from step 7.	257.1
10.	Cluster developed in step 8 merged with cluster 8 developed in step 9	269.3

Note. The large distance between the clustered items between step #1 and step# 10 is evident by the Euclidean distance between the clusters (i.e. 120.0 in step #1 compared to 269.3 in step #10).

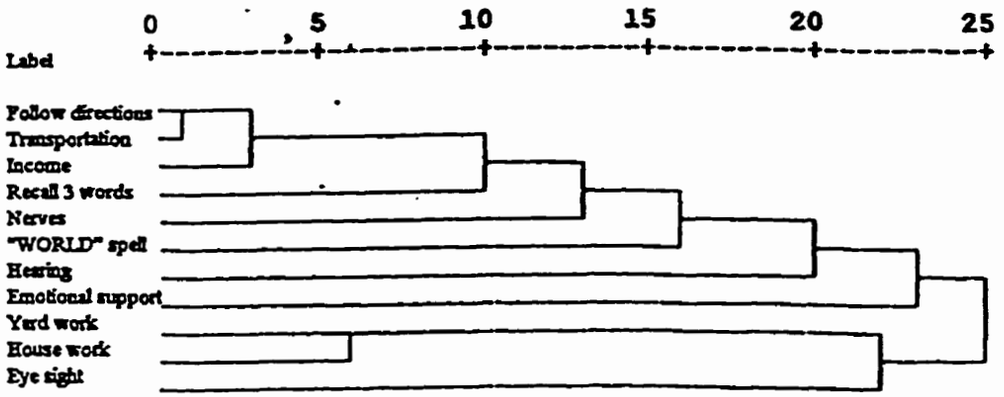

Figure 6.1. Dendogram depicting cluster analysis for items in the developmental self-care sub-scale.

Cluster analysis: Health self-care sub-scale.

Table 6.14 displays the distances between health self-care items and the order in which the items cluster. It is evident that the distances between the health self-care items are greater than the distances between developmental items. This is consistent with the low K-R 20 coefficient values for the health self-care items (K-R 20 = .37) compared to the developmental items (K-R 20 = .52).

Table 6.14 Euclidean Coefficient Distance Values for Items in the Health Self-care Sub-scale

Stage	Items combined	Euclidean distance coefficient
1.	Kidney and bladder function	114.0
2.	Meal Preparation merged with #1	122.0
3.	Pulmonary function merged with #2	186.3
4.	Digestive function merged with # 3	230.3

Note. The large distance between the clustered items #1 and step #4 is evident by the Euclidean distance between the clusters (i.e. 114.0 in step #1 compared to 230.3 in step #4).

Nonetheless, one cluster seems to emerge based on table 6.14 and the dendogram in figure 6.2. The cluster consists of three items, namely kidney function, bladder function and the ability to prepare meals. The Pearson's r calculation does not reflect the clustering as none of the items that clustered were correlated (see table 6.9).

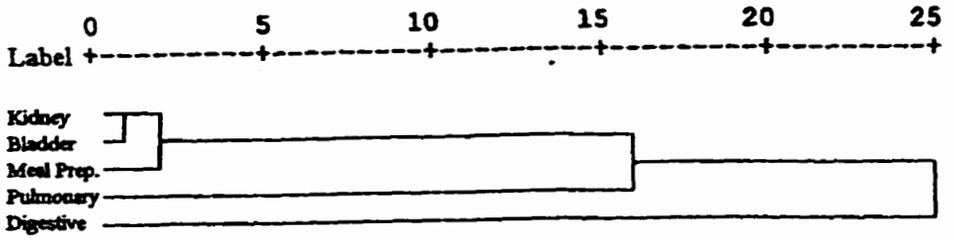

Figure 6.2. Dendogram depicting cluster analysis of health self-care items.

Cluster analysis: Cumulative self-care scale.

Lastly, a cluster analysis was performed for the cumulative self-care scale which includes all 16 developmental and health self-care items. Table 6.15 demonstrates how the 16 items cluster based on the Euclidean distance coefficients between the items.

Table 6.15 Euclidian Distance Coefficient Values for Items in the Cumulative Self-care Scale

Stage	Items combined	Euclidean distance
1.	"Ability to access transportation" & " Ability to prepare meals" are merged.	75.0
2.	" Adequate kidney function" & "Adequate bladder function" are merged	103.0
3.	Merge clusters developed in step #1 and #2.	115.0
4	"Ability to follow commands" & "Satisfaction with income" merged.	119.5
5.	The 6 items clustered in step #1,2, and 4 are merged into a larger cluster (ie. Cluster 1).	131.6
6.	"Ability to do yard work" & "Ability to do house work": are merged to form new cluster.(ie Cluster 2).	149.0
7.	"Adequate memory recall" merged with Cluster 1 .	171.7
8.	"Adequate pulmonary function" merged with Cluster 1.	184.9
9	"Ability to cope" merged with Cluster 1.	192.8
10.	"Ability to maintain attention" merged with Cluster 1	212.1
11.	"Adequate hearing function" merged with Cluster 1	225.2
12	"Adequate digestive function" merged with Cluster 1	238.1
13.	"Adequate vision" merged with Cluster 2	245.5
14	Cluster 1 and Cluster 2 merge to form Cluster 3	253.9
15.	"Adequate emotional support" merges with Cluster 3 to form Cluster 4.	273.1

Note. The large distance between the clustered items between step #1 and step #15 is evident by the Euclidean distance between the clusters (i.e. 75.0 in step #1 compared to 273.1 in step #15).

Ideally, 16 items would cluster neatly into distinct groups consisting of items from the developmental sub-scale in one cluster and items from the health self-care sub-scale in another cluster. This was not the case. Consistent with the lack of correlation, no regular clustering pattern is evident. Hence, the clusters that do form are simply clusters of things least far apart rather than close together when compared to the proximity of the other items.

None the less, two clusters emerge when clustering is cut off at a minimum Euclidian distance co-efficient of 150 (see table 6.15) or a minimum re-scaled distance of 10 (see figure 6.3). These clusters also reflect the more significant correlation coefficients and the higher K-R 20 values calculated earlier. The first cluster consists of the ability to prepare meals and the ability to access transportation. As shown previously in table 6.7, the Pearson's r correlation for these items was negligible, albeit significant ($r = .32$, $p < .01$).

The second cluster consists of the ability to do yard work and house work. The Pearson's r value for these two items was significant ($r = .60$, $p < .01$). Additionally, table 6.13 and figure 6.1 suggest that while house work and yard work are not close together, they are "least far apart" compared with other clustered items. They are in fact the "best cluster". Hence, house work and yard work belong together as they correlate well and are the best cluster.

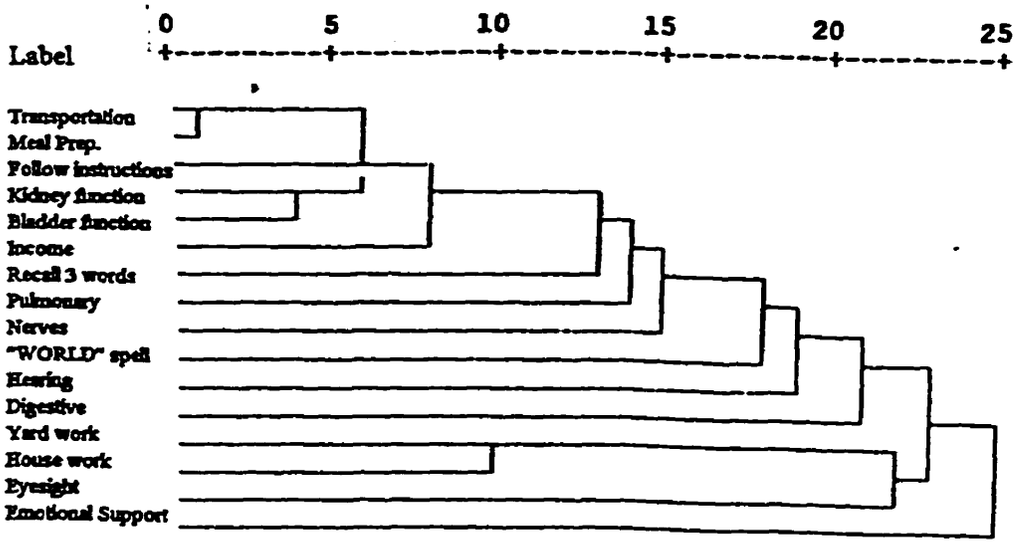

Figure 6.3 Dendogram depicting cluster analysis for items in the cumulative self-care scale.

Initially, the intent was to utilize a self-care scale from research question #1 to address research question #2. Based on the findings from research question #1, a self-care scale similar to the SMI did not emerge. The lack of validity and reliability of the self-care scale from research question #1 is evidenced by the fact that items within the sub-scales were not strongly correlated. Furthermore, as table 6.12 illustrated, the unacceptably low K-R 20 value (0.60) also suggests conceptual deficiencies within the cumulative self-care scale for this sample.

Based on these findings a self-care scale cannot be brought forward for research question #2. Instead, the dependent variable will consist of the two items that have demonstrated the strongest relationship. These two items encompass the ability to do house work and the ability to do yard work. The correlation between the two items was significant ($r = .60$, $p < .01$). The K-R 20 value for the developmental self-care sub-scale was .52 when the scale included the "house work" and "yard work" items. When these items were deleted from the scale, the K-R 20 value was reduced to .43. Lastly, the cluster analysis also suggested that the ability to do house work and the ability to do yard work could be appropriately grouped together.

The dependent variable (House/Yard Work).

The dependent variable, namely house/yard work is presented as a dichotomous self-care indicator. That is, the ability to do house work and yard work generated a score of "1" while being unable to perform house work or yard work or both achieved a score of "0". Frequencies revealed that 57.8% (n= 461) of the sample could do both while 42.2% (n=336) of the sample could not do one or both.

The rationale for grouping respondents who reported being unable to perform house work and yard work with those who could perform either house work or yard work is that conceptually, house work and yard work are similar. According to the MSHA survey, house work refers to heavy house work such as washing walls, and vacuuming. Similarly, yard work also involves heavy work such as gardening and pushing a lawn mower. Conceptually, it was apparent that if individuals were unable to perform heavy work inside, then it followed that they will also be unable to perform heavy work outside. The assumption was that being able to do both house work and yard work was distinctive from not being able to do at least one of the items.

A cross tabulation of data is presented in table 6.16.depicting frequencies for the house work and yard work variables (n=797). Consistent with the conceptual assumption about yard work and house work, 57.8% of the 797 respondents reported being able to do house work and yard work, while 74.4 % reported being able to do house work only and 60.4% reported being able to do their yard work. Similarly, 23.0% of the 797 respondents reported being unable to do house work and yard work while 25.6% reported being unable to do house work only and 39.6 reported being unable to do yard work .

Table 6.16

Cross-tabulation of House Work and Yard Work (n= 797)

	Yard work				Total	
	Inadequate		Adequate		Count	Percent
House work						
Inadequate	183	23.0	21	2.6	204	25.6
Adequate	132	16.6	461	57.8	593	74.4
Total count/ Percent	315	39.6	482	60.4	797	100.0

7. Research Findings: Research Question #2

The results for research question #2 are presented in this chapter. Research question #2 was to examine the relationship between the self-care indicator (dependent variable) and selected socio-demographic characteristics and conditioning factors (independent variables).

House/yard work is the dependent variable that emerged from research question #1. The dependent variable is also referred to as the self-care indicator variable. The independent variables consist of selected factors used to describe the sample and Orem's conditioning factors. Descriptive factors include age, gender, marital status, years of education, monthly income, utilization of physician services in the past six months and utilization of pharmacist services in the past six months. Additional conditioning factors consist of three health status indicators, life satisfaction, six health belief items, the presence of depressive symptoms, and five social support indicators.

Various statistical analyses described in Chapter four have been conducted to determine (a) frequencies and alpha coefficients for selected scales, (b) relationships between the dependent variable and the independent variables, (c) inter-item correlations and (d) the impact of the independent variables on the

dependent variable at the multivariate level. The findings related to these analyses will be presented here.

7.0 Frequencies

In this section, frequencies for the independent variables are presented. The independent variables include age, gender, marital status, years of education, monthly income, utilization of physician services, utilization of pharmacist services, three health status indicators, life satisfaction, six health belief indicators, presence of symptoms related to depression and five social support indicators.

Independent variables: Select descriptive factors.

Frequencies for the select factors include age, gender, utilization of physician services and utilization of pharmacist services remain as they have been presented for research question #1 in section 5.0. However, frequencies for marital status and education will reflect recoded values for this research question, namely, research question #2. Marital status has been recoded to a dichotomous variable. Frequencies indicate that 47.6% of the sample (n=375) were not married (never

married, divorced, separated, widowed) while 52.4 % (n=423) were married (married, common law) (n=808). Level of education has been recoded as years of education. Two variables have been deleted from further analyses, namely monthly income and the number of sick days in bed.

The variable, "monthly income" has been excluded due to a large number of missing values (n=172). The explanation is that many female respondents were not aware of their income. Years of education to some extent reflects socio-economic status. Frequencies for this variable are shown in Table 7.0.

Table 7.0 Years of Education (n = 809)

	n	%
Number of years		
0	3	.4
1	1	.1
2	1	.1
3	3	.4
4	11	1.4
5	14	1.7
6	27	3.4
7	43	5.3
8	96	11.9
9	79	9.8
10	135	16.8
11	119	14.8
12	98	12.2
13	33	4.1
14	44	5.5
15	26	3.2
16	31	3.9
17	14	1.7
18	9	1.1
19	3	.4
20	12	1.5
22	1	.1
23	1	.1
25	1	.1
Totals	805	100.0
M = 10.7		
SD = 3.3		
Mdn = 10.0		

Note. Totals do not equal 809 due to missing values.

Health status.

The "health status variable" includes three items related to respondents' perceptions of (a) their health these days, (b) health for their age and (c) how much ill health interferes with daily activities. Frequencies for the three health status indicators have been computed. These items have been presented earlier in Table 5.6, 5.7 and 5.8. To review, the majority of the respondents believed their health was good. In terms of the first item (health these days), 24.5% reported their perception that their health was "very good" while 53.2% said their health was "pretty good" (n = 807). Eighteen percent said their health was not too good, while 3.1% and .4% rated their health as "poor " and "very poor" respectively. For the item, "health for your age", 71.9% of the sample rated their health as "excellent" and "good"; 23.9% thought their health was fair and 4.2% thought their health was "poor" or "bad" for their age (n=799). For the third health status indicator (" How much do health troubles stand in the way?"); 46.4 % said "not at all", 33.0% reported "a little", while 20.5% said it bothered them "a great deal" (n=806).

Life satisfaction.

Life satisfaction has been measured using ten items from Andrew and Whithey's (1976) "terrible/ delightful" scale. Each item generates a score ranging from one to seven with total scale scores for ten items ranging from 10 to 70. The higher score is indicative of being more satisfied with life. Only 687 of the 809 respondents responded to all 10 items. Frequencies for the sample ranged from 33 to 66 ($\alpha = .76$).

As stated earlier, the frequencies for this variable have been pro-rated so that up to a maximum of four missing values were coded as "0". After pro-rating, the frequencies for life satisfaction ranged from 24.29 to 66 (n=808, $\alpha = .69$). Table 7.1 illustrates the frequencies for life satisfaction after pro-rating. Frequencies have been collapsed according to the mean (M = 51.9) in increments that reflect the standard deviation (SD= 4.6).

Cronbach's alpha has been calculated for the life satisfaction scale before and after pro-rating the scale score. The variation of the Cronbach's alpha coefficient was negligible (i.e. .07). This suggests that the reliability of the measurement instrument has been maintained while pro-rating the data.

Table 7.1. Life Satisfaction (n=809)

	n	%
Life satisfaction scores		
24.3 to 33.0	18	2.2
42.22 to 46.25	63	7.7
46.67 to 51.43	314	38.6
52.00 to 56.00	291	35.8
56.67 to 61.11	111	13.6
62.00 to 66.00	11	1.3
Totals	808	100.0
M= 51.9 SD= 4.6 Mdn = 52.0 α = .69		

Note: Totals do not equal 809 due to missing values.

Health beliefs.

Turning now to health beliefs, frequencies have been calculated for six health belief items from the HLOC scale. Three of the six items measure EHLOC, while the remaining three items measure IHLOC (Walston et al., 1976). The three EHLOC items include: (a) MSHA#48(f): "People who never get sick are just plain lucky", (b) MSHA#48(j).: " Good health is largely a matter of good fortune" and (c)MSHA#48(s).: "No matter what I do, if I am going to get sick, I will get sick". The three IHLOC items include: (a)MSHA#48(c):"People's ill health results from their carelessness", (b) MSHA#48(o).: "Whenever I get sick it is because of something I've done or not done and (c) MSHA#48(p).: "When I feel ill, I know it is because I have not been getting the proper exercise or eating right".

