The Components and Principles of Successful Adolescent Pregnancy Prevention Programs

Practicum Project Report

Submitted to the Faculty of Graduate Studies

In partial fulfillment of the requirements for the Degree of

MASTER OF NURSING

Faculty of Nursing

University of Manitoba

Submitted by:

JUDY MARVIN

December 2004

THE UNIVERSITY OF MANITOBA

FACULTY OF GRADUATE STUDIES
*****
COPYRIGHT PERMISSION PAGE

The Components and Principles of Successful Adolescent Pregnancy Prevention Programs

BY

Judy Marvin

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

JUDY MARVIN ©2004

Permission has been granted to the Library of The University of Manitoba to lend or sell copies of this thesis/practicum, to the National Library of Canada to microfilm this thesis and to lend or sell copies of the film, and to University Microfilm Inc. to publish an abstract of this thesis/practicum.

The author reserves other publication rights, and neither this thesis/practicum nor extensive extracts from it may be printed or otherwise reproduced without the author's written permission.

DEDICATION

This practicum project is dedicated to:

My wonderful family:

For your patience, understanding, encouragement, and support

You are the wind beneath my wings.

I could not have done it without you!

Acknowledgments

I acknowledge and sincerely thank those who contributed to this project:

- **Doug, Derek, Kristy, and Jeremy,** who have endured the seemingly endless tasks, the volumes of paper, and the roller coaster of emotions that this project has generated. *You made it possible for me to achieve this goal and finish a " special project" that I nearly gave up on.*
- **Mom**, who was with me every step of the way, whenever needed, as always. *I know you had my project on your mind nearly as often as I did.*
- **Marilyn and Rick**, who leant a hand and were on my team. *You cheered me on when I doubted myself.*
- **My classmates** who shared the joys and the challenges. *Misery really does love company!*
- **Debbie Fraser-Askin** for chairing my committee, providing constructive criticism, and useful insights. *You kept the project going through some pretty rough times and revived my sense of hope more than once.*
- **Dr. Anne Katz** for agreeing to serve on my committee when other plans fell apart. *You made me raise the level of the project to a higher place.*
- **Dr. Margo Lane** for agreeing to serve as my External Committee member and sharing your books, expertise, and time. *You brought the risk-taking model to the project and shared insights that pulled it together.*
- **Louise Sabourin,** Graduate Program Assistant for being the kind and helpful person that you are! *Your support was greatly appreciated.*

It has been the best of times and the worst of times...
Here's to the end of this, and the beginning of the next phase of life...

Table of Contents

Page

Chapter 1: Adolescent pregnancy: An overview of the problem

Introduction 1
Description of the problem 2
Rates of adolescent pregnancy 2
Incidence of repeat pregnancy 3
The Brandon context 3
Current programs 4
Summary 6

Chapter 2: Literature Review

Introduction 7
Consequences for adolescent females 7
Consequences for the children 9
Consequences for society 10
Summary 11

Chapter 3: Theoretical framework

Introduction 12
Adolescence and risk taking 12
Biological-psycho-social model of risk taking 13
Biological factors 15
Psychological and cognitive factors 15
Social and environmental factors 16
Risk-taking in repeat pregnancy 18
Summary 20

Chapter 4: Methodology

Introduction 21
Search Method 21
Information extracted from studies 21
Definitions 22
Plan for disseminating information 22
Summary 23

Chapter 5: Pregnancy prevention programs

Introduction 24
Goals of pregnancy prevention: A historical perspective 24
An overview of the literature 26

Canadian framework for action	26
The Institute of Medicine's Committee on Unintended Pregnancy	29
Systematic Reviews, and Meta analysis	29
Components of successful pregnancy prevention programs	35
Biological components	36
Psychological and cognitive components	37
Social and environmental components	38
Principles of successful pregnancy prevention programs	38
Principle 1: Holistic	39
Principle 2: Theory driven	41
Principle 3: Comprehensive/ Multi faceted interventions	43
Increase knowledge	43
Providing reproductive health services	45
Promote skill development	48
Principle 4: Utilize multiple settings	51
Principle 5: Employ varied teaching methods	54
Principle 6: Provide enough of intervention	54
Principle 7: Promote strong parent and peer relationships	56
Principle 8: Ensure appropriate timing of interventions	57
Principle 9: Tailor intervention to the community and culture	58
Principle 10: Incorporate well training staff	58
Principle 11: Set clear goals/objective and	58
Summary	59

Chapter 6: Next steps

Introduction	61
Making a change	62
Exploration: assessing the needs	62
Planning	62
Assembling the team	62
Setting Goals and Strategic Planning	64
Consolidating the change	69
Presentations made to stakeholders	70
Summary	72

References 74

Appendix:

Table 1:Rates of pregnancy in Canada versus Manitoba	85
Table 2a:Brandon population demographics by age	86
Table 2b:Brandon population demographics in comparison to Manitoba: by age and ethnic origin	86

Table 2c:Brandon population demographics in comparison to Canada: by age and ethnic origin 86

Table 3a:Brandon average income in comparison to Manitoba 87

Table 3b:Brandon average income in comparison to Canada 88

Table 4: Brandon RHA pregnancy rates: 2001/2002; 2002/2003 89

Table 5:Components of pregnancy prevention programs based on model of risk-taking behavior 90

Table 6: Principles of successful pregnancy prevention programs in context of risk-taking behavior 91

Figure 1: Model of risk-taking behavior: Predisposing, precipitating, and protective factors 94

Figure 2: PROACTION, POSTPONEMENT, and PREPARATION/SUPPORT: A framework for Action to prevent teenage pregnancy in Canada 95

Figure 3: Model of sexual risk-taking and adolescent pregnancy: adapted from Irwin & Ryan (1989) 96

Chapter 1

Adolescent pregnancy: An overview of the problem

Introduction

Each year in Manitoba approximately 2,100 teens become pregnant and some of these have become pregnant for a second time (Manitoba Health, 2003). Adolescent pregnancies can result in considerable burden to the teen, to the health care and social welfare systems, and society in general. About 30-50% of adolescent mothers go on to have a second pregnancy creating an even more complex set of challenges (Williams & Sadler, 2001). Preventing teenage pregnancy has been a perennial focus of attention for health care professionals, educators, and family services agencies. A vast number of programs have been implemented, many of which have not achieved the results that were hoped for, and the problem of adolescent pregnancy persists (Di Censo, Guyatt, & Griffith, 2002). Given the potential outcomes for adolescents, their children, and society, additional efforts are called for.