As mentioned earlier in section 4.3.3, analysis is required to examine the internal consistency of the EHLOC and IHLOC sub-scales, and the HLOC scale. First, frequencies of the individual items, sub-scales and scale were examined (see tables 7.2, 7.3, 7.4 and 7.5).

Secondly Cronbach's alpha coefficients for the sub-scales and the scale were examined. The Cronbach's alpha coefficients for the sub-scales and the scale suggest a lack of internal consistency of these scales for this sample (EHLOC: α =

.55, n = 802; IHLOCα = .59, n= 800; HLOC :α = .51, n=797). Since the sub-scales and scale depicting health beliefs demonstrate a lack of reliability individual health belief items were examined instead.

Table 7.2 Frequencies: Individual Health Belief Items

	#48(f)		#48(j)		#48(s)		#48 (c)		#48 (o)		#48(p)	
	n	%	n	%	n	%	n	%	n	%	n	%
Item score												
1	14	1.7	31	3.8	31	3.9	31	3.8	16	2.0	8	1.0
2	233	28.9	313	38.8	336	41.8	311	38.5	419	52.2	327	40.8
3	62	7.7	60	7.4	100	12.4	99	12.3	112	13.9	113	14.1
4	454	56.3	381	47.3	321	39.9	348	43.1	249	31.0	342	42.6
5	43	5.3	21	2.6	16	-2	18	2.2	7	0.9	12	1.5
Total	809	100.0	806	100.0	804	100.0	807	100.0	803	100.0	802	100.0
M	3.35		3.06		2.94		3.01		2.77		3.00	
SD	1.01		1.06		1.02		1.03		.94		.97	
Mdn.	4.00		3.00		3.00		3.00		2.00		3.00	

Note. Totals do not equal 809 due to missing values.

Table 7.3 Health Beliefs: Six Item HLOC Scale Frequencies (n=797)

	n	%
HLOC Score		
9	2	.3
10	3	.4
11	2	.3
12	18	2.3
13	29	3.6
14	62	7.8
15	52	6.5
16	94	11.8
17	69	8.7
18	123	15.4
19	56	7.0
20	101	12.7
21	46	5.8
22	62	7.8
23	25	3.1
24	39	4.9
25	11	1.4
26	1	.1
27	1	0.1
28	1	0.1
Total	797	100.0
M= 18.2		
SD= 3.3		
Mdn = 12.0		
α = .51		

Note: Totals do not equal 809 due to missing values.

Table 7.4 Health Beliefs: Three-item EHLOC Sub-scale Frequencies (n=809)

	n	%
EHLOC sub-scale score		
3	2	.2
4	3	.4
5	18	2.9
6	86	10.7
7	63	7.9
8	157	19.6
9	54	6.7
10	159	19.8
11	65	8.1
12	159	19.8
13	27	3.4
14	7	.9
15	2	0.2
Total	802	100.0
M = 9.4		
SD = 2.3		
Mdn=10.0		
α = .55		

Note: Totals do not equal 809 due to missing values.

Table 7.5 Health beliefs: Three-item IHLOC Sub-scale Frequencies (n = 809)

	n	%
IHLOC sub-scale score		
3	3	.4
4	4	.5
5	9	1.1
6	137	17.1
7	74	9.3
8	179	22.4
9	77	9.6
10	136	17.0
11	45	5.6
12	116	14.5
13	13	1.6
14	6	.8
15	1	0.1
Total	800	100.0
M = 8.8		
SD = 2.2		
Mdn = 8.0		
α = .59		

Note: Totals do not equal 809 due to missing values.

Depression.

In terms of the depression variable, a scale has been computed consisting of 20 items from the previously established CES-D scale (MSHA item #49 a to t). According to the CES-D scale, a score of 16 or more suggests depressive symptomatology (Radloff, 1977). The sample scores ranged from 0 to 52, with a mean of 6.9 and a median of 5.0 (n=782).

As stated earlier, the data for the CES-D scale was pro-rated to eliminate the large number of missing values (n= 27). Based on the fact that two items were frequently not answered, the decision was made to pro-rate scores allowing up to two missed CES-D items. The pro-rated scores indicated a range of 0 to 52 (n=803), with a mean of 7.0, a standard deviation of 7.6 and a median of 5.0.

Additionally, the pro-rated CES-D scores have been recoded as a dichotomous variable. The rationale was that conceptually, with respect to self-care ability it may be more relevant to determine whether or not the individual experiences depressive symptoms rather than correlating self-care to a CES-D scale score.

As table 7.6 shows, 88.9% of the sample scored under 16 on the CES-D, indicating the absence of depressive symptoms. However, 11.1% of the respondents scored 16 and higher (n=803). The alpha coefficient was .85 for the CES-D scale prior to and after the CES-D scale score was pro-rated for missing values. Since no variation occurred, this demonstrates that pro-rating the CES-D scores did not affect the reliability of the CES-D scale.

Table 7.6 Depression (n=809)

	n	%
No depressive symptoms exist	711	88.9
Depressive symptoms exist	92	11.1
Total	803	100.0

$\alpha = .85$

Note: Totals do not equal 809 due to missing values.

Social support.

The dimension of social support examined here is social embeddedness. Social embeddedness refers to the quantity of social support (Barrera, 1986). Five items have been examined with a focus on the presence of social ties and on the living arrangements of respondents in this sample. The items that comprise social support include (a) marital status ("0 = not married/divorced/separated, 1=married/ living common law"); (b) living with a spouse ("0= no, 1= yes"); (c)living alone ("0 = yes, 1= no"); (d) number of people living with respondents and (e) the size of respondents' total social support network (those living with plus those not living with respondents). Table 7.7 describes marital status frequencies of the sample.

Table 7.7 Social Support: Marital Status as a Dichotomous Variable (n=809)

	n	%
Married (married/common law)	424	52.4
Not married (never married, separated, divorced, widowed)	385	47.6
Totals	809	100.0

Table 7.8 illustrates the number of respondents living with their spouses. Of those 423 married respondents, 409 lived with their spouse, while 15 did not (n=423). Looking at the whole sample (n=809), 400 respondents did not live with a spouse.

Table 7.8 Social Support: Living with a Spouse (n=809)

	n	%
Respondents living with a spouse	409	50.6
Respondents not living with a spouse	400	49.4
Totals	809	100.0

The variable, "living alone" (yes/ no) has been coded as a dichotomous variable, namely "those who live alone versus those who do not" for the purpose of analysis with respect to the relationship between living alone and self-care (see table 7.9).

Table 7.9 Social Support: Number of Respondents Living Alone (n=809).

	n	%
Respondents living alone	341	42.2
Respondents living with others	468	57.8
Totals	809	100.0

Table 7.10 illustrates the frequencies related to the number of persons living alone versus those living with someone. In this sample (n=809), 42.2 % of the respondents (n = 341) lived alone, while 57.8% of the sample reported living with someone (n = 468). Of those who lived with someone (n= 468) 48.7% lived with one person, 6.3% lived with two persons, 1.1% lived with three persons and 1.5% of the sample lived with 3 to 35 other persons.

Table 7.10 Social Support: Number of Respondents Living Alone and Living with Others (n=809)

	n	%
Number of persons living with respondents		
0	341	42.2
1	394	48.7
2	51	6.3
3	9	1.1
4-9	11	1.2
13-35	3	0.3
Totals	809	100.0

Respondents' total social support network consisted of persons living with the respondent and persons not living with the respondent (spouses, relatives, friends and neighbours) (n=792). The majority of the sample reported having a network of up to 50 persons (58.7%). Three respondents reported having social networks as large as 428, 656 and 1093 persons and these outliers were removed for the frequency analysis. The size of the three respondents' social networks may reflect respondents' varying definitions of friends and neighbours. The mean of the sample's total social network was 56.9 persons, the standard deviation was 43.6 and the median was 45 persons (n=792). Frequencies presented in table 7.11 have been collapsed based on the mean and standard deviation values.

Table 7.11 Social Support: Size of Respondents' Total Social Support Network (n=792).

	n	%
Size of total social support network (Includes the number of relatives , neighbours, and friends living with or not living with respondents).		
1 to 14	36	4.5
15 to 57	483	61.0
58 to 101	181	22.9
102 to 145	52	6.9
147 to 191	20	2.4
195 to 235	14	1.7
245 to 280	6	0.6
Totals	792	100.0

M = 56.7
SD = 43.6
Mdn = 45.0

Note Totals do not equal 809 due to missing values.

To conclude, frequencies for the dependent and the independent variables have been presented. In addition, Cronbach's alpha coefficients have been examined relative to this sample for the following scales: (a) life satisfaction, (b) HLOC, (c) EHLOC, (d) IHLOC and (e) CES-D. Two independent variables have been removed from further analysis due to insufficient variation. These two variables are "monthly income" and " days spent ill in bed". Additionally, the HLOC scale, the EHLOC sub scale and the IHLOC sub scale have been excluded due to a lack of internal consistency.

The independent variables examined further included: age, gender, years of education, utilization of physician services, utilization of pharmacist services, three health status items, life satisfaction, six individual health belief items, depression and five social support items.

7.1. Examination of the Relationships between the Dependent Variable (House/yard work) and the Independent Variables (Age, Gender, Marital Status, Education, Utilization of Physician Services, Utilization of Pharmacist Services, Health Status, Life Satisfaction, Health Beliefs, Depression, and Social Support)

The Pearson's r correlation coefficients were examined to determine the strength of the relationship between the independent variables and the dependent variable. The entry of selected socio-demographic factors and conditioning factors into the regression model is based on whether or not a significant correlation ($p < .05$) existed between the dependent variable and the independent variables.

The correlation matrix shown in table 7.12 depicts the statistically significant relationships between the dependent variable and the following independent socio-demographic variables: (a)age ($r = -.34$, $p < .01$), (b) gender ($r = -.29$, $p < .01$) and (c) marital status ($r = .20$, $p < .01$), (d) the use of physician services ($r = -.16$, $p < .01$) and (e) the use of pharmacist services ($r = -.24$, $p < .01$). No significant relationship emerged between the self-care indicator and years of education.

Turning now to the conditioning factors, the correlations for all three health status indicators were weak but statistically significant: (a) health these days ($r = -.49$, $p < .01$), (b) health for their age ($r = -.44$, $p < .01$) and (c) amount of

interference with daily activities due to ill health ($r = -.49$, $p < .01$).

The correlation between self-care and life satisfaction was also significant ($r = .33$, $p < .01$).

Pearson's r coefficient value for house/yard work and four of the six health belief items were not high. Each of the three EHLOC sub-scale items demonstrated a significant correlation: (a)MSHA#48(f).: "People who never get sick are just plain lucky" ($r=-0.18$, $p < 0.01$), (b) MSHA #48(j).:"Good health is largely a matter of good fortune" ($r=-.11$, $p < .01$) and (c) MSHA# 48(s).: "No matter what I do, if I am going to get sick, I will get sick"($r=-.09$, $p < .05$). One item from the IHLOC sub-scale also demonstrated significant correlation with the house/yard variable #48 (c) "People's ill health results from their own carelessness" ($r= 0.08$, $p=0.05$). Two of the IHLOC items were not significantly correlated to self-care. These two items included (a) MSHA#48(c): the belief that whenever respondents get sick, it is because of something they have done or something they have not done and (b) #48(p).: whenever the respondents feel ill, they know it is because they have not been getting the proper exercise or eating right. These correlations suggest that a conceptual link exists between four of the six health belief items and self-care.

House/yard work and the depression ($r = -.22$, $p < .01$) were statistically

significant, but weakly correlated. The direction of the correlation suggests that those individuals in this sample who reported not experiencing depressive symptoms are more likely to be able to do their house/ yard work.

In terms of social support, four of the five indicators demonstrated a weak, albeit significant association with house/ yard work (see table 7.11). The four social support indicators significantly related to house/ yard work included (a) marital status ($r = .20$, $p = .01$), (b) living with a spouse ($r = .20$, $p = .01$), (c) living alone ($r = .17$, $p = .01$)and (d) total social support network ($r = .11$, $p = .01$). Since no significant relationship exists between the dependent variable and the number of persons living with the respondent, this item will be excluded from logistic regression analysis.

To review briefly, the following independent variables were significantly correlated to house/ yard work: age, gender, marital status, utilization of physician services, utilization of pharmacist services, three health status indicators, life satisfaction, four health belief items, depression and four social support indicators. The following independent variables will be excluded from regression analysis at the multivariate level due to a lack of correlation between the independent and the dependent variable where the p value is greater than 0.05: (a) a belief that when the respondent gets sick it is because of something they have done or have not

done, (b) a belief that when ever the respondent feels ill it is due to a lack of exercise or not eating right and (c) the number of persons living with the respondent.

One exception was made with respect to the independent variable, namely, years of education. Given that socio-economic status in terms of income could not be included, education as a proxy has been examined in future analyses.

Table 7.12. Pearsons Correlation Coefficients: Examining Relationships between the Conditioning Facto

	1	2	3	4	5	6	7	8.	9.	10.	11.	12.	13.	14.	15.
1.Age	1.00	.09**	-.37**	-.05	.08*	.08*	.10**	.08*	.15**	-.08*	.03	.02	-.02	.17**	.10**
2.Gender	.09**	1.00	-.40**	-.02	-.03	.08*	.07	.06	.08*	-.08*	-.12**	-.15**	-.12**	-.07*	.04
3. Marital	-.36**	-.40**	1.00	.11**	.02	.01	-.04	-.04	-.09**	.11**	.00	.03	.01	-.04	-.07*
4.Educ/yrs	-0.05	-.02	.11**	1.00	-.04	.04	-.19**	-.24**	-.09*	.19**	-.07	-.07*	-.10**	-.14**	-.11**
5.Physian	.08*	-.03	.02	-.04	1.00	.35**	.16**	.13**	.17**	-.08*	.01	.00	.01	.06	.03
6.Pharmacist	.08*	.07*	.01	.04	.35**	1.00	.26**	.29**	.28**	-.19**	.00	-.02	-.02	.11**	.03
7. Health	.10**	.07	-.04	-.19**	.16**	.26**	1.00	.73**	.57**	-.49**	-.05	-.04	.06	.19**	.10**
8. Health	.08*	.06	-.04	-.24**	.13**	.23**	.73**	1.00	.58**	-.49**	-.04	-.02	.04	.16**	.07
9. Ill health	.15**	.08*	-.09**	-.09*	.17**	.28**	.57**	.58**	1.00	-.46**	-.07	-.04	-.01	.11**	.07
10.Lifesat.	-.08*	-.08*	.11*	.19**	-.08*	-.19**	-.49**	-.49**	-.46**	1.00	.04	.00	-.03	-.14**	-.10**
11.H.B.#C	.03	-.12**	.00	-.07	.01	.00	-.05	-.04	-.07	.04	1.00	.27**	.23**	.06	.07
12.HB #O	.02	-.19**	.03	.07*	.00	-.02	-.04	-.02	-.04	.00	.27**	1.00	.47**	.05	.03
13.HB #P	-.02	-.12**	.01	-.10**	.01	-.02	.06	.04	-.01	-.04	.23**	.47**	1.00	.00	.05
14. HB#F	.17**	.07*	-.04	-.14**	.06	.11**	.19**	.16**	.11**	-.14**	.06	.05	.00	1.00	.43**
15.HB #J	.10**	.04	-.07*	-.11**	.03	.03	.10**	.07	.07**	-.10**	.07	.03	.05	.43**	1.00
16.HB#S	.06	.07*	-.05	-.20**	.01	.05	.15**	.14**	.11**	-.16**	-.02	.07*	.04	.20**	.25**
17.CESD	0.05	-.10**	-.04	-.05	.01	.10**	.28**	.25**	.30**	-.37**	-.04	.00	.06	.10**	.08*
18Spouse	-.37**	-.39**	.97**	.11**	.01	.01	-.03	-.03	-.09**	.12**	.00	.03	.01	-.04	-.07
19 Live	-.35**	-.33**	.84**	.11**	.01	.02	-.04	-.02	-.08*	.09**	.00	.02	.04	-.05	-.08*
20# live	-0.04	-.11**	.23**	.06	.03	.01	-.03	-.02	-.03	-.10**	-.01	.00	.01	-.07*	-.04
21 Total	-.11**	-.03	.05	.00	.06	.04	-.08*	-.06	-.06	.18**	.04	.02	-.07	.00	-.02
22.Hvy/hswr	.36**	.28**	-.24**	-.04	.15**	.24**	.46**	.42**	.51**	-.34**	-.11**	-.04	-.04	.19**	.10**
23. Hsewrk	.29*	.19**	-10**	-.02	.08*	.20**	.40**	.37**	.41**	-.30**	-.08*	-.07*	-.04	.14**	.07*
24.Hse/yrd	-.34**	-.29**	.20**	.05-	-.16**	-.24**	-.44**	-.40**	-.49**	.33**	.08*	.04	.03	-.18**	-.11**