Before considering further program development, an examination of the existing literature is called for to determine what is known about the problem, what interventions have been tried, what outcomes have been achieved, and what has been learned through the endeavors. This project will consist of a review of the literature to determine the key components and principles of successful adolescent pregnancy prevention programs. A model of adolescent risk-taking behavior described by Igra and Irwin (1996) will be used as the theoretical framework. Recommendations for program development and evaluation will be identified based on the review and the findings will be presented to key stakeholders in the Brandon Regional Health Authority (Brandon RHA). In this chapter, an overview of the problem will be provided,

along with relevant statistics, a description of the Brandon context, as well as an overview of Brandon RHA programs.

Description of the problem

Rates of adolescent pregnancy

Stats Canada (2001) reports that the rate of pregnancy among 15-19 year olds has declined overall from 41.7 per 1000 in 1998 to 38.2 per 1000 in the year 2000. The rate of pregnancy for that age group in Manitoba was 65.2 per 1000 in 1998 and 58.7 per 1000 in 2000 (see Table 1). Pregnancy rates in Manitoba and the rest of Canada tend to be highest among the 18-19 year old category of adolescents. In Manitoba, more teen pregnancies in 2000 ended in live births (1,323) compared to induced abortions (896), whereas in Canada as a whole, a higher number of pregnancies ended in induced abortions (20,426) than in live births (17,350) (Stats Canada, 2001).

Manitoba has one of the highest rates of teen pregnancy in Canada, a trend that has persisted since 1960 (Stats Canada, 2001). Manitoba Health figures show that in 2002, there were 2117 reported adolescents pregnancies among 15-19 year olds and 25 cases among 10-14 year olds. On average, six adolescents become pregnant every day (Manitoba Health, 2003). While the rates of pregnancy are high in Manitoba, the rates vary dramatically between regions and are much higher for Status Indians and Metis. Manitoba Health (2000) reports that 45% of unmarried adolescent mothers in Manitoba are Aboriginal, with proportions as high as 75% in the Northern/ Thompson region and 70% in Winnipeg. The pregnancy rate among Aboriginal adolescents is three times the level of Non-Aboriginal citizens (Manitoba Health, 2000).

Incidence of Repeat Adolescent Pregnancy

Repeat pregnancy among adolescents is a perplexing phenomenon that occurs at a fairly high rate (Gillmore, et al, 1997; Kalmuss & Namerow, 1994; Pfitzner, Hoff & McElligott, 2003; Ventura, Mosher, Curtin, Abma, & Henshaw, 1999). Ventura et al. (1999) report that in the United States, 30% of adolescents become pregnant in the first post partum year and 25-50% become pregnant in the second year.

No Canadian studies were found that documented the rate of repeat pregnancy in Canada. However, Ek (2004) provided some insight into the rate of repeat pregnancy in Brandon in an evaluation of the Special Delivery Club, a Brandon program for pregnant and parenting adolescents. In a focus group study of 40 adolescents from Brandon who had given birth and attended the Special Delivery Club program, 17 of the teens had been pregnant more than once during their adolescence. Of this group, 25% had given birth to a second child within 1 or 2 years; one teen had three children and the other 16 adolescents had two (Ek, 2004).

The Brandon Context

The Brandon RHA encompasses the City of Brandon, as well as the Rural Municipalities of Cornwallis and Elton. The population of the Brandon RHA is approximately 45,000 people with about 8.5% of the total population in Brandon reported to be Aboriginal (Stats Canada, 2001) (see table 2a). The proportion of people that are of Aboriginal descent is higher in Brandon than the rest of Canada (see table 2c). The socio-economic profile of the region reveals that the average income among people in the Brandon RHA is lower than the Provincial and National averages (Stats Canada, 2001) (see tables 3a and b). Low income and being Aboriginal are both factors that are associated with a higher rate of adolescent pregnancy in the general population (Frager, 1991).

In 1998-99, there were 87 pregnancies among 10-19 year olds in the Brandon RHA; the following year the number rose to 94, and in 2000-2001, there were 101 pregnancies (Barrett, 2004). Figures for 2002-2003 show there were a total of 97 teen pregnancy cases that year, with two of these being in the 10-14 age group. The rate of adolescent pregnancy in the Brandon RHA was higher (56 per 1000) than the provincial rate (45.4 per 1000) in 2002-2003 (Barrett, 2004) (see tables 4a and b).

Current Brandon Programs

Adolescents in the Brandon RHA are exposed to school based educational programming, youth programs in the community and churches, and pregnancy prevention programs offered through the Public Health (PH) Office. PH offers a Reproductive Health and Family Planning Clinic every Monday evening; adolescents can attend by appointment or drop-in to obtain contraceptives, and counseling, health assessments, and diagnostic studies (including pap tests and investigations for STIs). The STI Program Coordinator is also on hand during the Clinic to provide information and counseling related to STI prevention and treatment. Adolescents can also attend the Family Planning Clinic during regular daytime hours Monday to Friday for assistance on matters pertaining to reproductive health.

The Family Life curriculum in the Brandon School Division includes education around sexuality, risks, and relationships commencing at a basic level in grade 5 and continuing on at an increasingly more explicit level through middle years. PH Nurses provide instruction to Grade 9 students in all of the High Schools in Brandon on the topic of birth control and STIs. In Grade 10, the PH nurses review the information provided the proceeding year and use a game of Jeopardy to engage in the students in the topic. Two middle schools in the Brandon RHA offer classes and instruction on the topic of birth control and reproductive health. The Baby Think It

Over program, which employs a life-sized computerized doll to simulate a live baby, is operational as part of the Family Life program in all of the High Schools in Brandon.

The Sexuality Education Resource Centre is open 5 days a week and offers a drop-in service for information and counseling. Informal gatherings for adolescents that focus on communication, decision-making, contraception, and relationships are held. The Brandon Friendship Center offers adolescent programs for Aboriginals directed at helping youth in a variety of ways including preventing adolescent pregnancy.

Various church based youth groups and the Youth for Christ (YFC) program provide adolescent programs that include healthy living and skill building classes for 13-17 year olds. YFC Outreach Programs are also offered in two schools where student leaders are used as peer instructors and counselors. Additionally, YFC offers transitional housing for adolescents in two locations. Growth planning (life skills training) is offered to adolescents who use the program in individual and group training sessions. The Pregnancy Crisis Centre also offers support for adolescents on matters related to pregnancy, contraception, and reproductive health.

Other health and welfare agencies offer some pregnancy prevention services to adolescents including Child and Family Services, who offer parenting classes for adolescent parents. The 7th Street Health Access Centre is a relatively new downtown clinic that offers drop-in services to adolescents who are looking for information about pregnancy testing, contraception, STIs prevention/treatment, as well as other problems including addictions, stress and depression. The 7th Street Health Access Centre was established to meet the needs of the underserved and disadvantaged people in the community; Aboriginal people, including adolescents, are included in the target population for this health centre.

Tertiary prevention programs are also available that include the Special Delivery Club, which is a pre and post natal support group for pregnant and parenting adolescents, as well as the Baby First, and the Healthy Baby Programs; the latter two are provincial programs directed at assisting high risk or disadvantaged parents including adolescents. Repeat pregnancy prevention is addressed early in the program through a discussion about contraception methods.

Summary

Despite the presence of a variety of pregnancy prevention initiatives, the Brandon RHA has experienced a rate of pregnancy that is higher than the provincial average. This is especially significant given that Manitoba itself has reported a higher rate of adolescent pregnancy than other Canadian provinces (Stats Canada, 2001). However, considering that the rate of pregnancy tends to be higher among the poor and minority groups, including aboriginal people (Frager, 1991), the rates of pregnancy in Brandon may be partially accounted for in the lower average income, and relatively high percentage of aboriginal people found in the region. It behooves program planners however, to consider these demographic features when interventions to address teenage pregnancy prevention are planned. This project will examine programs that have been directed toward preventing adolescent pregnancy. Utilizing a framework of risk-taking behavior, a compilation of successful strategies along with recommendations will be presented to relevant stakeholders in the Brandon RHA.

Chapter 2

Literature Review

Introduction

For many in Canadian society, sexuality and adolescent pregnancy is framed as a moral issue, a topic that is taboo and not open for general discussion (Dilworth, 2000). Historically, pregnancy was blamed on the young woman who was seen as promiscuous and immoral (Dilworth, 2000). In the 1950's and 60's, pregnant adolescents were "sent away" to special homes until they gave birth. The pregnant adolescent was expected to bear the consequences of her actions as well as the shame that she brought to herself, her family, and her community (Dilworth, 2000). In reality, adolescent pregnancy and parenting are areas of concern because research has demonstrated that these phenomena are associated with wide ranging negative outcomes for adolescent mothers, the child and society in general (Brooks-Gunn & Chase-Lansdale, 1991; Stevens-Simon & McAnarney, 1996). In this chapter, some of the potential consequences of adolescent pregnancy will be described.

Consequences of pregnancy for adolescent females

For the adolescent mother, the consequences of early childbearing are numerous and include negative emotional, educational, economic, and social effects (Pfitzner, Hoff, McElligott, 2003). Fessler (2003) reported that in the United States, adolescent mothers are less likely to complete their education, to be employed, to earn high wages, and to be happily married. Health Canada (2000) states that: "Although not doomed to a life of hardship, teenage parents are less likely to complete their education and are more likely to have limited career and economic opportunities."

Early childbearing has frequently been associated with lower maternal educational attainment (Brooks-Gunn & Chase-Lansdale, 1991; Furstenberg, 1991). Koniak-Griffin et al. (2002) report that in the United States (U.S.) as many as 30,000 young women drop out of school owing to pregnancy or childbirth per year. McPherson (2002) affirmed these findings in focus-group discussions with eleven adolescent mothers aged 17–20 years in the Brandon RHA. The adolescents had one or two children. Of the eleven adolescent women, only four had completed grade 12. Two of the participants had only completed grade 9 and had not returned to school after having their baby. Failure to complete school or post secondary education increases the likelihood of low paying jobs, welfare dependency later in life, and poverty (Hoffman, Foster & Furstenberg, 1993; Stevens-Simon & McAnarney, 1996).

Physically, pregnancy exposes the teenager to life-threatening illnesses such as toxemia, anemia, and pregnancy-induced hypertension (Cunnington, 2001). The increased risk of these outcomes was found to be associated with socio-economic disadvantage and younger age (Cunnington 2001). Emotionally, adolescent pregnancy poses a variety of stresses for the individual and has been associated with emotional distress particularly among socially disadvantaged adolescents (Milan, Ickovics, Kershaw, Lewis, Meade, & Ethier, 2004). Depression, social isolation, and substance abuse have been associated with adolescent pregnancy (Frager, 1991). Panzarine, Slater and Sharps (1995) report that the prevalence of depression among adolescents may be as high 59% and that depression is associated with negative parenting.