** Correlation is significant at the 0.01 level (2-tailed) *Correlation is significant at the 0.05 level (2-tailed).

Relationships between the Conditioning Factors (n= 669)

9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	21.	22	23	24
15**	-.08*	.03	.02	-.02	.17**	.10**	.06	.05	-.37**	-.35**	-.04	-.11**	.36**	.29**	-.34**
08*	-.08*	-.12**	-.15**	-.12**	-.07*	.04	.07*	.10**	-.39**	-.33**	-.11**	-.03	.28**	.19**	-.29**
09**	.11**	.00	.03	.01	-.04	-.07*	-.05	-.04	.97**	.84**	.23**	.05	-.24**	-.10**	.20**
09*	.19**	-.07	-.07*	-.10**	-.14**	-.11**	-.20**	-.05	.11**	.11**	.06	.00	-.04	-.02	.05
17**	-.08*	.01	.00	.01	.06	.03	.01	.01	.01	.01	.03	.06	.15**	.08*	-.16**
28**	-.19**	.00	-.02	-.02	.11**	.03	.05	.10**	.01	.02	.01	.04	.24**	.20**	-.24**
57**	-.49**	-.05	-.04	.06	.19**	.10**	.15**	.28**	-.03	-.04	-.03	-.08*	.46**	.40**	-.44**
58**	-.49**	-.04	-.02	.04	.16**	.07	.14**	.25**	-.03	1.02	-.02	-.06	.42**	.37**	-.40**
00	-.46**	-.07	-.04	-.01	.11**	.07	.11**	.30**	-.09	-.08*	-.03	-.06	.51**	.41**	-.49**
46**	1.00	.04	.00	-.03	-.14**	-.10**	-.16**	-.37**	.12**	.09**	.10**	.18**	-.34**	-.30**	.33**
07	.04	1.00	.27**	.23**	.06	.07	-.02	-.04	.00	.00	-.01	.04	-.11**	-.08*	.08*
04	.00	.27**	1.00	.47**	.05	.03	.07*	.00	.03	.02	.00	.02	-.04	-.07*	.04
01	-.04	.23**	.47**	1.00	.00	.05	.04	.06	.01	.04	.01	.07	-.04	-.04	.03
11**	-.14**	.06	.05	.00	1.00	.43**	.20**	.10**	-.04	-.05	-.07*	.00	.18**	.14**	-.18**
07**	-.10**	.07	.03	.05	.43**	1.00	.25**	.08*	-.07	-.08*	-.04	-.02	.10**	.07*	-.11**
11**	-.16**	-.02	.07*	.04	.20**	.25**	1.00	.15**	-.06	-.05	-.02	-.09*	.09**	.08*	-.09*
30**	-.37**	-.04	.00	.06	.10**	.08*	.15**	1.00	-.04	-.01	-.04	-.11**	.23**	.22**	-.22**
09**	.12**	.00	.03	.01	-.04	-.07	-.06	-.04	1.00	.86**	.21**	.05	-.23**	-.1**	.20**
08*	.09**	.00	.02	.04	-.05	-.08*	-.05	-.01	.86**	1.00	.41**	.03	-.20**	-.07*	.17**
03	-.10**	-.01	.00	.01	-.07*	-.04	-.02	-.04	.21**	.41**	1.00	.04	.00	-.02	-.01
.06	.18**	.04	.02	-.07	.00	-.02	-.09*	-.11**	.05	.03	.04	1.00	-.10**	-.09**	.11**
51**	-.34**	-.11**	-.04	-.04	.19**	.10**	.09**	.27**	-.23**	-.20	.00	-.10**	1.00	.64	-.88**
41**	-.30**	-.08*	-.07*	-.04	.14**	.07*	.08*	.22**	-.10**	-.07*	-.02	-.09**	.64**	1.00	-.64**
49**	.33**	.08*	.04	.03	-.18**	-.11**	-.09*	-.22**	.20**	.17**	.01	.11**	-.88**	-.64**	1.00

s significant at the 0.05 level (2-tailed).

7.2. Examination of the Inter-item Correlations between the Conditioning Factors to Identify Redundant Variables

The Pearson's r correlation matrix has also been examined with respect to inter-item correlations between the independent variables. Nunnally (1996) states that items depicting significant inter-item correlation coefficient values may be measuring the same characteristic and hence are redundant. Where two or more items have been found to be redundant, only one item has been selected for regression analysis.

As table 7.12 depicts, inter-item correlations between the three health status items was significant: (a) health these days ($r = .73$ and $.57$, $p < .01$); (b) health for their age($r = .73$ and $.58$, $p < .01$) and (c) interference with daily activities due to ill health ($r = .58$ and $.57$, $p < .01$). The significant inter-item correlations suggest that these three health status indicators measure health status in similar ways. The health status item that has been selected for further analysis is "health these days" since it has the least number of missing values.

Several inter-item correlation coefficients for the health belief items also demonstrate redundancy. The two EHLOC items that demonstrated high inter-item correlation are (a) MSHA#48f: the belief that people who never get sick are

just lucky and (b) MSHA#48j: the belief that good health is largely a matter good fortune ($r=0.43$, $p < 0.01$). The decision was made to delete MSHA#48 (j) while retaining #48(f) since the latter demonstrated a higher correlation with the dependent variable (i.e. $r = -0.18$ versus $r = -0.10$, $p < 0.01$).

Based on these redundancies and the exclusion of MSHA #48(o) and MSHA #48(p) in section 7.1 and #48(j) in this section, three significant health belief variables remain eligible for logistic regression analysis. These three health belief items include MSHA #48 (c), (f) and (s). These three health items have been carried forward for the following reasons: (a) the items were not highly inter-correlated, (b) the items demonstrated a significant statistical correlation with the dependent variable and (c) the items were conceptually linked to self-care.

Turning now to the social support variable, the three highly correlated items included (a) marital status ($r = .97$ and $.87$, $p < .01$); (b) living with a spouse ($r = .97$ and $.86$, $p < .01$) and (c) living with others ($r = .84$ and $.86$, $p < .01$). Conceptually, marital status and the frequency of living with a spouse would be considered complementary. The high inter-item correlation supports this as well ($r = .97$, $p < .01$). Strong inter- item correlation also existed between marital status and "living alone". The decision was made to include "living alone" in the regression analysis, despite the high inter-item correlation between "living alone",

"marital status" and "living with a spouse". The rationale was that conceptually, people who do not live alone may not necessarily be living with a spouse. Additionally, it may also be that those who live alone may be more or less likely to enage in self-care. Hence, the following items related to social support will be entered into the regression model: (a) marital status, (b) number of respondents living alone and (c) the size of the respondents total social support network.

The relationships between gender, life satisfaction, depression and health were also examined with respect to multi-collinearity. The significant inter-item correlation between gender and depression ($r = -.10$, $p < .01$) as well as gender and life satisfaction ($r = -.08$, $p < .05$) may suggest a gender bias in that women tended to be more depressed and less satisfied with life. Similarly, looking at the high inter-item correlation of health and life satisfaction with depression it is important to determine whether persons who are depressed would more likely perceive their health as poor thereby experiencing lower life satisfaction.

In terms of gender and symptoms of depression, a chi-square analysis of depression by gender using cross tabulation demonstrates a relationship in that 92.0 % of the respondents who exhibit symptoms of depression were female. No relationship was shown between life satisfaction and/ or health by gender.

A *t*-test of life satisfaction and health by depression showed that people who

were more depressed were also more likely to rate their life satisfaction as lower and their health as poorer. Keeping in mind that higher values depict greater life satisfaction, *t*-statistics indicated that for respondents with depressive symptoms the mean for life satisfaction was lower (M = 47.2) than the mean for those who were not depressed (M = 52.5, p = 0.01). Based on these findings, multi-collinearity was not confirmed although a potential exits.

The mean value for the variable "health these days" is 2.60 for respondents exhibiting depressive symptoms. Note that the higher number for "health these days" depicts poorer health. Hence a higher mean (M = 2.60) depicts poorer health compared to a lower mean value (M = 1.93) for respondents who were not exhibiting depressive symptoms (p= 0.01).

The potential for multi-collinearity amongst the significantly correlated variables has been further examined during the logistic regression analysis. The estimated coefficients of the independent variables in the model were observed as each variable is added to the model.

To review briefly, the correlation matrix has provided the rationale to omit the following individual redundant items from entry into the logistic regression analysis: (a) respondents' perceptions of their health for their age, (b) perceptions about the amount of interference of daily activities due to ill health, (c) the health

belief that people who never get sick are lucky, (d) the belief that whenever a respondent gets ill it is because of something they have done or not done and (e) the health belief that when respondents feel ill, it is because they have not been getting the proper exercise or eating right" and (f) living with their spouse. Variables exhibiting significant inter-item correlation with a potential for mult-collinearity included gender, life satisfaction, depression and health these days. These variables will be monitored further during logistic regression analysis.

In the following two sections, further examination of the relationship between the dependent variable and the independent variables has provided additional guidance in terms of which items were brought forward for regression analysis.

7.3 Examination of the Relationships between the Dependent Variable and the Independent Dichotomous Variables

A modified chi-square coefficient, namely a phi coefficient has been computed from cross-tabs to examine the relationships between the dependant variable (house/yard work) and the independent dichotomous variables. The phi coefficient modifies the Pearson's r chi-square statistic for examining nominal variables with a large sample size. The independent dichotomous variables include

(a) gender, (b)the utilization of physician services, (c) the utilization of pharmacist services, (d) the presence of depressive symptoms, (e) marital status, (f)living with a spouse and (g)living alone.

Limited significant correlations were evident between the independent variable " house/yard work" and the following independent socio-demographic variables: (a) gender (Φ = -.29, *df*=1, p = .00), (b) utilization of physician services (Φ= -.16, *df* =1, p = .00), and (c) utilization of pharmacist services (Φ = -.24, *df* =1, p =.00). The negative direction of the correlation suggests that being male is associated with the ability to do house work and yard work. In terms of utilization of physician and pharmacist services, the correlation coefficient suggests that a lower utilization of services is associated with the ability to do house work and yard work.

Also significant was the relationship between house/yard work and depression (Φ = -.22, *df* =1, p=.00). The significant negative relationship between the self-care indicator and depression suggests that those respondents who did not experience symptoms of depression were more likely to be able to do house work and yard work. In all cases, although significant correlations did exist, the strength of the associations were limited (see table 7.13).

Phi coefficients also demonstrated a positive, weak association between

house/ yard work and each of the following dichotomous social support indicators: (a)marital status (Φ= .20, *df* =1, p=.00), (b) living with a spouse (Φ=.20, *df*=1, p = .00), and (c) living alone (Φ=.17, *df*=1, p= .00). The positive correlation was suggestive of an association between married persons living with their spouse and/or persons living with someone and the self-care indicator. The high phi coefficient values was not surprising given the strong inter-item correlations between marital status and "living with a spouse" (r=.97, p = .01) and "living alone" (r = .86, p = .00). This provided additional rationale for the deletion of the variable "living with a spouse" from the logistic regression analysis.

Table 7.13 Phi Coefficient Values between the Dependent Variable and the Dichotomous Independent Variables

	Gender n=796	Utilization of physician services n=796	Utilization of pharmacist services n=796	Depression n=791	Living with a spouse n=796	Live alone n=796	Marital status n=796
House /yard work	-.29	-.16	-.24	-.22	.20	.17	.20

df =1, p =.00 (2 tailed).

7.4 Examination of the Relationships between the Dependent variable and the Independent Categorical Variables

T-tests have been employed to examine the relationships between house/ yard work and the independent categorical variables at the ordinal, interval or ratio level. Items that previously demonstrated a low correlation to the dependent variable and/or were considered redundant have been considered here again to build additional support for excluding these items from regression analysis.

Continuous socio-demographic factors included age and years of education. Conditioning factors that have been examined using a *t*-test included (a) health for

ones' age,(b) health these days, (c) interference due to ill health, (d) life satisfaction, (e) MSHA#48c: the belief that ill health results from their own carelessness, (f) MSHA#48o: the belief that whenever respondents get sick it is because of something they've done or not done, (g) MSHA#48p: the belief whenever a respondent gets ill it is because they have not been getting the proper exercise or diet, (h) MSHA #48f: the belief that people who never get sick are just lucky, (i) #48j: the belief that good health is largely a matter of good fortune (j) MSHA#48s: the belief that no matter what respondents do if they are going to get sick they will get sick, (k) the number of persons living with a respondents and (l) the size of respondents' total social support network.

Based on the *t*-values and a significance level of $p < .05$, the findings were consistent with the correlation matrix in section 7.1 (see table 7.14). Consistent with previous findings for the socio-demographic variables, a realtionship between "age" and "house/ yard work" ($t = 10.08$, $p = .00$) is evident. No relationship exists between the independent variable, years of education and the house/yard work variable($p = .17$).

A relationship was evident between the dependent variable, house/yard work and the following items: three health status itesm, life satisfaction, four health belief items(# 48 c,f,j,and s) and the size of the total social support network.

In terms of health status, *t*- statistics support the perception that the three health status indicators (health these days, health for age, and ill health interferes) measure the same concept. In review, all three indicators demonstrate (a) a strong conceptual link with respect to self-rated health, (b) high inter-item correlation and (c) a strong significant relationship between respondents who rated their health as good and being able to do house work and yard work. The correlation matrix (see table 7.12) demonstrates that the Pearson's r coefficient for "health these days" and the "house/yard work" (r = .48 ,p = .01) is higher than the coefficient for "ill health interferes with activities" and "house/ yard work" (r=.16, p = .00). Additionally, "health these days" had the fewest missing values. Based on the findings presented previously, "health these days" were carried forward for logistic regression analysis.

A significant relationship between house/yard work and life satisfaction is also evident. Consistent with the finding related to Pearson's r, the *t* test provides further evidence suggesting that a relationship between house/yard work and life satisfaction exists ($t = -9.59$, $df = 617$, p = .00).

Findings related to the *t*-statistics for the six health belief items are also consistent with the Pearson's r correlation coefficient (see table 7.12). No relationship was evident between two health belief items and house/yard work:

(a)MSHA#48o: the belief that whenever respondents get sick it is due to something they have done or have not done and (b) MSHA#48p: the belief that when respondents felt ill it is because of not getting proper exercise or eating right (see table 7.14). As determined previously in section 7.1, the health belief variable #48(j) were deleted from the regression analysis since due to high inter-item correlation with #48 f), a health belief variable. Hence, the significance of the *t*-statistics for the health belief variables #48(c) (f) and (s) further support the decision to include these three items into the regression model.

In terms of social support, no relationship was evident between the number of persons living with the respondent and house/yard work ($p = 0.88$). The significicant relationship between house/yard work and the size of respondents' total social support networks based on the *t*-statistic was consistent with findings related to the correlation matrix ($t = -3.20$, $p = .00$). Therefore, the size of the respondents' total social support networks were examined further.

Table 7.14 Independent Samples *T*-test (95% Confidence Level)

	n	t	d.f	Sig.
Age	797	10.08	652	.00
Years of education	793	-1.39	707	.17
Health for one's age	787	12.02	637	.00
Health these days	795	13.24	590	.00
Ill health interferes	794	15.10	617	.00
Life satisfaction	796	-9.59	680	.00
48(c). Ill health due to carelessness	795	-2.24	686	.03
48(o). Illness due to something done	792	-1.24	710	.22
48(p). Ill due to lack of exercise/diet	791	-0.87	708	.39
48(f). People not ill are lucky	794	5.34	760	.00
48(j). Good health is due to good fortune	794	3.06	727	.00
48(s). I will get sick no matter what I do	793	2.49	721	.01
No of persons living with respondent	797	0.16	402	.88
Size of respondents' total social support network	780	-3.20	755	.00

Note: Equal variance not assumed. "n" may not equal 809 due to missing values.

To conclude, the independent variables that were examined further in logistic regression analysis were those variables which demonstrated significant correlation with the dependent variable and the independent variables with a low inter-item correlation. These independent variables are: age, gender, utilization of physician services, utilization of pharmacist services, respondents' perceptions of

their health these days, life satisfaction, three health belief indicators (#48 c, f, and s), depression and three social support indicators (marital status, living alone versus the number of persons living with respondents and the number of persons in respondent's total social support networks).

Several of the independent variables which were brought forward demonstrated a significant inter-item correlation. These included gender, depression, health these days and life satisfaction. While conceptually these items do not measure the same thing, a potential for multicollinearity does exist. Since it is not likely that these variables are conceptually linked and therefore redundant, they were entered into the logistic regression model. Multicollinearity of these four variables was furthered examined looking at the impact that each of these variables had on the logistic regression coefficient of the preceding highly correlated variable that entered the model.

Although the variable "years of education" was not strongly correlated to house/yard work it will be included since it is the only variable depicting socio-economic status.