The presence of emotional distress among adolescence mothers was supported in focus group work conducted by Ek (2004) involving adolescent mothers. Ek (2004) noted that pregnant or parenting adolescents often felt isolated from their friends since they did not have the

freedom to go out whenever they wished and peer support was inconsistent. Ek (2004) explained that the responsibility of caring for a baby was a difficult adjustment for some, and others complained that they had been forced to grow up quickly without much support.

It is important to note, however, that not all adolescent pregnancies result in negative sequelae for the mothers. Some adolescents appear to use their pregnancy as source of self-worth and feel quite fulfilled in the role of adolescent mother (Dilworth, 2000). Ek (2004) points out that some adolescents found that having a baby helped them to change their lifestyle for the better, for example, they spent less time at the bar, did not "hang around" with the same groups or do the "same things" that got them into trouble (p.14). Dilworth (2000) also noted that some adolescents report that pregnancy was a catalyst for positive changes in their life; they were able to give up drugs and it gave them a reason to live. Dilworth (2000) adds that many adolescents feel quite confident about their ability to be a parent, and they are comfortable with the added responsibility. Dilworth (2000) goes on to say that many young parents proceed on with "resilience and determination", and are able to become "successful individuals and role models" (Dilworth, 2000, p. 32).

Consequences for the children

Along with maternal consequences, there is an abundance of evidence to suggest there is a tendency toward negative outcomes for the children of adolescent parents (Steven-Simon & McAnarney, 1996). Teenage mothers tend to experience a higher rate of premature delivery, low birth weight, and neonatal death (Steven-Simon & McAnarney, 1996), although these outcomes may be more directly linked to socio-economic status, inadequate nutrition, and pre-natal care than to age per se (Klerman, 1993). Phipps, Sowers, and DeMonner (2002) found that adolescents who were 15 years or less had a substantially increased risk for infant mortality as

compared with older adolescents. Steven-Simon and White (1991) report that in early neonatal period, the children of adolescent mothers are at increased risk of morbidity and mortality because they are smaller and more often premature. Even when birth weight was controlled for, the infants remain at higher risk for medical complications such Sudden Infant Death Syndrome (SIDS) according to Stevens-Simon and White (1991).

Parks and Arndt (1990) report that adolescents had less parenting knowledge, and were less emotionally and verbally stimulating with their infants than were adults. Children born to adolescents are more likely to be placed in foster care, score lower on intelligence tests, have a higher rate of behavioral problems, repeat more grades in school, engage in criminal activity, and are less likely to be economically and socially successful as adults (Stevens-Simon & White, 1991). The daughters of teen mothers are more likely to repeat the cycle and themselves become teen mothers (Stevens-Simon & White, 1991).

Consequences for Society

For society, the consequences of early adolescent childbearing are significant and tend to be long term in nature (Steven-Simon & McAnarney, 1996). As a result of the effects of adolescent childbearing on the mother and child, society often bears the cost in the form of welfare support, unemployment insurance, additional health care costs, as well as expenditures connected to the criminal justice system (Evans, 1998). Manitoba Family Services attributes an estimated 55% of their social assistance budget to support adolescents who become parents, and in 1995/96, this percentage translated into an expenditure of $71 million dollars (Manitoba Health, 1998). In Manitoba, it has been estimated that each adolescent pregnancy delayed would save the province $20,000.00 per year (Manitoba Health, 1998).

Summary

The consequences of adolescent pregnancy are numerous and significant. For the adolescents and their children, the consequences include physical and psychological health effects as well as detrimental academic, and socio-economic sequelae. For society, there is a considerable economic burden that is imposed as a result of adolescent pregnancy and childbearing. While having unprotected sexual activity and bearing children may not produce morbidity and mortality in adolescence itself, the effects and costs grow incrementally over a lifetime (Burt, 2002). Regrettably, social programs and a significant percentage of health care expenditures are often directed toward the consequences of the lifestyle choices made in adolescence. Given the wide-ranging and life-altering potential effects of adolescent childbearing, there is a need to examine the evidence once again to determine a course of action that is proactive and effective

Chapter 3

Theoretical Framework

Introduction

Establishing a theoretical framework provides some structure to the voluminous literature on the topic of adolescent pregnancy and provides a means of organizing the concepts. To gain an understanding of the issues around adolescent pregnancy, it is beneficial to explore relevant theories of adolescent behavior and risk-taking. Adolescent pregnancy is, in part a result of risk taking, some of which is intentional, often to meet unmet emotional needs (DiClemente, Hansen, & Ponton, 1996). In this chapter, an overview adolescent behavior theory and a bio-psycho-social model of risk-taking described by Igra and Irwin (1996) will be presented. This model of risk taking will be used to map out the components and principles of pregnancy successful pregnancy prevention programs

Adolescence and risk taking

Adolescence is a developmental transition period between childhood and adulthood and is characterized by rapid physical growth, as well as social, intellectual, and emotional development (DiClemente, Hansen, & Ponton, 1996). Garbarino (1985) notes that adolescents in general tend to be concrete, present-orientated thinkers. As they mature, both an appreciation of long-range consequences tends to develop as well as the ability to form more intimate relationships. In their struggle to develop a sense of identity, adolescents move from dependence on family to dependence on peers (Dryfoos, 1990). This stage of life can be stressful for the teen as well as for parents, and others in their environment (Garbarino, 1985). Normal adolescence involves increasing independence, autonomy from family, greater peer affiliation, sexual awareness, as well as physiological and cognitive maturation (Igra & Irwin, 1996). Adolescence

is also increasingly becoming a period when there are many serious threats to their health and well being as a direct result of risk behaviors (DiClemente, Hansen, & Ponton, 1996).