7.5. Examination of a Regression Model of Self-care to Determine the Impact of the Independent Variables on the Dependent Variable at the Multivariate Level

A self-care indicator consisting of two items, representing the dependent variable has been generated from the findings in research question #1: (a) being unable to do both house work and yard work or being able to do only house work or yard work coded as " 0" and (b) the ability to do both yard work and house work coded as "1". The socio-demographic factors and the conditioning factors related to the dependent variable were examined using of a logistic regression model.

To begin, the dichotomous dependent variable, house/ yard work was entered into the logistic regression computation. The independent socio- demographic variables brought forward included: (a) age, (b) gender, (c) years of education, (d)utilization of physician services and (è) utilization of pharmacist services.

Conditioning factors examined using logisitic regression analysis included: (a) health these days; (b) life satisfaction; (c) three health belief items (#48(c).: the belief that ill health is due to carelessness, #48(f).: the belief that people who never get sick are just lucky #48(s): the belief that no matter what they do if they are going to get sick they will); (d) depression and (e) three social support items

(marital status, living alone and the size of respondents' total social support network).

Five independent variables emerged comprising the self-care model following logistic regression analyis. The independent variables included: (a) health these days, (b) age, (c) gender, (d) life satisfaction and (e) utilization of pharmacist services within the past six months. Table 7.15 depicts the chi-square statistics for the independent variables that were entered into the model.

Table 7.15 Variables Entered into the Logistic Regression Model. (n=764)

	Residual Chi- square statistic before variable is entered	d.f.	Sig.
Variable entered into the equation			
Health these days	282.35	14	.00
Age	160.55	13	.00
Gender	89.42	12	.00
Life satisfaction	35.96	11	.00
Utilization of pharmacist services	19.57	12	.03

Determining the strength of the contribution of each of the independent variables to the model.

The logistic regression coefficients generated by the five variables entered into the model are displayed in Table 7.16. The five independent variables were significantly correlated to the ability to perform the house/yard work self-care behaviour, although the strength of the correlation was limited.

The direction of the association between house/yard work was inverse for health, the utilization of pharmacist services, age and gender. This suggests that the ability to do house/yard work is reduced for older, female respondents, those who reported poorer health and those who used pharmacist services in the past six months. The direction of the association between house/yard work and life satisfaction is positive. This suggests that respondents who reported greater satisfaction with life were more likely to do house/yard work than those who reported lower life satisfaction.

Based on the logistic regression coefficients in Table 7.16, the following equation was generated by the model: Prob (ability to do house/ yard work)= 8. 97 -1.44 (being female) -1.33 (health these days) -0.64 (utilizing pharmacist services) - 0.12 (age) + 0.09 (life satisfaction).

Table 7.16 Logistic Regression Coefficients for Variable in the Equation (n=764).

1. Logistic regression coefficients of constant variable prior to entry of independent variable

Variable	coefficient	S.E.	Wald	d.f.	Sig.	R	Exp. (B)
Constant	.34	.07	21.9	1	.00		

2. Logistic regression coefficients after entry of the first independent variable: "Health these days"

Variable	coefficient	S.E.	Wald	d.f.	Sig.	R	Exp. (B)
Health/days	-1.47	.14	119.4	1	.00	-.34	.23
Constant	3.34	.29	134.3	1	.00		

3. Logistic regression coefficients after entry of the second independent variable: "Age as of December 31, 1990)

Variable	coefficient	S.E.	Wald	d.f.	Sig.	R	Exp. (B)
Health /days	-1.55	.14	116.27	1	.00	-.33	.21
Age	-.12	.01	72.97	1	.00	-.26	.89
Constant	12.48	1.15	117.58	1	.00		

4. Logistic regression coefficients after entry of the third independent variable: Gender

Variable	coefficient	S.E.	Wald	d.f.	Sig.	R	Exp. (B)
Health /days	-1.63	.15	117.05	1	.00	-.33	.20
Age	-.12	.02	68.36	1	.00	-.25	.89
Gender	-1.45	.20	51.94	1	.00	-.22	.24
Constant	13.66	1.23	122.78	1	.00		

5. Logistic regression coefficients after entry of the fourth independent variable: Life satisfaction

Variable	coefficient	S.E.	Wald	d.f.	Sig.	R	Exp. (B)
Health /days	-1.40	.16	76.88	1	.00	-.27	.25
Life satisfaction	.10	.02	16.02	1	.00	.12	1.10
Age	-.13	.02	70.21	1	.00	-.26	.88
Gender	-1.46	.20	50.78	1	.00	-.22	.23
Constant	8.48	1.74	23.72	1	.00		

6. Logistic regression coefficients after entry of the fifth independent variable: Utilization of pharmacist services

Variable	coefficient	S.E.	Wald	d.f.	Sig.	R	Exp. (B)
Health /days	-1.33	.16	67.48	1	.00	-.25	.27
Pharmacist	-.64	.22	8.50	1	.00	-.08	.53
Life satisfaction	.09	.03	14.27	1	.00	.11	1.10
Age	-0.12	.02	67.47	1	.00	-.25	.88
Gender	-1.44	.21	49.43	1	.00	-.21	.23
Constant	8.97	1.77	25.82	1	.00		

Examining the potential for multi-collinearity.

The estimated logistic regression coefficients from Table 7.16 suggest that the independent variables that demonstrated a significant inter-item correlation (ie.health age, gender, life satisfaction) were not multi-collinear. This is consistent

with results of the correlation matrix. The entry of each of these variables did not strongly impact the coefficient of the independent variable that had been entered in a previous step. For example,as Table 7.16 shows, with the addition of each variable to the model, the variation with respect to the coefficients for health, age, gender and life satisfaction were negligible. The greatest amount of variation was .3. The variation of the coefficient for "health these days" varied by .3 when "utilization of pharmacist services" was entered into the model.

Testing the model.

The percent correct values depicted in table 7.17 suggests that the model predicts approximately 78% correct even with a relatively large number of variables (n = 764). The percent correct increased from 58.51% to 78.27% with the entry of health, life satisfaction, age and gender into the model. However, the percent correct decreased from 78.27% to 77.62% when the "utilization of pharmacist services" variable was entered in the equation.

Nine variables were not significant correlates: education, utilization of physician services, the health belief items (#48 c, f, and j), depression, and the social support items (marital status, living alone, and total social support network).

Table 7.17 Testing the Model (n= 764)

Variable entered	% correct
Constant	58.51
Health these days	72.12
Age	74.74
Gender	76.83
Life satisfaction	78.27
Use of pharmacist services in past 6 months	77.62

In summary, independent variables significantly correlated to the dependent variable were entered into the regression model. Redundant independent variables demonstrating a high inter-item correlation and these independent variables that were not correlated to the self-care indicator were deleted from further analysis. The independent variables that were examined using logistic regression analysis included: age, gender, years of education, use of physician and pharmacist services, health these days, life satisfaction, three health belief indicators (#48 c, f, and s), depression and three social support items (marital status, living alone, and size of the total social support network). Five independent variables were entered into the model using logistic regression analysis, namely (a) health these days, (b) age, (c) gender, (d) life satisfaction and (e) the utilization of physician services. The model suggests that older women, those with lower self-rated health, those with lower

life satifaction, and those utilizing pharmacist services within the past six months were less likely to be able to adequately perform the two tasks represented by the self-care indicator.

8. Discussion

Secondary data analysis was carried out with a subset of the MSHA data, that is, adults aged 65 years and older who live in Winnipeg. This study examined the measurement and correlates of self-care with two research questions. Research question #1 examined whether or not the SMI (Snyder et al., 1991) was a reliable and valid measure of the three components of self-care as posited by Orem's model of self-care. The intent was to measure self-care using the SMI matched items from the MSHA dataset and for the purpose of research question #2, to examine the correlates of a resulting self-care scale. While no self-care scale based on the SMI was produced for research question #1, a self-care indicator consisting of two items did emerge. For research question #2, the self-care indicator comprised of the ability to do house work and yard work was examined in relation to conditioning factors as outlined in Orem's theory of self-care. Discussion of the findings generated from the two research questions are presented in this chapter. The discussion for each research question is followed by implications for practice and future research.

8.1 Discussion of the Findings for Research Question # 1: Is the SMI a Reliable and Valid Measure of the Three Components of Self-care as Posited by Orem's Model?

In this study, reliability and validity of the SMI as a measurement tool for self-care was not established. The lack of substansive statistical evidence for supporting validity and reliability of the SMI may be related to limitations inherent in secondary analysis and/or limitations in the tool itself. Four explanations are possible. First, the study uses secondary data and an attempt was made to match items from the SMI with items from the MSHA dataset. This process is imperfect. The SMI measures 39 self-care items based on Orem's model of self-care (26 developmental self-care items, 4 illness self-care items, and 9 health self-care items). A total of 28 MSHA items were matched to 33 SMI items. Only sixteen of the 28 MSHA items were considered for further analysis because 12 MSHA items demonstrated limited variability. Of the 16 SMI items, six were identical to the MSHA items, while the remaining ten SMI items were matched as closely as possible. The matching process for the ten items raises some doubt as to whether or not the MSHA items measured the same items as the SMI. In addition, the

implications of the reduced number of items (from a potential of 39 to 16 items) are difficult to assess.

The second explanation for the lack of validity and reliability of the SMI relates to the characteristics of the sample. The SMI was created to assess self-care for one specific group of elderly. It was developed with a group of frail elderly hospital patients who were awaiting discharge following an acute illness. Some of the SMI items were related to self-care in performing therapeutic treatments such as intravenous management and special clinical diets. In this study, the MSHA sample was limited to well elderly living in the community. It may be that the SMI is not a valid and reliable tool for measuring self-care of community residing well elderly.

The third explanation pertains to the means of data gathering for the assessment of self-care. In its original form, the SMI was an observational tool that was administered by nurses in hospital. Nurses observed and then rated the self-care performance of elderly patients awaiting discharge. In contrast, this study used self-report data from the MSHA. The impact of the variation in the source of data collection, that is, self report versus third person observation, is difficult to

assess. The rating of items in terms of performance could be biased in either direction, that is, by optimistic or pessimistic self-evaluation. In any event, the SMI may not be a valid and reliable tool when its administration differs from the original intention, that is, observation by nurses.

In contrast to the previous three explanations, the fourth explanation addresses whether or not the SMI is valid and reliable even under ideal conditions. The question is, would the SMI demonstrate adequate psychometric properties when used with primary data collected according to the parameters established in the original SMI study? This question cannot be answered definitively at this time.

Given that this study used fewer items as a measure of the SMI, that the sample consisted of community dwelling elderly and the data was based in self-report, was this study a reasonable test of the SMI? If it was a fair test, then the SMI is not valid or reliable and it is not appropriate for widespread use. If it was not a fair test, then future research that investigates the SMI using samples of elderly and items that more closely align with the original work by Snyder et al. (1991) is required.

Even though the SMI did not demonstrate adequate psychometric properties, analyses did generate a self-care indicator consisting of two items, namely the self-

reported ability to do house work and yard work. According to Orem (1991), these items fall under the domain of developmental self-care. Orem's model includes health self-care behaviours and illness self-care behaviours but goes beyond this dichotomy with a third domain, developmental self-care. Developmental self-care is based on activities of daily living and the ability to manage this domain of self-care is affected by changes in health status and physical and cognitive changes associated with old age.

The two MSHA items, ability to do house work and yard work were matched with the SMI items, "range of motion is adequate" (house work), "standing ability is adequate" (house work) and "muscle strength is adequate" (yard work). Analysis indicates that the vast majority (96%) of those who could do yard work could also do house work. Conversely, only 77% of those who could do their house work could also do their yard work. Thus, knowing that individuals from this sample reporting the ability to do yard work provides information on the likelihood of their ability to do house work.

8.2 Implications for Practise and Research Derived fromRresearch Question #1

Implications for practise and research emanate from the emergence of the self-care indicator for house work and yard work. Two major implications are evident.

First, the finding that the vast majority of those who reported ability to do yard work could also do house work, suggests the possibility of using only one of these items as a self-care indicator. A single question: "Can you do your own yard work" provides information on yard work and house work abilities for most of the elderly in the sample. For those who do not have a yard, a related question could be substituted. For example, "if you had a yard, could you do your own yard work"? For both questions, individuals are being asked if they can or could do yard work and not if they actually do this work. Further research is needed to assess the conceptual linkage between house work and yard work abilities and whether or not the relationship demonstrated in this study is widely observable.

Second, the ability to perform both house work and yard work may be associated with a number of physical and cognitive abilities. Physical abilities related to house work and yard work likely include adequate muscle strength,

range of motion, balance and motor coordination. In addition, cognitive abilities related to planning, organizing and orientation are probably prerequisites to carry out house work and yard work. Given these assumptions, it follows that those who can do house work and yard work are highly likely to be able to perform less physically and cognitively demanding self-care tasks, e.g., bathing and grooming.

In terms of research, it would be useful to examine whether or not the ability to do house work and yard work is associated with other self-care abilities and limitations among the elderly in the community. Ability to do house work and yard work has not been systematically examined and such an examination might contribute to the self-care literature and might expand our understanding of the correlates of self-care. From a theoretical perspective, Orem's model and the domain of developmental self-care in relation to the domains of health self-care and illness self-care behaviours seems worthy of further study.

From a practise perspective, a home care assessment format that includes this self-care indicator (in either the two or one item form), might assist in the process of screening. Asking about the ability to do house work and yard work might be a relatively simple, non-intrusive, cost effective method of "flagging" individuals according to relative need. Separating those who are able to do house

work and yard work from those are not able to do these tasks, might result in high versus low need groups. The assumption is that given the physical and cognitive ability prerequisites, those who are able to perform house work and yard work tasks are likely able to transfer these abilities to other self-care tasks. Those who are not able to perform house work and yard work tasks may be at risk and less able to perform other self-care tasks.

This is speculative and requires further study, but if the self-care indicator could "sort" individuals into two categories of need, then professional assessment and intervention could be promptly directed to the high need group. The low need group could be assessed and monitored with a lower priority. Ultimately, the goal of maintaining and enhancing self-care among older adults is to maximize self-care abilities by matching service with self-care ability in a timely fashion. Assessment of self-care among the elderly might be enhanced with the use of the self-care indicator that emerged from this study.

8.3 Discussion of the Findings for Research Question #2: What is the Relationship between Total Self-care as Measured by the SMI and Orem's Conditioning Factors?

Research question #2 in its original form could not be addressed. Instead, the potential correlates of the self-care indicator were examined using Orem's identified conditioning factors. The independent variables examined were age, gender, years of education, monthly income, utilization of physician services in the past six months, utilization of pharmacist services in the past six months, self-rated health, life satisfaction, three health belief indicators (one IHLOC item and two EHLOC items), depression, and three social support items (marital status, the number of respondents living alone and the total size of one's social network).

Logistic regression analysis generated a model consisting of five independent variables. The findings indicate that the self-care indicator (ability to do yard work and house work) is correlated to better self-rated health, younger age, being male, higher life-satisfaction and non-utilization of pharmacist services in the past six months.

Findings on the correlates of self-care from this study are difficult to place in the context of the larger literature on self-care. Much of the theoretical and empirical work on self-care and aging has emphasized illness self-care or health self-care behaviours. The self-care indicator that emerged from this study is neither health nor illness behaviour. The ability to do house work and yard work does not depict health promotion and illness prevention (health self-care behaviour) or the alleviation of symptoms (illness self-care behaviour). Instead, from a conceptual perspective, the self-care indicator falls into what Orem has described as age-related ability to meet human needs, that is, developmental self-care.

Similarly, the self-care indicator (ability to house work and yard work) does not fit with the WHO definition of self-care which focuses on health promotion behaviours and symptom management during illness. The WHO definition was

adopted for this study because its broad scope which included professional consultation as a form of self-care is consistent with Orem's model. However, the WHO definition does not include the developmental dimension of self-care. While Orem developed a model that included health, illness and developmental self-care, she did not provide a succinct definition of self-care.

However, Orem does indicate that the health, illness and developmental dimensions of self-care are interrelated and some behaviours fall into more than one dimension. This makes sense intuitively and similarly, investigations that tend to dichotomize health self-care and illness self-care behaviours, also indicate that some behaviours fit into both categories. For example, limiting salt intake can be a health self-care behaviour and an illness self-care behaviour (Lin et al., 1998). To the extent that interrelationships and overlap occur among dimensions, a cautious comparison of the findings from this study with the larger literature is possible.

The five significant correlates of the self-care indicator are better self-rated health, younger age, being male, greater life satisfaction and non-utilization of pharmacist services within the past 6 months. These correlates are discussed in the context of the broader literature on self-care.

First, in terms of self-rated health, those who reported being able to do house

work and yard work were more likely to rate their health as "excellent" or "good" than those who were not able to do house work and yard work. This seems logical in view of the physical abilities likely needed to carry out house work and yard work. Individuals who are capable of these tasks have reason to rate their health as "excellent" or "good". The literature examining health self-care behaviours indicates that those who rate their health as good are likely to practise healthy behaviours. Stoller and Pollow (1994) found that health self-care behaviours aimed at reducing tension and exercising regularly were associated with better self-rated health. Similarly, better self-rated health was associated with eating a nutritious diet (Nicholas, 1993). Taken together, the relationships among self-rated health and developmental self-care items (ability to do house work and yard work) and health self-care behaviour (promoting a healthy lifestyle) are congruent. As might be anticipated, self-rated health is inversely related to increased symptom management in illness self-care behaviour. People with poorer self-rated health were more likely to visit physicians more frequently (Strain, 1991) and were more likely to self-treat their symptoms than do nothing (Chappell et al, 1988), and to self-medicate more (Segall & Goldstein, 1986).

In this study, younger age was associated with doing house work and yard

work. Similarly, Yu (1995) reported that older individuals experience reduced functional ability in managing their ADL. Other studies on illness self-care behaviours, indicate that younger cardiac and transplant patients manage symptoms more aggressively in terms of exercise, dietary restriction and infection control (Carroll, 1995; Wang et al., 1998). In terms of health self-care behaviours, older individuals are less likely to exercise (Schuster et al., 1995), quit smoking, visit dentists and comply with seat belt regulations (Dean, 1991). On the whole, age is associated with fewer health self-care behaviours and less rigorous symptom management in illness. These findings are not inconsistent with the results from this study which found an inverse relationship between age and the ability to do house work and yard work.

Results from this study indicated that being male was associated with the ability to do house work and and yard work. This is not surprising given the probable gender bias of the indicator. Men are more likely to report that they are able to do yard work, and the house work item asks about ability and not about actual performance. Women may be less likely to do yard work even though they are capable in terms of their physical ability. The MSHA item asks, "Can you do yard work and/or gardening?" The outdoor work of

women is likely gardening rather than yard work for this cohort of older women. However, by asking about both yard work and gardening in the same question, women may have been inclined to take both tasks into account in making their response rather than separating the two tasks. Yard work and gardening may be perceived by men as being closely linked outdoor tasks. These speculations about the weak associaton between gender and house/ yard work await further research.

Research studies tend to report fairly consistent gender differences in functional ability and self-care behaviours. Compared with women, older men tend to report greater functional ability (Carroll, 1995; Dean, 1991; Penning & Strain, 1994). However, men perform fewer illness self-care behaviours compared with women in terms of physician visits, self-medication and self-treatment (Musil, 1998; Verbrugge, 1985; Lukkarinen, et al., 1998). Men are less likely to practice health self-care behaviours such as self-examination (Chappell, et al., 1988), eating a healthy diet and exercising (Dean 1991).

For this study, those who could do house work and yard work tended to report higher life satisfaction. The link between functional ability and life satisfaction has been well-documented in the literature (Fenton et al., 1994; Ghusn et al., 1996). Furthermore, the findings from this study are consistent with the

illness self-care and health self-care literature. Individuals who did more to manage their illness symptoms (Dill et al., 1995) and who practised more health promotion behaviours (Craft et al., 1998) reported higher life satisfaction.

For this study, utilization of pharmacist services in the past six months was significantly associated with the self-care indicator. Older adults who had not used pharmacist services within the past six months were more likely to be able to do house work and yard work. This makes intuitive sense. The ability to do house work and yard work implies greater functional ability and if so, this is consistent with non-utilization of pharmacist services in the past six months. Previous self-care research has overlooked the role of the pharmacist and in terms of professional consultation, has focused on physician services. Comparison of findings on pharmacist utilization with other self-care research is not possible. Utilization of physician services in the past six months was not a significant correlate for this study. Further research on the ability to do house work and yard work and the utilization of physician services may shed light on the underlying reasons for this lack of association.

Along with utilization of physician services, the following conditioning factors were not significant correlates: education, health beliefs (three measures),

depression and social support (three measures). It is not surprising that education (in years) and the three health belief items (locus of control) were not significant correlates of the self-care indicator in view of non-significant bivariate correlations. Overall, previous studies show that education has not been strongly correlated with self-care (Jirovec & Kasno, 1993; Kart and Engler, 1994). An exception has been work reported on adherence to dietary restrictions and the use of home remedies. Rakowski et al. (1997) reported a positive relationship between education and adhering to dietary restrictions, while Segall and Goldstein (1986) reported an inverse relationship between the use of home remedies and education.

Of the three health belief items, two items emphasize the role of external control on individual health and one item focuses on internal control of health. In the literature, few self-care studies have examined health beliefs (locus of control) and these studies generally do not report strong relationships (Dean, 1991). One health self-care study indicated a significant relationship between internal locus of control and dietary practices (Stoller & Pollow, 1994). A second study on illness self-care indicated a significant relationship between external locus of control and professional utilization (Kart & Engler, 1994). Studies examining locus of control and developmental self-care tasks have not been reported in the literature.

Of greater interest here, are depression and social support because these factors were significantly correlated with the self-care indicator at the bivariate level of analysis. Previous research has demonstrated an inverse association between depression and self-care (Dill et al., 1994; Fenton et al., 1984; Ghusn et al., 1996). Williamson and Schulz (1992) reported that depression was a significant correlate of three specific health self-care behaviours (eating a nutritious meal, shopping, and participating in recreation). Depression has also been associated inversely with functional ability (Yu, 1995). Although the literature suggests depression as a significant correlate of self-care, this was not the case for this study. It may be that while depression is correlated with the performance of personal care (eating) and socially-based self-care behaviours (shopping and recreation), it is not associated with self-care tasks that are neither personal care nor social, such as the ability to do house work and yard work. This significance of depression may be related to the type of self-care task or some other aspect. The relationship between the ability to do house work and yard work and depression awaits further study.

Given the primacy of social support in Orem's model and the literature that identifies informal support as an important factor in promoting illness and health

self-care (Ory & DeFriese, 1999), it was anticipated that the embedded support measures would be significant correlates. Instead, this study found that marital status, living arrangement and the size of the social support network (embedded social support) were not significant correlates of the self-care indicator. The ability to do house work and yard work, unlike illness and health self-care behaviours, may be less dependent on embedded social support. The ability to do house work and yard work may not be contingent on having a spouse, living with someone or having a large network.

The individualistic nature of the findings in this study, reflects the fact that elderly individuals are more than simple functions of a number of select variables. The mechanism for synthesizing such complex inter-relations is difficult to construct at best.

8.4 Implications for Practise and Research Derived from Research Question #2

For research question #2, five variables were significantly associated with the self-care indicator. Elderly persons who reported being able to do house work and yard work were being younger, being male, reporting having better health,

experiencing greater life satisfaction and not utilizing pharmacist services within the past six months. These correlates assist in providing a profile of community dwelling elderly who report being able to do house work and yard work. Such information may be useful for health care professionals in assessing potential needs.

Of particular interest, is the significant correlation between being able to do house work and yard work and not utilizing pharmacist services within the past six months. The role of the pharmacist has not received attention in self-care research. Future research might begin to examine the role of the pharmacist in the self-care behaviours of the elderly . Future investigations from an interdisciplinary perspective might examine the pharmacist as a resource to community health nurses and other professionals in the community. Pharmacists may be in a position to refer elderly clients to other health care professionals in order to support their self-care. Future research could also examine ways in which other professional health care providers in the community might partner with pharmacists to provide education and assistance to promote self-care. Findings from such research have implications in terms of interdisciplinary practice.

8.5. Summary

In conclusion, based on findings from research question #1, reliability and validity of the SMI were not established. This may be due to the limitations inherent in secondary analysis and/or limitations in the tool itself. Although the SMI did not demonstrate adequate psychometric properties, analysis did generate an indicator consisting of two self-care developmental items, that is the self-reported ability to do house work and yard work.

In research question # 2, correlates of the self-care indicator were examined using a logistic regression model. The model indicated that the ability to do house work and yard work was associated with being younger and male, having better self-rated health, experiencing greater life satisfaction and not utilizing pharmacist services in the past six months. Collectively, these five variables were not greatly predictive. It may be that the elderly are too individualistic to model self-care behavior patterns.

Implications for practise and future research emanating from the findings have been discussed. Major implications involve the further study and potential use of the self-care indicator and the role of the pharmacist in self-care behaviours of the elderly.

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APPENDIX A

Name (code) _____

INVENTORY OF SELF-MANAGEMENT ABILITIES[a]

DEVELOPMENTAL DEMANDS

Assessment	Indicators	Nursing Diagnoses
I. MOTOR		
1. Patient's range of motion is adequate. ___ Yes ___ No	___ Moves all limbs. (Have patient do.)	Self-Care deficits: feeding bathroom/hygiene grooming/dressing toileting
2. Patient's muscle strength is sufficient. ___ Yes ___ No	___ Moves all limbs against resistance. (Place hand on limb and apply pressure; ask to lift limb.)	
3. Patient's sitting balance is adequate. ___ Yes ___ No	___ Sits in an armless chair or toilet. (Have patient sit upright at edge of bed)	
4. Patient's standing ability is adequate. ___ Yes ___ No	___ Stands by self or with assistive devices for one minute. (Have patient stand)	
5. Patient's ability to walk is adequate. ___ Yes ___ No	___ Walks 20 feet by self or with devices.	
6. Patient's ability to move self from bed to chair is adequate. ___ Yes ___ No	___ Transfers from bed to chair by self. (Have patient do.)	
7. Patient's fine motor ability is adequate. ___ Yes ___ No	___ Snaps or buttons clothes. (Have do.) ___ Picks up pencil. (Have do.)	
II. SENSORY PERCEPTION		
A. Patient's vision with or without glasses is adequate. ___ Yes ___ No	___ Counts examiner's fingers at 6 foot distance. (Stand 6 feet from patient. (Have do.)	Sensory-perceptual alteration: visual auditory tactile

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DEVELOPMENTAL L .NDS (cont.)

Assessment	Indicators	Nursing Diagnoses
9. Patient's hearing is adequate. ___ Yes ___ No	___ Responds to questions asked at normal volume. (Ask what weather is like; accuracy not important.)	Potential for injury Impairment of skin integrity: potential Alteration in tissue perfusion peripheral Impaired health maintenance
10. Patient's sensation is adequate. ___ Yes ___ No	___ Identifies touch in all extremities. (Have close eyes, move broad side of pencil up and down each limb; may repeat twice; ask when h/she can feel).	
III. COGNITION		
11. Patient's orientation is adequate. ___ Yes ___ No	___ Knows time (month and year). (Ask month & year). ___ Knows place, name of hospital. (Ask hospital /floor on.)	Alteration in thought processe Potential for injury Altered role performance Alteration in family processes Fear Deceased cardiac output Knowledge deficit Impaired communication Sensory-perceptual alterations Impaired health maintenance
12. Patient's short term memory is adequate. ___ Yes ___ No	Repeats the following words: "Ball, flag, and tree." (May repeat words 3x) ___ Ball ___ Flag ___ Tree Inform patient he/she will be asked to name these items later.	
13. Patient's ability to follow direction is adequate: ___ Yes ___ No	___ Direct patient to: Take paper in right hand, fold in half, hand to examiner; (If patient is hemiparetic or left-handed, may use right hand.)	
14. Patients attention ability is adequate. ___ Yes ___ No	___ Spells "WORLD" backward.	
15. Patient's recall is adequate. ___ Yes ___ No	Recalls items in #12 after five minutes. ___ Ball ___ Flag ___ Tree (Ask above words.)	

(Verify remaining information from relative, staff, or chart if deficits in Cognitive Section were found.)

IV. PSYCHOSOCIAL		
16. Patient's ability to communicate is adequate. ___ Yes ___ No	___ Makes self understood by speaking/ writing/gesturing. (Ask, Where is the television set?" - provide paper if needed.)	Impaired communication: Verbal/social isolation Impaired health maintenance

DEVELOPMENTAL DEMANDS (cont.)

Assessment	Indicators	Nursing Diagnoses
17. Patient expresses interest in self care. ___ Yes ___ No	___ Participates in cares in the hospital. (i.e. Patient helps with ADLs/ activities.) Expresses interest in caring for self at home. (Ask if interested.)	Impaired health maintenance
18. Patient's ability to monitor/ control use of alcohol or other substances is adequate. ___ Yes ___ No	___ Drug free. (Ask re' use of marijuana or other street drugs.) ___ Notes taking more/for less of alcohol/chemical effect: ___ Admits to using alcohol/chemical for medicinal reason pain/anxiety.) ___ Admits others have felt he/she drinks/uses substances too much. ___ Looks forward to drinking/using substances. ___ States consumes more alcohol/ substances than intended. ___ States has been through treatment.	Ineffective coping Disturbances in self-concept
19. Patient's ability to cope is adequate. ___ Yes ___ No	___ Identifies coping strategies that allowed him/her to successfully deal with worries/concerns in past. (Ask how he/she has handled a stressful situation in past.	Ineffective coping Anxiety
20. Patient's emotional state does not interfere with self-management. ___ Yes ___ No	___ Reports no disruptive emotional state. (Ask if feeling any emotions now. [Circle those reported]). Anxious, angry, depressed, guilty, agitated, sad, fatigued, uneasy. ___ Does not appear to be in a disruptive emotional state. (Circle those observed.) Anxiety, anger, hostility, agitation, sad, withdrawn, denial, disorganized thought processes, unable to make decisions.	

DEVELOPMENTAL DEMANDS (cont.)

Assessment	Indicators	Nursing Diagnoses
21. Patient's support system for carrying out self care activities is adequate. ___ Yes ___ No	___ States has person(s) available to help. ___ States has discussed assistance needed. ___ Gives name/location of these persons. ___ Discusses expectations of caregiver.	Ineffective family coping Alteration in family processes Impaired health maintenance Social isolation
22. Patients has adequate sources of emotional support. ___ Yes ___ No	___ States has someone with whom he/she can discuss problems/feelings.	
23. Patient's home environment is adequate. ___ Yes ___ No	___ States has residence to go to.	Potential for injury Impaired home maintenance
24. Patient's financial resources post-discharge are adequate. ___ Yes ___ No	___ States money available for food/clothing/housing. ___ States not worried about future financial problems (ask patient if worried.	Impaired health maintenance Social isolation
25. Patients financial resources are sufficient for health care services/medications/supplies. ___ Yes ___ No	___ States money available to cover needs.	
26. Patient's access to transportation is adequate. ___ Yes ___ No	___ States transportation available for medical appointments/groceries. (Ask how he/she will travel.)	
	THERAPEUTIC DEMANDS	
27. Patient's knowledge of medications is adequate. ___ Yes ___ No ___ NA	___ States names/purpose of medication/over the counter drugs taken prior to hospitalization.	Knowledge deficit Impaired health maintenance Alteration in nutrition Impaired skin integrity Alteration in fluid balance Potential for injury
28. Patient's ability to take medication is adequate. ___ Yes ___ No ___ NA	___ Describes method for remembering to take meds at home (i.e., pill box, with meals). ___ States how to obtain refills. ___ States who to call if side effects occur.	

Assessment	Indicators	Nursing Diagnoses
7. Patient's ability to perform treatments or special therapies (i.e., tube feeding, respiratory therapy, colostomy care, IV therapies blood sugar monitoring, exercise) is adequate. ____ Yes ____ No ____ NA	____ Identifies steps of therapy. (Can use written cues.) ____ Identifies signs of success of therapy. ("How will you know if things are ok?) ____ Identifies potential problems of the therapy. ("What are problems that may happen with _____?") ____ Appropriate equipment/supplies available. ____ Knows who to call for problems. ____ Wants to perform therapy.	
8. Patient's knowledge of a special diet is adequate. ____ Yes ____ No ____ NA	____ States purpose of diet. ____ Identifies foods not allowed. (Can use written cues.)	
	UNIVERSAL DEMANDS	
1. Patient's pulmonary function is adequate. ____ Yes ____ No	____ Performs ADL's without SOB. ____ Walks 20 feet without SOB. (Can use data from #4)	Ineffective breathing pattern Activity intolerance Fatigue Impaired gas exchange Impaired mobility Alteration in nutrition Impaired health maintenance Impaired home maintenance management
2. Patient is able to take care of nutritional needs at home. ____ Yes ____ No	____ States can obtain foods. ____ States can prepare foods. ____ Eats appropriately from all food groups. ____ Feeds self if food/fluids available.	
3. Patient's urinary function is adequate. ____ Yes ____ No	____ Free of dysuria/frequency/urgency (circle if present). ____ Adequate output of urine.	Alteration in patterns of urinary elimination Self-care deficit: toileting
4. Patient is continent of urine. ____ Yes ____ No	____ Does not wet bed. ____ Keeps bed/clothing dry. (Ask, if does.)	
5. Patient's bowel function is adequate. ____ Yes ____ No	____ Free of diarrhea/constipation.	Alteration in bowel elimination Self-care deficit: toileting
6. Patient is continent of stool. ____ Yes ____ No	____ Keeps bed & clothing clean.	