Jessor (1982) asserts that risk-taking or problem behavior should be considered purposeful and functional as opposed to arbitrary or perverse and that risk-taking serves an important role in helping adolescents gain peer acceptance and autonomy from parents. Burt (2002) adds to this theory, suggesting that adolescence represents a period when establishing a satisfying self identity and inter-personal bonds beyond the family, including partnering, are critical. Learning to handle growing sexual maturity in a responsible manner and developing the capacity for economic viability, including education, skills, attitudes, and habits are also important tasks. This affirms the idea that the most undesirable behaviors usually represent the attempts of adolescents to complete their developmental tasks. However, Igra and Irwin (1996) point out "some adolescents will experiment in a limited way, while others will establish health-endangering life-styles that will jeopardize their futures" (p. 48). While some risk-taking behaviors are adaptive, others are "pathogenic- dangerous with little or no chance for secondary gain" (p.48).

Bio-psycho-social model of risk-taking

Igra and Irwin (1996) describe a bio-psycho-social model of risk-taking that provides a framework for understandings adolescents and their behavior. They include a variety of behaviors in the theory including: alcohol and drug use, risky sexual practices, delinquency, eating disorders, and intentional injury. By linking these potentially health-damaging risk-taking behaviors, this framework provides a means to examine specific problem behavior as it relates to other behavior. Igra and Irwin (1996) suggest this creates a framework for a more "parsimonious use of interventions, targeting groups of behaviors rather than applying multiple more narrowly

targeted interventions" (p.35).

According to Igra and Irwin (1996), risk-taking behaviors "can be viewed as alternate vehicles for achieving developmental tasks of adolescence such as individuation from the family, identification with a peer group, or achieving adult status" (p.48). Risk taking in the form of substance use, for example may serve to enable the adolescent to identify with peers, while engaging in risky sexual behavior may serve as a means of achieving adult status (Igra & Irwin, 1996). Furthermore, Igra and Irwin (1996) point out that risk-taking behaviors serve different functions at various developmental stages during adolescence. Igra and Irwin (1996) point out that the prevalence of sexual activity increases with advancing age and note that behaviors such as sexual activity and alcohol use, which are considered risky and deviant at age 12, are normative by age 18. Igra and Irwin (1996) conclude that the factors that are associated with the onset of risk-taking may be more or less influential at different stages of adolescence and this should be considered when prevention strategies are developed.

Evidence for linking of risk-taking behaviors, comes from three sources (Igra and Irwin, 1996). First, risk-taking behaviors generally display a developmental trajectory, meaning that drug use, sexual activity, and reckless driving increase with increasing age. Secondly, risk-taking behaviors are likely to covary meaning that adolescents who engage in one form of risk-taking tend to also engage in other forms. Millstein and colleagues (1992) added support to this theory in their work that demonstrated that that adolescents who are sexually active are more likely than their non-sexually active peers to also be using alcohol and marijuana. A third factors that links risk-taking behaviors lies in the fact that these behaviors often share similar psychological/cognitive, environmental/ social, and or biological antecedents (Igra & Irwin, 1996). Igra and Irwin (1996) add that there are protective, as well as predisposing, and

precipitating biological, psychological, social/environmental and possibly cultural factors that influence risk taking. These factors are depicted in a model proposed by Irwin and Ryan (1989) (see Figure 1). This model has been adapted in Figure 3 to show factors that have been found to be associated with sexual risk-taking and adolescent pregnancy.

Biological Factors

The biological elements of risk-taking behavior focus on theories of genetic pre-disposition, asynchronous pubertal development, and direct hormonal influences. Igra and Irwin (1996) suggest that there is evidence that genetics may predispose some adolescents to risk-taking behavior but note that this theory has been difficult to study given the overlapping influence of environment. They go on to explain that hormones play a role in adolescent risk-taking directly and through their role in pubertal development. Asynchronous pubertal development refers to adolescents who deviate from the norm in terms of age at puberty. Igra and Irwin (1996) point out that when physical development precedes cognitive development, adolescents are at risk for behavioral morbidities. Kirby (1997) affirmed that early pubertal development makes adolescents particularly vulnerable to sexual risk-taking.

Psychological and cognitive factors

A number of psychological and cognitive factors come in to play in risk-taking behavior. Adolescents tend to have a low perception of their risk with decision-making influenced greatly by the tendency toward unconventionality and sensation seeking (Igra & Irwin, 1996). Voydanoff and Donnelly (1990) explain that, despite widespread knowledge about reproduction, teenagers tend to hold mythical beliefs about their own fertility. According to these researchers, adolescents are inclined to underestimate their fertility and think that they cannot get pregnant because they are too young, because they have intercourse infrequently, or because they use

positions for intercourse that they believe will make pregnancy unlikely. Adolescent pregnancy may result from erroneous self-attribution, a willingness to take risk, or a perception of invulnerability (Voydanoff et al., 1990). Dilworth (2000) notes that Canadian adolescents report that there is an expectation that relationships be characterized by spontaneity, lack of inhibition, and romance; this belief may contribute to risk-taking sexual behavior. Grossman, Beinashowitz, and Anderson (1992) add that cognitive factors such as good self-esteem and an internal locus of control are protective against risk-taking behavior.

Social and environmental factors

Social and environmental factors involved in the onset of risk-taking include the influence of families, peers, institutions (schools and church), and other societal institutions. Family structure and parental relationships have been shown to correlate with adolescent risk-taking behavior (Igra and Irwin, 1996). Coming from a non-intact home, living without a father figure, having less educated parents, sexually active older siblings, and parents who have initiated sexual relations at a younger age, were all related to higher rates of risk-taking behavior and adolescent pregnancy (Grossman, Beinashowitz, & Anderson; 1992; Langille, Beazley, Shoveller, & Johnston, 1994).