Assessment	Indicators	Nursing Diagnoses
37. Patient's level of activity is adequate. ____ Yes ____ No	____ States daily schedule includes physical activity/rest. ("How do you spend your day?") ____ Has stamina.	Activity intolerance Diversional activity deficit Fatigue, Disuse syndrome Social isolation Potential for injury
38. Patient's skill for self preservation is adequate. ____ Yes ____ No	____ Can physically remove self from danger. ____ Recognizes dangerous situations. (Ask what to do if a fire began in in the house.) ____ Can call for help (e.g., dial 911; "What number to dial in emergency?")	Altered thought processes Knowledge deficit Impaired health maintenance
39. Patient's environment is safe for self care: ____ Yes ____ No	Smoke detector ____ Adequate lighting ____ Locks on doors ____ Stair rails (if appropriate) (Ask if residence has above.	Potential for injury Impaired home maintenance management

MS:bjm:Hdos:S2:s12:2/25/88
revised 5/21/91 (brr)
revised 5/31/91 (brr)

APPENDIX B

MANITOBA STUDY OF HEALTH AND AGING
SCREENING INTERVIEW

ID#_____

Time of Interview: ___:___ (HR MIN)

Date of Interview: ___ / ___ / ___ (DD MM YY)

Name of Interviewer: _____ INTERVIEWER ID# ___ ___ ___

P RECORD TYPE OF HOUSING ARRANGEMENT:

1 Detached
2 Semi-detached
3 Apartment (no more than 4 stories)
4 Highrise
5 Guest/Boarding Home/Hostel
6 Other (specify) _____
8 Don't know
9 Missing

P SENIORS-ONLY HOUSING

1 Yes 2 No

* RECORD SEX OF RESPONDENT:

1 Male 2 Female

* RACE

3 White 2 Black 1 Other (SPECIFY _____)
8 DON'T KNOW

(ASK THE PERSON IF THEY USE GLASSES AND/OR A HEARING AID AND IF SO, COULD THEY PLEASE WEAR THEM. BE SURE THEY ARE IN WORKING ORDER, IF THEY ARE NOT YOU WILL NEED TO RESCHEDULE THE INTERVIEW)

P. Vision and Hearing

YES	N/A	
1	9	Hearing Aid
1	9	Deaf (DISCONTINUE - THIS SHOULD HAVE BEEN ASCERTAINED WHEN MAKING THE APPOINTMENT OVER THE PHONE)
1	9	Eyeglasses
1	9	Blind (CONTINUE, CERTAIN QUESTIONS WILL NOT BE APPLICABLE)

OPENING QUESTIONS

*1a. What languages do you speak?

CIRCLE # FOR ALL THOSE MENTIONED AND LIST ALL OTHERS THEY MENTION

1 English	5 Spanish	9 Japanese
2 French	6 Icelandic	10 Danish
3 Italian	7 Ukrainian	11 Arabic
4 German	8 Chinese	12 Urdu/Hindi
		13 Others(LIST ALL) _____ _____
		_____ _____
		_____ _____

77 REFUSED

* b. Do you read and write in English?

Read: 1 Yes 2 No
Write: 1 Yes 2 No

IF THEY SPEAK ONE LANGUAGE ONLY -> QUESTION 4

*2. What languages do you feel most comfortable speaking?

1. _____
2. _____
3. _____

*3a. What language did you first learn to speak as a child?

1 English	5 Spanish	9 Japanese
2 French	6 Icelandic	10 Danish
3 Italian	7 Ukrainian	11 Arabic
4 German	8 Chinese	12 Urdu/Hindi
		13 Other _____

IF ENGLISH -> QUESTION 4
OTHERWISE -> ASK PART 3b

* b. How old were you when you learned English?

___ ___ year

IF < 18 YEARS -> ASK PART 3c

* c. How many years of your schooling were in English?

___ ___ years

*4. What is your ethnic or cultural background?
[IF THEY DON'T UNDERSTAND, SAY: FOR EXAMPLE,, ARE YOU FRENCH, ENGLISH, JEWISH, UKRAINIAN ...]

1. _____ (___ ___)

2. _____ (___ ___)

3. _____ (___ ___)

4. _____ (___ ___)

5. Have you received any formal education in an ethnic (not necessarily religious) school?

1	No	7	Refused
		8	Don't Know
2	Yes	B	Not Apply

6. Do you belong to any ethnic organizations, associations or institutions?

1	No	7	Refused
		8	Don't Know
2	Yes	B	Not Apply

7. Do you read ethnic newspapers or listen to programs on the radio or TV?

1	No	7	Refused
		8	Don't Know
2	Yes	B	Not Apply

*8a. How many years of education did you complete?

___ ___ Years

77 Refused
88 Don't Know

b. So that means that you .... (completed primary school, completed part of high school, all of high school, some university)? (SELECT A SUITABLE CATEGORY)

1	No formal schooling	8	Some university
2	Some primary school	9	Bachelor's degree
3	Finished primary school	10	Master's degree
4	Some secondary or high school	11	PhD
5	Completed secondary or high school	12	Other
6	Some community or technical college, CEGEP, or nursing program	88	DK
7	Completed community college, technical college, CEGEP, or nursing program		

*9. **What kind of work did you do for most of your life? (PROBE)**

0000 Never Worked --> SKIP TO Q. 11

Longest job: _____ (__ __ __ __)

Other jobs: 1. _____ (__ __ __ __)

2. _____ (__ __ __ __)

3. _____ (__ __ __ __)

4. _____ (__ __ __ __)

*10. **Are you working (for pay) now?**

2 NO -> When did you last work? Year 19 __ __

97 never worked for pay
98 DK

1 YES -> Do you work full time or part time?

1 Yes, casual	7 Skipped
2 Yes, part-time	8 Don't Know
3 Yes, full-time	

What is your job title? _____ (__ __)

*11. **Are you single, married, widowed, divorced, or separated?**

0 Never Married -> [GO TO Q.14]
1 Married
2 Common law marriage
3 Divorced -> [GO TO Q.14]
4 Separated ->[GO TO Q.14]
5 Widowed

12. **FOR THOSE MARRIED OR WIDOWED**

What kind of work did your spouse do for most of his/her life? (PROBE)

0000 Never Worked

Longest job: _____ (__ __ __ __)

Other jobs: 1. _____ (__ __ __ __)

2. _____ (__ __ __ __)

3. _____ (__ __ __ __)

4. _____ (__ __ __ __)

13. **FOR THOSE CURRENTLY MARRIED**

Is your spouse working (for pay) now?

2 NO -> **When did he/she last work?** Year 19 ___ ___ --> [GO TO Q.14]

97 never worked for pay
98 DK

1 YES -> **Does he/she work full time or part time?**

1 Yes, casual
2 Yes, part-time
3 Yes, full-time

7 Skipped
8 Don't Know

What is his/her job title? _____ (__ __)

*14. How is your eyesight (with glasses or contacts if you wear them)? Excellent, good, fair, poor, or are you completely unable to see?

1 Excellent 2 Good 3 Fair 4 Poor 5 Unable to see

*15. How is your hearing (with a hearing aid if you wear one)? Excellent, good, fair, or poor?

1 Excellent 2 Good 3 Fair 4 Poor 5 Unable to hear

INTERVIEWER, RECALL EARLIER QUESTION ABOUT MARITAL STATUS AND ASK THE FOLLOWING APPROPRIATELY)

*16. Do you live here alone?

1 YES --> [GO TO Q. 17]

2 NO --> How many people live here with you? __ __ [RECORD NUMBER]

Please tell me the names of all the people who live here.
(FOR EACH NAME, SAY:) How are they related to you?

	Name	Relationship	
1.	_____	_____	(___ ___)
2.	_____	_____	(___ ___)
3.	_____	_____	(___ ___)
4.	_____	_____	(___ ___)
5.	_____	_____	(___ ___)
6.	_____	_____	(___ ___)
7.	_____	_____	(___ ___)

*17.a) Do you have any children (other children)?

2 NO --> [GO TO Q. 17b]
1 YES --> Could you please give me their first names? [LIVING CHILDREN ONLY. THIS INCLUDES STEPCHILDREN]

_____, _____, _____, _____,
_____, _____, _____, _____,
_____, _____, _____, _____,
_____, _____, _____, _____

b) So, how many (living) children do you have altogether (including those living with you)?

___ ___ [RECORD NUMBER]

*18. Who is the best person to call if we can't get in touch with you? How is this person related to you? _____ (__ __)

INTERVIEWER: WRITE THE NAME, ADDRESS AND RELATIONSHIP ON THE INTERVIEWER SUMMARY SHEET AT THE END OF THE QUESTIONNAIRE, THEN RETURN TO THE NEXT QUESTION BELOW

*19. Most people have one or more individuals they can count on for help in time of need (ie. helps and supports you). Can you think of someone like this in your life?

2 No -> [GO TO Q.23]
1 Yes -> How many such persons? Number of helpers _____ [RECORD NUMBER]

Ask for names and relationship of helpers. (INDICATE IF PROBE ie. for a spouse not mentioned)

	Name	Relationship	
1.	_____	_____	(___ ___)
2.	_____	_____	(___ ___)
3.	_____	_____	(___ ___)
4.	_____	_____	(___ ___)
5.	_____	_____	(___ ___)

*20. Thinking now about the main such person, who helps and supports you, how are they related to you?

01 Spouse
02 Son
03 Daughter
04 Parent
05 Sibling
06 Friend
07 Neighbour
08 Formal Service Provider (specify) _____ (__ __)
09 Other _____ (__ __)

Comments:

21. How close or far away does this person live?

INTERVIEWER: PLEASE DON'T ASK THIS QUESTION IF YOU ALREADY KNOW THAT THEY LIVE IN THE SAME HOUSEHOLD FROM QUESTION 16, JUST CIRCLE 1. (SHOW CARD)

1 Same household
2 Within walking distance
3 Within half an hour by car
4 Within two hours by car
5 Within a day by car
6 More than a day by car
8 DK

*22. Of all the people in your life, how close would you say you are to this person? (SHOW CARD)

1 Closer than to any other
2 As close as to any other
3 Only 1 or 2 others I am closer to
4 Only 3 or 4 others I am closer to
5 5 or more others I am closer to

*23. If you were injured and could not leave your home, whom, if anyone, would you call for help? How long would it be before help arrived?

	Name	Relationship	Time Delay (Minutes)
1.	_____	_____(__ __)	__ __ __ (mins)
2.	_____	_____(__ __)	__ __ __ (mins)
3.	_____	_____(__ __)	__ __ __ (mins)
4.	_____	_____(__ __)	__ __ __ (mins)
5.	_____	_____(__ __)	__ __ __ (mins)

*24. Imagine you were sick for a long time and not able to get out of your house. Among your family, friends, and neighbours, how many people would be available to help you with day-to-day tasks, such as getting groceries for you?

___ ___ [RECORD NUMBER]

How are they related to you?

	Name	Relationship	
1.	_____	_____	(___ ___)
2.	_____	_____	(___ ___)
3.	_____	_____	(___ ___)
4.	_____	_____	(___ ___)
5.	_____	_____	(___ ___)

TO THE INTERVIEWER: REVIEW THE ANSWERS TO QUESTIONS 19 THROUGH 24 AND SEE WHETHER THERE IS SOMEONE WHO APPEARS TO BE THE MAIN CAREGIVER. VERIFY THIS WITH THE RESPONDENT BY ASKING ...

CG "So, am I right in thinking that _____ is the person most likely to care for you?"

	Name	Relationship	
1.	_____	_____	(___ ___)

THEN (IF YOU DO NOT ALREADY KNOW THE ADDRESS) ASK IF YOU CAN HAVE THIS PERSON'S ADDRESS. WRITE THE NAME AND ADDRESS ON THE INTERVIEWER SUMMARY SHEET AT THE END OF THIS QUESTIONNAIRE, THEN CONTINUE WITH THE INTERVIEW.

Comments:

25. Do you receive emotional support from anyone or not? That is, do you have someone who you confide in, talk to about yourself, your concerns, etc.?

1 No --> [GO TO Q. 27]
2 Yes

26. [IF YES TO Q. 25] From whom? (SPECIFY RELATIONSHIP) (INDICATE IF PROBE USED)

	Name	Relationship	
1.	_____	_____	(___ ___)
2.	_____	_____	(___ ___)
3.	_____	_____	(___ ___)

So, how many people in total would you say you receive emotional support from?

___ ___ [RECORD NUMBER]

27.a) Who visits you or provides companionship most often? (INDICATE IF PROBE USED)

	Name	Relationship	
1.	_____	_____	(___ ___)
2.	_____	_____	(___ ___)
3.	_____	_____	(___ ___)

b) So, how many people in total would you say visit you or provide companionship?

___ ___ [RECORD NUMBER]

*28a. Are you the main person providing help for someone else at the present time?

1 No --> [GO TO Q. 29]
2 Yes

b. (IF YES) For whom? (SPECIFY RELATIONSHIP)

	Name	Relationship	
1.	_____	_____	(___ ___)
2.	_____	_____	(___ ___)
3.	_____	_____	(___ ___)

So, how many people are you providing help for?

___ ___ [RECORD NUMBER]

ADL QUESTIONS

Now, I would like to ask you a few questions about activities of daily living, things that we all need to do as a part of our daily lives. I would like to know if, today, you can do these activities without any help, or if you need some help to do them, or if you can't do them at all. Please tell me about your situation today when answering these questions. (SHOW CARD)

FOR EACH ITEM, SHOW THE CUE CARD AND ASK THEM TO SELECT THE BEST ANSWER. IF THE RESPONDENT HAS DIFFICULTY IN SELECTING A RESPONSE CATEGORY, YOU CAN READ THE EXAMPLES IN PARENTHESES BELOW EACH OPTION. USE THESE ONLY WHEN HELP IS REQUIRED, HOWEVER: DO NOT READ THEM ROUTINELY

IF THE RESPONDENT SAYS THEY CAN DO IT "WITH SOME HELP" PROBE AS TO WHETHER THAT HELP WOULD BE FROM A DEVICE, A PERSON OR BOTH. NOTE: THAT THE USE OF A DEVICE, PERSON OR BOTH WILL APPLY TO SOME ACTIVITIES MORE THAN TO OTHERS. ONLY PROBE FOR THOSE THAT APPLY. WRITE DOWN THEIR RESPONSE, IF IT IS UNCLEAR.

*29a. Can you eat ...

1	2	3	4	5
without any help	with some help from a device ONLY	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* b. Can you dress and undress yourself

1	2	3	4	5
without any help (pick out clothes, dress, undress)	with some help from a device ONLY (zipper pulls)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* c. Can you take care of your own appearance, for example, combing your hair and (for men) shaving

1	2	3	4	5
without any help	with some help from a device ONLY (extenders, long shoe horn)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

(ADL cont'd)

* d. Can you walk

1	2	3	4	5
without any help (except a cane)	with some help from a device ONLY (walker, crutches or a chair)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

IF ANSWER WITHOUT ANY HELP OR WITH SOME HELP]
dd. Do you walk out of doors (Assisted or Unassisted)

1 1 mile or more
2 1/4 mile
3 100 yards
4 10 yards

e. Can you get about the house

1	2	3	4	5
without any help	with some help from a device ONLY (walker, crutches or a chair)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

f. Can you go up and down stairs

1	2	3	4	5
without any help	with some help from a device ONLY (handrails, walker,chairlift)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* g. Can you get in and out of bed

1	2	3	4	5
without any help	with some help from a device ONLY (any type lift)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it (someone lifts you)

ADL (cont'd)

* h. Can you take a bath or shower

1	2	3	4	5
without any help	with some help from a device ONLY (shower seat, hand held shower)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* i. Can you go to the bathroom, commode (or outhouse)

1	2	3	4	5
without any help	with some help from a device ONLY (raised toilet seat, walker)	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* j. Can you use the telephone

1	2	3	4	5
without any help (look up numbers and dial)	with some help from a device ONLY (hearing device, special phone, CAN dial operator in emergency)	with some help using a person ONLY (help getting numbers, dialing, can dial operator in an emergency)	with some help from BOTH a person and a device	unable to do it

* k. Can you get to places out of walking distance

1	2	3	4	5
without any help (can travel alone on bus, taxi; drives car)	with some help from a device ONLY (motorized scooter)	with some help using a person ONLY (need someone to go with you)	with some help from BOTH a person and a device (Handi-Transit)	unable to do it (need special arrange-ments)

l. Can you go out of doors in good weather

1	2	3	4	5
without any help	with some help from a device ONLY	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

ADL (cont'd)

m. **Can you go out of doors in any weather**

1	2	3	4	5
without any help	with some help from a device ONLY	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* n. **Can you go shopping for your groceries or clothes (assuming they have transportation**

1	2	3	4	5
without any help (take care of all shopping)	with some help from a device ONLY	with some help using a person ONLY (need someone to go with you on all trips)	with some help from BOTH a person and a device	unable to do it

* o. **Can you prepare your own meals**

1	2	3	4	5
without any help (plan and cook full meals)	with some help from a device ONLY	with some help using a person ONLY (not full meals)	with some help from BOTH a person and a device	unable to do it

* p. **Can you do your housework (eg. scrub floors, vacuum, windows & walls)**

1	2	3	4	5
without any help (scrub floors etc.)	with some help from a device ONLY	with some help using a person ONLY (can do light but not heavy work)	with some help from BOTH a person and a device	unable to do it

q. **Can you do light housework (dusting, dishes, etc.)**

1	2	3	4	5
without any help	with some help from a device ONLY	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

ADL (cont'd)

r. **Can you do your yardwork and/or gardening**

1	2	3	4	5
without any help	with some help from a device ONLY	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

* s. **Can you take your own medicine**

1	2	3	4	5
without any help (in the right doses at the right time)	with some help from a device ONLY (pill counter)	with some help using a person ONLY (someone prepares it and reminds you to take it)	with some help from BOTH a person and a device	unable to do it

* t. **Can you handle your own money** (THIS QUESTION REFERS TO DAY-TO-DAY HANDLING)

1	2	3	4	5
without any help (write checks, pay bills, etc.)	with some help from a device ONLY	with some help using a person ONLY (can manage day-to-day buying but need help with check book and paying bills)	with some help from BOTH a person and a device	unable to do it

u. **Can you handle planning your long-term finances (ie. investments, banking)**

1	2	3	4	5
without any help	with some help from a device ONLY	with some help using a person ONLY	with some help from BOTH a person and a device	unable to do it

Now I would like to ask about your income and expenses. What you tell me is confidential information.