Thornberry, Smith, and Howard (1997) found that supportive and involved parents tend to be more successful at postponing sexual activities and teenage fathering. Kirby (2002) found that close relationships with family positively impacted on the use of contraceptives. Catalano and Hawkins (1995) note that extreme economic deprivation, family conflict, and a family history of problem behavior are predisposing or precipitating factors for risk-taking behavior.

Igra and Irwin (1996) point out that cultural expectations may influence the onset of risk-taking behavior. Beliefs about contraception and sexuality differ among different cultural,

ethnic, and religious groups. Contraception use rates, the onset of sexual activity, and the use of substances differ among different ethnic groups. MacNider et al. (2000) report that the role culture plays in the high rate of pregnancy among Aboriginals warrants further investigation. These researchers point out that having babies at a young age was common in traditional aboriginal societies and add that the shift from aboriginals living on the reserves, where family supports are in place for adolescent parents and their children, to urban centers, where traditional supports are lacking, has created a set of complex social problems among Aboriginals.

Burt (2002) adds support to this aspect of risk-taking behavior in noting that macro and family level environmental conditions, such as poverty and family dysfunction or lack of parent involvement or support, consistently differentiate youth who are most likely to get into serious trouble from those who will not. According to Burt (2002), most of these conditions start to work in childhood, and through continued exposure, the risk increases. Adolescents become the most vulnerable when they do not have enough protective factors to offset negative influences. Burt (2002) suggests that family, peers, neighborhood environments, schools, and other associations can help teens complete their developmental tasks or can pose significant barriers that many youth will not be able to overcome on their own. Igra and Irwin (1996) point out that societal influences such as the media and community norms may influence risk-taking behaviors including sexual activity. Fessler (2003) adds that adolescent pregnancy is often related to the social context, limited life options, the experience of poverty, poor educational aspirations, violence, and a history of sexual or physical abuse. Predisposing, precipitating, and protective factors for risk-taking behavior as outlined by Irwin and Ryan (1989) are depicted in Figure 1.

Risk-taking in relation to repeat adolescent pregnancy

From the literature it appears that theories of adolescent risk-taking behavior have applicability in the realm of repeat pregnancy. Gillmore, Lewis, Lohr, Spencer and White (1997) found that young women who have strong bonds to conventional institutions (family, church, school) are less likely to experience repeated pregnancy than those with weaker bonds. Furthermore, Gillmore et al. (1997) in their study of 240 adolescent women found that a history of school problems, drug use, fighting, longer relationships with boys, best friends becoming pregnant, and minor delinquencies were positively associated with repeated pregnancy. Adolescents who marry, were younger when they gave birth, who do not return to school, and who have a history of problem behaviors are at higher risk of repeating pregnancy (Gillmore, et.al., 1997). Living with parents was negatively associated with repeated pregnancy. Adolescent mothers who obtain additional schooling and those who have better educated parents are less likely to have a repeat pregnancy than their peers (Kalmuss & Namerow, 1994, Stevens-Simon, Kelly & Singer 1996). In a study by Jacoby, Gorenflo, Black, Wunderlich, and Eyler (1999), interpersonal violence was correlated with repeat pregnancy among low-income adolescents.

Gillmore et al. (1997) suggest that younger adolescents and those who have a history of risk-taking or problem behavior are most at risk of repeating pregnancies. Kalmuss and Namerow (1994) found that the experiences of adolescent mothers following the first birth of their first child affected the timing and occurrence of subsequent births. For example, young mothers who continue their education following birth were less likely to have a closely spaced birth; those who married were more likely to have a rapid second birth.

Coard, Nitz and Felice (2000) examined the relationship of various factors to the occurrence of repeat pregnancy by 12 and 24 months postpartum in a clinic sample of urban adolescent mothers. A history of miscarriages, and postpartum contraceptive method were associated with repeat pregnancy at Year 2. The use of long-term contraception was associated with fewer repeat pregnancies. The more miscarriages a teen experienced, the more likely she was to have a repeat pregnancy during the second post partum year. Coard, Nitz and Felice (2000) recommended close monitoring of contraceptive use in the early post partum period and additional counseling for the adolescents who had miscarried.

Summary

The reasons for risky sexual behavior and subsequent pregnancy may vary from biological factors such as physical development that does not match with cognitive maturity to psychological factors such as a lack of self esteem that preempts appropriate use of contraception, and social factors such as poverty. Motivations for becoming pregnant include a search for love or emotional connections, self-esteem issues, mother- daughter relationship issues, and other systemic factors pertaining to family, male partners, peers and societal influence. The onset of risk-taking behavior is influenced by various biologic, psychological/ cognitive, and social/ environmental factors that need to be considered when strategizing about programs aimed at pregnancy prevention (Stevens-Simon & McAnarney, 1996; Stevens-Simon, Kelly, & Singer, 1996). Developing an understanding of the factors that influence whether adolescents will engage in adaptive risk-taking behavior or pathogenic health threatening risk-taking is important when addressing adolescent pregnancy. For the purpose of this project, the theories of risk-taking will be used as the framework for organizing the critical components of pregnancy prevention programs.

Chapter 4

Methodology

Introduction

An exploration of the literature covering the topic of adolescent pregnancy yields a vast volume of material. To capture the evidence that is relevant, a systematic approach to the literature search and the review must be undertaken. In this chapter, the methods used to search, organize, and evaluate the literature will be described. Applicable definitions will be provided and a plan for the dissemination of information will be outlined.

Search methods

For the purpose of this review, CINAHL, Pub Med/ MEDLINE, ERIC, and Cochrane databases were searched. The thesaurus in ERIC and CINAHL was referenced for indexing terms. From this, the terms "prevention programs" "adolescent pregnancy prevention programs," "adolescent risk-taking prevention," and "effective teenage pregnancy prevention" were used. Evidence from systematic reviews, meta-analysis, and clinical trials using experimental or quasi-experimental design were included in the literature review. For the purpose of this review, only published programs were considered from the year 1990 and onward. Studies from Canada and the U.S. were included with a focus on programs that involved a comparable demographic profile to the Brandon RHA as much as possible.

For this review, studies that examined the impact of programs on sexual activity (as one form of risk-taking behavior) and the rate of adolescent pregnancy were included. To be considered a successful program, the interventions must have achieved changes in behavioral outcomes: lower rates of adolescent pregnancy, delayed first intercourse, or increased use of contraception with last intercourse. However, interventions that reduced other predisposing risk-

taking behaviors or the rate of sexually transmitted infections were noted. Studies that examined only changes in adolescent attitudes, sexual knowledge or self-esteem were not included. In evaluating adolescent programs, behavioral outcomes measures are considered superior to other measures and are recognized as the best indicators of the effectiveness of pregnancy prevention programs (Brown &Eisenberg, 1995; Card, 1999; Hofferth, 1991.).

Program information that was extracted from the studies was whether the intervention was single focus or multi faceted; what type(s) of approaches or interventions were used (for example: abstinence only, sex education classes, contraception counseling and distribution); the setting of the intervention (community, school based or both; clinic or non-clinic); whether multiple teaching methods were used; whether or not there was a skill building or life options component; whether males were targeted as well as females; whether other risk-taking behavior was addressed in the prevention program(s); whether a media campaign was incorporated; and whether the program was theory driven (and if so, what theory was used) , culturally relevant, and systematically evaluated.

To capture the components of successful programs, individual studies, systematic reviews and meta-analysis were examined. To complement earlier reviews, a "review of reviews" was conducted to identify common themes among successful programs. Franklin, Grant, Corcoran, Miller, & Buitman (1997) assert that the statistical methods used in a meta analysis help to address deficiencies that may be present if only single studies are examined.

To facilitate an understanding of adolescent behavior, the bio-psycho-social model of risk-taking described by Igra and Irwin (1996) has been used. This model provides a framework for identifying the factors that contribute to adolescent risk-taking and pregnancy and in

additionally provides a method of organizing the components and principles of successful pregnancy programs.

Definitions

For the purposes of this discussion, the term “adolescent pregnancy”includes live births, pregnancies that ended in therapeutic (or induced) abortions, and spontaneous abortions among female adolescents aged 13-19. The term “repeat pregnancy” will refer to subsequent pregnancies that occur among adolescents aged 13-19. “Inter-sectoral collaboration” will be defined as partnerships established with agencies and institutions that have not traditionally been considered as providers of health care. “Risk-taking behavior” is defined as behavior that involves a conscious weighing of alternative courses of action, and that is associated with the possibility of negative heath outcomes (Igra & Irwin, 1996). “Primary prevention” refers to programs that promote healthy lifestyles, reproductive health, and prevention of risk-taking behavior. “Secondary prevention” refers to interventions directed at prevention and early detection of pregnancy and sexually transmitted disease. "Tertiary prevention" refers to interventions for adolescents who are pregnant, programs that support school completion and, those that attempt to prevent subsequent unplanned pregnancies (Porter, 1998).

Plan for Dissemination of Information

Findings of the literature review will be presented to the Brandon RHA, inter-sectoral partners, and other members of the stakeholder group. The presentation will include an account of the problem; a description of the principles and components of, and approaches to, successful programs; recommendations for implementation and evaluation strategies; and implications for future research. Invitations to attend the presentation will be extended to parents of adolescents; representatives from parent advisory councils, social service and health professionals, educators

and policy makers, community organizations, cultural and ethnic support groups, as well as civic and municipal officials.

Summary

The focus of this project is to examine the literature for the purpose of identifying the key components of successful primary, secondary, and tertiary pregnancy prevention programs. A systematic approach will be used to search, evaluate and disseminate the information. The bio-psychosocial model of risk-taking behavior described by Igra and Irwin (1996) will be used as the framework for organizing the program components. The components of successful programs will be categorized to show how they address specific biological, psychological-cognitive, and social-environmental risk-taking factors and what level of prevention they provide.

Chapter 5

Pregnancy Prevention Programs

Introduction

Effective pregnancy prevention programs are worthy endeavors. Planned Parenthood Nova Scotia determined that for every dollar spent on prevention of unhealthy sexual outcomes, an estimated $10.00 was saved in health and social assistance (2002). While some programs do not necessarily achieve the results that are sought after (Di Censo et al. 2002), the overall decline in the rate of adolescent pregnancies suggests that some prevention strategies have had an impact. Given that some prevention programs have achieved more success than others, an examination of the literature is warranted to determine what components and principles characterize successful programs. In this chapter the goals of various pregnancy prevention programs will be discussed, an overview of prevention programs will be provided, and the components and principles of successful programs will be described. The principles of successful programs will be categorized according to the level and component of prevention that they address.

Goals of pregnancy prevention programs: A historical perspective

While most people agree that adolescent pregnancy is a problem, divergent views are held about where the root of the problem lies and therefore, program goals and strategies have also differed. Card (1999) notes that the way the problem of adolescent pregnancy is framed is critical in determining what interventions are planned. Dryfoos (1990) points out that some people insist that adolescent pregnancy is directly related to the problem of "too-early sex" and "pre-marital sex", which is linked to a lack of morality and a decline in the role of family. Programs that advocate for abstinence and/ or strive to strengthen the role of family have been

developed in response to these beliefs (Stevens-Simon & McAnarney, 1996). Dryfoos (1990) asserts that other people identify a lack of knowledge about reproduction, contraception, and as well as the risks and consequences of sexual activity as the problem. Lack of knowledge and a perception of invulnerability may contribute to the "Oh, No!" response of adolescents who are shocked and devastated when they realize they are pregnant. Those who blame a lack of sexual knowledge and awareness have developed programs to increase access to, and knowledge of contraception (Stevens-Simon & McAnarney, 1996).