> IF NECESSARY, EXPLAIN THAT THE QUESTIONNAIRE IS NOT MENTIONING HIS/HER AME AND THAT THE INFORMATION WILL BE USED STATISTICALLY AS WE WANT TO KNOW WHAT INCOMES OLDER PEOPLE MAKE IN GENERAL AND NOT THE INCOME OF ANY ONE INDIVIDUAL.)

30. What is the average monthly income for your household, including the old age security payment?

$___ ___ ___ ___.00

9997 REFUSED
9998 DON'T KNOW
9999 MV

31. What is your primary (largest) source of income?

1 Old Age Security (O.A.S.)
2 Old Age Security and government supplement
3 Private pension (i.e. C.P.P.)
4 Interest earnings/dividends
5 Family or spouse
6 Other (SPECIFY) _____
7 DK
9 MV

32. How do you think your income and assets currently satisfy your needs? (READ CATEGORIES)

1 Very well
2 Adequately
3 With some difficulty
4 Not very well
5 Totally inadequate
9 Missing

33. Do you own or rent this dwelling?

1 Own
2 Rent
3 Other (Specify _____)
9 Missing

34. (IF NOT ALREADY KNOWN AND CODED ON PAGE 2)
Is this seniors only housing?

1 Yes
0 No
8 Don't Know
9 Missing

THE 3MS

THE NEXT SET OF QUESTIONS CONCERNS MEMORY. THE QUESTIONS MAY SEEM UNUSUAL, BUT THEY ARE ROUTINE ONES WE ASK OF EVERYONE. SOME OF THE QUESTIONS THAT I ASK YOU WILL BE EASY AND MAY SEEM SILLY; OTHERS MAY BE MORE DIFFICULT, SO DON'T BE SURPRISED IF YOU HAVE TROUBLE WITH SOME OF THEM. I MAY ALSO ASK YOU THE SAME QUESTIONS TWICE. PLEASE ANSWER ALL OF THEM AS BEST YOU CAN.

Blind? Y N ---> see crib sheet for appropriate skips and prorating
Read? Y N ---> see crib sheet for appropriate skips and prorating
Write? Y N ---> see crib sheet for appropriate skips and prorating
Disability? Y N ---> if respondent cannot answer a particular question because of a disability other than the above, circle Y and specify _____.

---

1. _____ (5)

When were you born? ____ / ____ / ____
dd mm yy

Where were you born? _____ / _____
city, town province, country

Year	0	1	Province	0	1
Day	0	1			
Month	0	1	Town	0	1

2. _____ (5)

I am going to say three words for you to remember. Please repeat them after I have said all three: Shoes ...Blue...Modesty...

(Number of presentations : _____)

Shoes	0	1	Blue	0	1	Modesty	0	1

3. _____ (5)

Please count from 1 to 5.

Can _____ Can't _____

Now, please count backwards from 5 to 1.

5 to 1 (write their answer ___ ___ ___ ___ ___)
5 4 3 2 1

Score 0 1 2

Would you please spell "WORLD"?

Can ____ Can't ____

Now please spell "WORLD" backwards?

World backwards (print letters) ___ ___ ___ ___ ___

Score 0 1 2 3 4 5

4. _____ **What three words did I ask you to remember earlier?**
9

Spontaneous recall: shoes	3
Cue: Something to wear	2
Multiple: Shirt, shoes, socks	1
Missed completely	0
Spontaneous recall: blue	3
Cue: A color	2
Multiple: Black, blue, brown	1
Missed	0
Spontaneous recall: modesty	3
Cue: A good personal quality	2
Multi.:Modesty, charity, honesty	1
Missed	0

5. _____ **What is today's date?**
15

Today's date _____ Month _____

Accurate	3	Accurate or within 5 days	2
Missed by 1 or 2 days	2	Missed by one month	1
Missed by 3-5 days	1	Missed by more than 1	0
Missed by more than 5 days	0		

Year _____ Day of Week _____

Accurate	8	Accurate	1
Missed by 1 year	4	Missed	0
Missed by 2-5 years	2		
Missed by more than 5 years	0		

Season _____

Accurate or within 1 month	1
Missed	0

6. _____ **What province are we in?** _____
5 Province 0 2

What country are we in? _____
Country 0 1

What city/town are we in? _____
City or Town 0 1

Are we in a hospital (clinic), or a store , or a home? _____
Hosp., Store, home 0 1

MMSE: What is the address here?

_____ Street_____

7. _____ (5) What do you call this part of the face? and this part? and this part of the body? and this part? and this part of the hand?

Forehead	0	1	Chin	0	1	Shoulder	0	1
Elbow	0	1	Knuckle	0	1			

MMSE: What is this? Pencil Y N
What is this? Watch Y N

8. _____ (10) What animals have four legs? Tell me as many as you can. (30 SECONDS)

(Write animals named) _____,_____,

_____,_____,_____,

_____,_____,_____,

_____,_____

9. _____ (6) In what way are an arm and a leg alike? (Write answer)

Limbs, extremities 2
Body parts, bend, move, joint 1
Very Weak similarity or no similarity 0

In what way are laughing and crying alike?

Feeling, emotion 2
Expressions, sounds, relieve tension 1
Very weak similarity or no similarity 0

In what way are eating and sleeping alike?

Necessary bodily functions 2
Bodily functions, relaxing, good for you 1
Very Weak similarity or no similarity 0

10. _____ (5) Repeat what I say .... "I WOULD LIKE TO GO OUT"

Correct 2 / 1 or 2 missed/wrong words 1 / More than 2 0

Now repeat ... "NO IFS, ANDS, OR BUTS"

No ifs 1 0, ands 1 0, or buts 1 0

11._____ **Please do this. (show card "CLOSE YOUR EYES")**
3

Obeys without prompting	3
Obeys after prompting	2
Reads aloud only	1
None of the above	0

12._____ **I would like to have a sample of your handwriting.**
5 **Write "I WOULD LIKE TO GO OUT". (1 MINUTE)** HANDEDNESS L R

(I) would like to go out. 1 2 3 4 5

MMSE: **Would you please write another sentence for me?**

(transcribe)_____

13._____ **Here is a drawing. Please copy the drawing on the same paper.**
10 **(1 MINUTE)**

	Each Pentagon		Intersection	
5 apporx. equal sides	4	4	4 corners	2
5 unequal (>2:1)sides	3	3	Not 4 corner enclosure	1
Other enclosed figures	2	2	No intersection or no enclosure	0
2 or more lines	1	1		
Less than 2 lines	0	0		

14._____ **Take this paper with your left/right hand, fold it in half, and hand**
3 **it back to me.**

left/right hand	1	0
fold it in half	1	0
hand it back to me	1	0

15._____ **What three words did I ask you to remember earlier?**
9

Spontaneous: Shoes	3
Something to wear	2
Shoes, shirt, socks	1
Missed	0
Spontaneous: Blue	3
A color	2
Black, blue, brown	1
Missed	0
Spontaneous: Modesty	3
A good quality	2
Modesty, charity, honesty	1
Missed	0

--------- TOTAL SCORE 3MS

HEALTH QUESTIONS

*37. I would just like to check on your birthdate again.

When were you born? ___ ___/ ___ ___/ ___ ___
day month year

38. Where were you born?

(IF CANADA, ASK PROVINCE; IF OUTSIDE CANADA, ASK COUNTRY, AND ALWAYS ASK WHAT TOWN OR CITY)

*a. _____/ _____
Town Province (or country)

b. (IF BORN OUTSIDE CANADA) What year did you come to Canada?

_____ (RECORD YEAR)

I would like to ask you some questions about your health.

*39. How would you say your health is these days? Would you say your health is very good, pretty good, not too good, or poor or very poor?

1 Very good 2 Pretty good 3 Not too good 4 Poor 5 Very poor

40. In the <u>past 30 days</u>, have you had any of the following complaints?:

* a. A cough any time during the day or night, which lasted for three weeks or more?

1 Yes 2 No

* b. Feeling tired for weeks at a time for no special reason?

1 Yes 2 No

* c. Nose stuffed up or sneezing, for two weeks or more?

1 Yes 2 No

d. Chronic pain

1 Yes 2 No

41. For your age, would you say, in general your health is: (READ)

(ONLY READ INFORMATION IN BRACKETS IF THEY REQUIRE MORE INFORMATION. WE ARE INTERESTED IN THEIR HEALTH IN GENERAL AND IN THE LONG-TERM, NOT TODAY)

1 Excellent (never prevents activities)
2 Good for your age (rarely prevents activities)
3 Fair for your age (occasionally prevents some activities)
4 Poor for your age (very often prevents activities)
5 Bad for your age (health troubles of infirmity all the time - prevents most activities, or requires confinement to bed)
6 NR

42. Now, I will read a list of health problems that people often have. For each problem that I read, please tell me if you have had it in the <u>past year</u>. You can just answer Yes or No.

INTERVIEWER: IF THE PROBLEM BEGAN LONGER AGO AND SYMPTOMS LASTED INTO THE PAST YEAR, CHECK "YES". DO NOT READ THE EXAMPLES IN PARENTHESES UNLESS THE RESPONDENT ASKS FOR CLARIFICATION.)

		Yes	No
* a)	High blood pressure (whether controlled by medication or not)	1	2
* b)	Heart and circulation problems (hardening of the arteries, heart troubles, or other blood diseases)	1	2
* c)	Stroke, or effects of stroke	1	2
* d)	Arthritis or rheumatism	1	2
* e)	Parkinson's disease (or other neurological problems)	1	2
f)	Other neurological problems (if yes, specify _____)	1	2
* g)	Eye trouble not relieved by glasses (cataracts, glaucoma)	1	2
* h)	Ear trouble (hearing loss)	1	2
* i)	Dental problems (teeth need care, dentures don't fit)	1	2
*	- Do you wear dentures?	1	2->[GO TO j]
*	(IF YES) How long have you worn dentures? ___ ___ years		
*	Do the dentures fit to your satisfaction?	1	2

QUESTION 42 (cont'd)

		Yes	No
* j)	Chest problems (asthma, pneumonia, T.B., emphysema, bronchitis, breathing problems)	1	2
* k)	Troubles with your stomach or digestive system	1	2
* l)	Kidney trouble (including bladder troubles)	1	2
* m)	Do you ever lose control of your bladder? (by that I mean, do you ever pass water when you don't intend to?)	1	2
* n)	Do you ever lose control of your bowels? (by that I mean, do you ever lose stool when you don't intend to?)	1	2
* o)	Diabetes	1	2
* p)	Trouble with your feet or ankles	1	2
* q)	Trouble with your nerves (including all mental illness or emotional problems)	1	2
* r)	Skin problems	1	2
* s)	Any fractures (if yes, Specify _____)	1	2
t)	Cancer	1	2
u)	Memory Loss	1	2
* v)	Other -- specify (including amputations)	1	2

_____

_____

_____

43a. Which (one) of the illnesses you have identified above do you believe to be the most serious?

Illness _____

I would like to ask you several questions about (THIS ILLNESS).

43b. What do you believe caused this illness?

_____

_____

_____

c. What do you think should be done about it?

_____

_____

_____

d. What do you think will be the outcome of this illness?

_____

_____

_____

*44. How much do your health troubles stand in the way of your doing the things you want to do -- not at all, a little, or a great deal?

3 Not at all 2 A little (some) 1 A great deal

*45. Do you have a regular doctor or clinic which you use for your health needs?

1 Yes 2 No 7 REFUSED 8 DK 9 MV

46. About how many days have you spent in a hospital during the last month? (CODE NUMBER OF DAYS)

___ ___ DAYS 7 REFUSED 8 DK 9 MV

47. About how many days during the past month have you been sick in bed at home all or most of the day? (CODE NUMBER OF DAYS)

___ ___ DAYS 7 REFUSED 8 DK 9 MV

48. HEALTH BELIEFS

The following statements are designed to help us learn about your opinions regarding health and illness in general. Please indicate how strongly you agree or disagree, On a scale of 1 to 5, where 1 is strongly disagree and 5 is strongly agree. (HAND RESPONDENT CARD)

	SD	D	U	A	SA
a. Getting well is often a matter of chance.	1	2	3	4	5
b. I have my doubts about some things doctors say they can do for you.	1	2	3	4	5
c. People's ill health results from their own carelessness.	1	2	3	4	5
d. I believe in trying out different doctors to find out which one I think will give me the best care.	1	2	3	4	5
e. If you wait long enough, you can get over most sicknesses without going to the doctor.	1	2	3	4	5
f. People who never get sick are just plain lucky.	1	2	3	4	5
g. At my age, it usually isn't worth the trouble to bother with community services and programs for seniors.	1	2	3	4	5
h. Some home remedies are still better than prescribed drugs for curing sickness.	1	2	3	4	5
i. A person understands his/her own state of health better than most doctors.	1	2	3	4	5
j. Good health is largely a matter of good fortune.	1	2	3	4	5
k. People who take care of themselves stay healthy.	1	2	3	4	5
l. Doctors often tell you there's nothing wrong with you, when you know there is.	1	2	3	4	5

HEALTH BELIEFS (cont'd)

		SD	D	U	A	SA
m.	If I take care of myself, I can avoid illness.	1	2	3	4	5
n.	When you reach my age, you have to accept a fair degree of discomfort and physical disability.	1	2	3	4	5
o.	Whenever I get sick it is because of something I've done or not done.	1	2	3	4	5
p.	When I feel ill, I know it is because I have not been getting the proper exercise or eating right.	1	2	3	4	5
q.	I am directly responsible for my health.	1	2	3	4	5
r.	Most of the time it isn't worth the trouble to see doctors and other medical professionals at my age.	1	2	3	4	5
s.	No matter what I do, if I am going to get sick, I will get sick.	1	2	3	4	5

49. CES-D SCALE

Now I'm going to read you a list of ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

USE THE FOLLOWING SCALE FOR RESPONDENTS' ANSWERS.

1 Rarely or none of the time (less than 1 day)
2 Some or a little of the time (1-2 days)
3 Occasionally or a moderate amount of time (3-4 days)
4 Most or all of the time (5-6 days)
9 Missing

(HAND RESPONDENT CARD)

During the past week:

a) I was bothered by things that usually don't bother me. ___

b) I did not feel like eating; my appetite was poor. ___

CES-D SCALE (cont'd)

USE THE FOLLOWING SCALE FOR RESPONDENTS' ANSWERS.

1 Rarely or none of the time (less than 1 day)
2 Some or a little of the time (1-2 days)
3 Occasionally or a moderate amount of time (3-4 days)
4 Most or all of the time (5-6 days)
9 Missing

During the past week:

49c) I felt that I could not shake off the blues even with help from my family or friends. ___

d) I felt that I was just as good as other people. ___

e) I had trouble keeping my mind on what I was doing. ___

f) I felt depressed. ___

g) I felt that everything I did was an effort. ___

h) I felt hopeful about the future. ___

i) I thought my life had been a failure. ___

j) I felt fearful. ___

k) My sleep was restless. ___

l) I was happy. ___

m) I talked less than usual. ___

n) I felt lonely. ___

o) People were unfriendly. ___

p) I enjoyed life. ___

q) I had crying spells. ___

r) I felt sad. ___

s) I felt that people dislike me. ___

t) I could not get "going". ___

50. **LIFE SATISFACTION**

Now I would like to change the subject somewhat and ask you to consider your life as it is right now. I am going to read you a number of key words or phrases which people use to identify various areas of their lives. After I have read each key word or phrase, please consider how you would rate your own life, as it is right now, in terms of that descriptive word or phrase.

To assist you in giving your rating, we have designed a labelled scale which runs from "TERRIBLE" to "DELIGHTFUL" in seven equal steps. Each of these steps has a corresponding number.

When you have picked the level from the scale that comes closest to describing how you feel about the particular area of your life I have just read, please tell me which label and number you have picked. For example, is your HEALTH "dissatisfying", "satisfying", "very satisfying", etc.?

USE THE FOLLOWING SCALE FOR EACH CATEGORY: (SHOW CARD)

1 - Terrible
2 - Very dissatisfying
3 - Dissatisfying
4 - Mixed
5 - Satisfying
6 - Very satisfying
7 - Delightful
8 - No opinion - this covers not applicable, can't remember, no comment, etc.
9 - Missing

a)	HEALTH	The present state of your general health (relatively free of common chronic illnesses).	____
b)	FINANCES	Your income and assets (including investments, property, etc.).	____
c)	FAMILY RELATIONS	Kind of contact and frequency of contact you have with your family members. This includes personal contact, phone calls, and letters.	____
d)	PAID EMPLOYMENT	Any work for wages, salaries or fees.	____
e)	FRIENDSHIPS	Kind of contact and frequency of contact you have with your friends. This includes personal contact, phone calls, and letters.	____

LIFE SATISFACTION (cont'd)

USE THE FOLLOWING SCALE FOR EACH CATEGORY: (SHOW CARD)

1 - Terrible
2 - Very dissatisfying
3 - Dissatisfying
4 - Mixed
5 - Satisfying
6 - Very satisfying
7 - Delightful
8 - No opinion - this covers not applicable, can't remember, no comment, etc.
9 - Missing

50f)	HOUSING	The present type, atmosphere and state of your home (e.g., apartment, house, farm, room, etc.).	____
g)	LIVING PARTNER	Includes a marriage partner; partner sharing intimate relations.	____
h)	RECREATION ACTIVITY	Personal recreation activities you engage in for pure pleasure when you are not doing normal daily living chores or some type of work. This includes relaxing, reading, TV, regular get togethers, church activities, arts and crafts, exercises, trips, etc.	____
i)	RELIGION	Your spiritual fulfilment.	____
j)	SELF-ESTEEM	How you feel about yourself; your sense of self-respect.	____
k)	TRANSPORTATION	Public and private transportation (e.g., including convenience, expense).	____

l) Now, using the same scale, how do you feel about your life as a whole right now? Is life generally dissatisfying, satisfying, etc.?

1 - Terrible
2 - Very dissatisfying
3 - Dissatisfying
4 - Mixed
5 - Satisfying
6 - Very satisfying
7 - Delightful
8 - No opinion
9 - Missing

(INTERVIEWER: RECALL EARLIER RESPONSES ABOUT HOUSEHOLD, MARITAL STATUS AND FAMILY AND ASK FOLLOWING QUESTIONS APPROPRIATELY)

Now, I would like to talk to you about your family and friends.

51a. How many sons do you have not including those living with you? (RECORD LIVING ONLY)

_____

b. Of your sons, how many do you have contact with ... (READ EACH CATEGORY) (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING) (EXCLUDE SONS IN HOUSEHOLD): (SHOW CARD)

___ Every day
___ Once a week or more
___ A few times a month
___ Once a month
___ Less often than once a month but at least once a year
___ Less than once a year
___ Never
___ MV

(NOTE: NUMBER IN b. SHOULD ADD UP TO THE SAME AS IN a.)

52a. How many daughters do you have not including those living with you? (RECORD LIVING ONLY)

_____

b. Of your daughters, how many do you have contact with ... (READ EACH CATEGORY) (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING) (EXCLUDE DAUGHTERS IN HOUSEHOLD):

___ Every day
___ Once a week or more
___ A few times a month
___ Once a month
___ Less often than once a month but at least once a year
___ Less than once a year
___ Never
___ MV

(NOTE: NUMBER IN b. SHOULD ADD UP TO THE SAME AS IN a.)

53. **Are either of your parents still living?**

1 Neither --> (GO TO Q.56)
2 Mother
3 Father
4 Both
9 MV

54. **(ASK ONLY IF FATHER LIVING & NOT LIVING IN HOUSEHOLD)**
How often do you have contact with your father?
(CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)?

1 Every day
2 Once a week or more
3 A few times a month
4 Once a month
5 Less often than once a month but at least once a year
6 Less than once a year
7 Never
9 MV
0 No father

55. **(ASK ONLY IF MOTHER LIVING & NOT LIVING IN HOUSEHOLD)**
How often do you have contact with your mother?
(CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)?

1 Every day
2 Once a week or more
3 A few times a month
4 Once a month
5 Less often than once a month but at least once a year
6 Less than once a year
7 Never
9 MV
0 No mother

56a. **How many brothers do you have not including those living with you?**
(RECORD LIVING ONLY)

_____

b. **Of your brothers, how MANY do you have contact with ... (READ EACH CATEGORY) (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)?**
(EXCLUDE BROTHERS IN HOUSEHOLD)

___ Every day
___ Once a week or more
___ A few times a month
___ Once a month
___ Less often than once a month but at least once a year
___ Less than once a year
___ Never
___ MV

(NOTE: NUMBER IN b. SHOULD ADD UP TO THE SAME AS IN a.)

57a. How many sisters do you have not including those living with you? (RECORD LIVING ONLY)

_____

b. Of your sisters, how MANY do you have contact with ... (READ EACH CATEGORY) (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)? (EXCLUDE SISTERS IN HOUSEHOLD)

___ Every day
___ Once a week or more
___ A few times a month
___ Once a month
___ Less often than once a month but at least once a year
___ Less than once a year
___ Never
___ NV

(NOTE: NUMBER IN b. SHOULD ADD UP TO THE SAME AS IN a.)

58a. How many other relatives do you have not including those living with you? (INCLUDE GRANDCHILDREN, NIECES, NEPHEWS, COUSINS, IN-LAWS, ETC.) (RECORD LIVING ONLY)

(NOTE TO INTERVIEWER: PROBE FOR A SPECIFIC NUMBER, NOT "LOTS", OR "THOUSANDS")

_____

b. Thinking of your other relatives, how OFTEN do you have contact with them? (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)? (EXCLUDE RELATIVES IN HOUSEHOLD)

1 Every day
2 Once a week or more
3 A few times a month
4 Once a month
5 Less often than once a month but at least once a year
6 Less than once a year
7 Never
9 NV

59a. Other than family and relatives, how many people do you consider as friends? (RECORD NUMBER)

(NOTE TO INTERVIEWER: IF RESPONDENTS SAYS "WHOLE TOWN" TRY TO NARROW DOWN TO A SPECIFIC NUMBER OF PEOPLE THEY REALLY CONSIDER FRIENDS)

_____

b. Thinking of your friends, how OFTEN do you have contact with them? (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)? (EXCLUDE FRIENDS IN HOUSEHOLD)

1 Every day
2 Once a week or more
3 A few times a month
4 Once a month
5 Less often than once a month but at least once a year
6 Less than once a year
7 Never
9 MV

60a. Other than friends and family, how many of your neighbours do you know? (RECORD NUMBER)

_____

b. Thinking of your neighbours, how OFTEN do you have contact with them? (CONTACT INCLUDES: SEEING, PHONING, LETTER WRITING)?

1 Every day
2 Once a week or more
3 A few times a month
4 Once a month
5 Less often than once a month but at least once a year
6 Less than once a year
7 Never
9 MV

Lastly ....

61. **Have you used any of the following services in the past 6 months? (CIRCLE ALL THAT APPLY)**

01 General Practitioner
02 Specialist MD
03 Emergency Department
04 Other Hospital Depts
05 Day Hospital
06 Emergency Walk-in Clinic
07 Envoy/other doctor home visiting services
08 Medical Lab (outside hospital)
09 Visiting Lab Service
10 Dentist
11 Chiropractor
12 Occupational or Physical Therapist
13 Podiatrist/Chiropodist (foot care)
14 Pharmacist
15 Optometrist/Optician
16 Nutritionist Dietician
17 Audiologist (hearing)
18 Public/Community Health Nurse
19 Social Worker
20 Minister/Priest
21 Senior Centre
22 Home Care
23 Adult Day Care
24 Fitness Program
25 Community Health Clinic
26 Lawyer
27 Other (_____)

Now, we are finished. Thank you very much for your assistance. I have enjoyed talking with you.

TIME INTERVIEW ENDED: _____

INTERVIEWER SUMMARY SHEET

ID# _____

3MS SCORE ____ ____ %

RATING OF RESPONDENT'S REACTIONS:

Friendly						Unfriendly
	5	4	3	2	1	
Calm						Angry
	5	4	3	2	1	
Responsive						Unresponsive
	5	4	3	2	1	

COMMENTS:

_____
_____
_____
_____
_____
_____

AGREEABLE TO ANOTHER INTERVIEW:

YES NO

LANGUAGE ABILITY:

Please rate the language ability of the respondent (in the language of interview):

Completely Fluent						Major Difficulty
	5	4	3	2	1	

INTERVIEWER RECORD OF CONTACT PERSON AND CAREGIVER

ID _____

INTERVIEWER _____
DATE OF INTERVIEW _____

_____

MAIN CONTACT PERSON

We must be readily able to contact this person if we cannot reach the study subject (ie. holiday, hospital). If they indicate the spouse, take their name down. In addition, we need to have a contact person living outside the household.

Who is the best person to call if we can't get in touch with you?

Spouse's name _____ (Relationship)

(CONTACT PERSON OUTSIDE OF HOUSEHOLD)

Name _____

Address _____

Phone _____

PRIMARY CAREGIVER

This person is the one best suited to answer questions on the care the study subject is receiving. He/she should be well informed about the subject. As a guideline only, they probably visit or telephone the subject at least each week. They are not cognitively impaired. A family member is preferred, but take information on a paid caregiver also, if mentioned.

Definition: the primary caregiver is defined as the person perceived by the subject or his/her family as ordinarily being the most responsible for day-to-day decision making and provision of care to the subject (the amount of care varying widely between subjects).

So, am I right in thinking that ____ is the person most likely to care for you?"

Name _____ (Relationship)

Address _____

Phone _____

APPENDIX C

THE 3MS

THE NEXT SET OF QUESTIONS CONCERNS MEMORY. THE QUESTIONS MAY SEEM UNUSUAL, BUT THEY ARE ROUTINE ONES WE ASK OF EVERYONE. SOME OF THE QUESTIONS THAT I ASK YOU WILL BE EASY AND MAY SEEM SILLY; OTHERS MAY BE MORE DIFFICULT, SO DON'T BE SURPRISED IF YOU HAVE TROUBLE WITH SOME OF THEM. I MAY ALSO ASK YOU THE SAME QUESTIONS TWICE. PLEASE ANSWER ALL OF THEM AS BEST YOU CAN.

Blind? Y N ---> see crib sheet for appropriate skips and prorating
Read? Y N ---> see crib sheet for appropriate skips and prorating
Write? Y N ---> see crib sheet for appropriate skips and prorating
Disability? Y N ---> if respondent cannot answer a particular question because of a disability other than the above, circle Y and specify _____.

---

1. _____ (5)

When were you born? ____ / ____ / ____
dd mm yy

Where were you born? _____ / _____
city, town province, country

Year	0	1	Province	0	1
Day	0	1			
Month	0	1	Town	0	1

2. _____ (5)

I am going to say three words for you to remember. Please repeat them after I have said all three: Shoes ...Blue...Modesty...

(Number of presentations : _____)

Shoes 0 1 Blue 0 1 Modesty 0 1

3. _____ (5)

Please count from 1 to 5.

Can _____ Can't _____

Now, please count backwards from 5 to 1.

5 to 1 (write their answer ___ ___ ___ ___ ___)
5 4 3 2 1

Score 0 1 2

Would you please spell "WORLD"?

Can ____ Can't ____

Now please spell "WORLD" backwards?

World backwards (print letters) ___ ___ ___ ___ ___

Score 0 1 2 3 4 5

4. _____ What three words did I ask you to remember earlier?
9

Spontaneous recall: shoes	3
Cue: Something to wear	2
Multiple: Shirt, shoes, socks	1
Missed completely	0
Spontaneous recall: blue	3
Cue: A color	2
Multiple: Black, blue, brown	1
Missed	0
Spontaneous recall: modesty	3
Cue: A good personal quality	2
Multi.:Modesty, charity, honesty	1
Missed	0

5. _____ What is today's date?
15

Today's date _____ Month _____

Accurate	3	Accurate or within 5 days	2
Missed by 1 or 2 days	2	Missed by one month	1
Missed by 3-5 days	1	Missed by more than 1	C
Missed by more than 5 days	0		

Year _____ Day of Week _____

Accurate	8	Accurate	1
Missed by 1 year	4	Missed	(
Missed by 2-5 years	2		
Missed by more than 5 years	0		

Season _____

Accurate or within 1 month	1
Missed	0

6. _____ What province are we in? _____
5 Province 0 2

What country are we in? _____
Country 0 1

What city/town are we in? _____
City or Town 0 1

Are we in a hospital (clinic), or a store , or a home? _____
Hosp., Store, home 0 1

MMSE: What is the address here?

_____ Street_____

7. _____ What do you call this part of the face?
—5 and this part? and this part of the body? and this part?
and this part of the hand?

Forehead	0	1	Chin	0	1	Shoulder
Elbow	0	1	Knuckle	0	1	

MMSE: What is this? Pencil Y N
What is this? Watch Y N

8. _____ What animals have four legs? Tell me as many as you can. (30 SEC
10

(Write animals named) _____,_____,

_____,_____,_____,

_____,_____,_____,

_____,_____

9. _____ In what way are an arm and a leg alike?
6 (Write answer)

Limbs, extremities	2
Body parts, bend, move, joint	1
Very Weak similarity or no similarity	0

In what way are laughing and crying alike?

Feeling, emotion	2
Expressions, sounds, relieve tension	1
Very weak similarity or no similarity	0

In what way are eating and sleeping alike?

Necessary bodily functions	2
Bodily functions, relaxing, good for you	1
Very Weak similarity or no similarity	0

10. _____ Repeat what I say .... "I WOULD LIKE TO GO OUT"
5

Correct 2 / 1 or 2 missed/wrong words 1 / More than 2

Now repeat ... "NO IFS, ANDS; OR BUTS"

No ifs 1 0, ands 1 0, or buts 1 0

1._____ Please do this. (show card "CLOSE YOUR EYES")
3

Obeys without prompting	3
Obeys after prompting	2
Reads aloud only	1
None of the above	0

2._____ I would like to have a sample of your handwriting.
5 Write "I WOULD LIKE TO GO OUT". (1 MINUTE) . HANDEDNESS L R

(I) would like to go out. 1 2 3 4 5

MMSE: Would you please write another sentence for me?

(transcribe)_____

3._____ Here is a drawing. Please copy the drawing on the same paper.
10 (1 MINUTE)

	Each Pentagon			Intersection
5 apporx. equal sides	4	4	4 corners	2
5 unequal (>2:1)sides	3	3	Not 4 corner enclosure	1
Other enclosed figures	2	2	No intersection or no enclosure	0
2 or more lines	1	1		
Less than 2 lines	0	0		

4._____ Take this paper with your left/right hand, fold it in half, and hand
3 it back to me.

left/right hand	1	0
fold it in half	1	0
hand it back to me	1	0

5._____ What three words did I ask you to remember earlier?
9

Spontaneous: Shoes	3
Something to wear	2
Shoes, shirt, socks	1
Missed	0
Spontaneous: Blue	3
A color	2
Black, blue, brown	1
Missed	0
Spontaneous: Modesty	3
A good quality	2
Modesty, charity, honesty	1
Missed	0

--------- TOTAL SCORE 3MS

APPENDIX D

The University of Manitoba

FACULTY OF NURSING
ETHICAL REVIEW COMMITTEE

APPROVAL FORM

Proposal Number N98/05

Proposal Title: Testing Orem's Self-Care Framework: Investigating the Relationships Between the Total Self-Care Score and Three Components of Self-Care, and Conditioning Factors

Name and Title of
Researcher(s): Valerie Wiebe

Date of Review: February 2, 1998

APPROVED BY THE COMMITTEE: February 19, 1998

Comments: With clarifications and additional information.

Date: February 19, 1998

Wanda Chernomas

Wanda Chernomas, PhD, RN Co-Chairperson
Assistant Professor
University of Manitoba Faculty of Nursing

NOTE:
Any significant changes in the proposal should be reported to the Chairperson for the Ethical Review Committee's consideration, in advance of implementation of such changes.

Revised: 92/05/08/se