Dryfoos (1990) reports that deficiencies in the area of communication, negotiation, and decision-making skills have been cited by some to be significant contributing factors for teenage pregnancy; this idea led to the development of programs that provide opportunities to practice communication techniques including those that are needed to refuse unwanted advances (Card, 1999). On a system level, Dryfoos (1990) points out that many blame adolescent pregnancy on poverty, the lack of opportunity or hope for the future ("no reason not to get pregnant"), and deficiencies in social organization. Programs in the 1990s responded to this concern by modeling their interventions around social support and youth development, which included skills sessions, career planning, and vocational training (Card, 1999). Dryfoos (1990) also explains that some believe that the problem centers on having a social welfare system that "rewards" young women for becoming mothers. This, some believe, encourages adolescents to become pregnant as a means of moving away from their current situation (Dryfoos, 1990). In an attempt to mitigate this effect, some programs have attempted to make welfare payments contingent on school and health clinic attendance (Wood, Bloom, Fellerath, & Long, 1995).

According to Card (1999), programs in the 1990's brought back an emphasis on abstinence and incorporated strategies that addressed prevention of STIs and HIV/AIDS.

Programs focused on safer sex and the risk involved with various sex-related behaviors. Card (1999) points out that community-wide initiatives have emerged in recent years, which are directed toward addressing teen pregnancy in the context of the larger social issues. For every viewpoint about the problem, there has been a corresponding solution developed. However, the problem is complex and multi-factorial. When the problem is considered within the bio-psycho-social model of risk-taking behavior, it becomes evident that there is an interplay of multiple factors that results in adolescent risk-taking and pregnancy; since there is no single cause, it is unlikely there will be a single solution.

An overview of pregnancy prevention program literature

In reviewing the topic of adolescent pregnancy prevention, a body of literature emerges from systematic reviews, meta analyses, national committees and other sources that may provide some useful information and resources for program planners.

Canadian Framework for Action

Rogers and Dilworth (2002), for example report on a Canadian project at that was jointly initiated by the Community Action Program for children, the Canadian Prenatal Nutrition Program, Health Canada, Young/Single Parent Support Network of Ottawa Carlton, and Timmins Native Friendship Centre, and the Canadian Institute of Child Health. The project involved the creation of a national framework that could be used to reduce the rate of teen pregnancy in Canada. The goals were to reduce the rate of teen pregnancy but also to support those whose lives have been touched by pregnancy at a young age. This project was intended to serve as a springboard for future program development. The objectives were to learn what is currently being done, what needs to be done on this issue across the country, and to explore the potential role of projects funded by the federal Canada Action Program for Children (CAPC) and

Canada Prenatal Nutrition Program (CPNP) in reducing the rate of teen pregnancy. The findings of this report are based on a literature review, a survey of 40 key informants, five consultations with youth, and a survey of 756 CAPC/CPNP projects across Canada. The literature review completed by Dilworth (2000) was one component of this project and included general information on Canadian programs and research findings. In the review, Dilworth (2000) acknowledges that there are gaps in what is known specifically about repeat pregnancy and the issue of high aboriginal pregnancy rates. Some empirical findings from the primary studies described in the review by Dilworth (2000) will be reported under the heading "Components of successful programs."

The groups that partnered in the aforementioned Canadian project developed a model to incorporate and address the realities of teenage pregnancy in Canada (Rogers & Dilworth, 2002). In the model, Rogers and Dilworth (2002) describe three interlocking spheres that share the goal to "maximize the number of youth in Canada who are thriving, to support and enrich their adolescent experiences, and respect their personal choices" (p.98). The three program spheres described by Rogers and Dilworth (2002) include PRO-ACTION, POSTPONEMENT, PREPARATION AND SUPPORT (see Figure 2). The goal of PROACTION is to reduce the percentage of teens that see having a baby as a means of meeting their psychosocial needs. PROACTION strategies build resilience in disadvantaged children and youth by strengthening social competence, problem solving abilities, and coping skills. Successful PROACTION strategies combine individual, school-based and community-based interventions designed to "build a strong foundation of life skills" (p. 98).

POSTPONEMENT is a program to delay first intercourse and reduce the rate of unprotected intercourse. Strategies involve good sex education with an emphasis on delaying

first intercourse and free confidential access to contraceptives. The use of condoms and other contraceptives are advocated after the youth becomes sexually active. Important components of the program are having a credible educator and supportive and informed parents who reinforce the messages passed along in the program (Rogers & Dilworth, 2002).

PREPARATION and SUPPORT is designed to help teens who become pregnant, and those who are already parents to postpone subsequent pregnancies, and maximize the healthy development of the mother and child. Strategies assist in basic living including nutrition safety, housing, and life skills and cultural and community differences are accounted for. Initiatives include home visits, child development programs, nutrition and parenting programs, and models that promote healthy neighborhood conditions for families (Rogers & Dilworth, 2002).

Rogers and Dilworth (2002) make a number of recommendations for future programming based on the findings of the literature review and surveys. Included are: curricula to help build girl's self-esteem; gender specific parent education; accessible arts and recreational activities for at-risk families; discussions around future orientations for the adolescents; and the inception of volunteer groups to support families and youth. In POSTPONEMENT, support for teaching about healthy relationships and body image were suggested, as well as enhanced education about date rape. HIV prevention and the expanded use of contraception were also advocated. It was recommended that there was a need for additional outreach for young men through employment centers, bars, sports leagues, and post secondary educational institutions. In the PREPARATIONS / SUPPORT sphere, there was an identified needed to provide greater access to basic needs such as food, clothing, shelter, and safety. Connections to spiritual life and religious institutions were recommended, and safe places for youth to obtain information were identified as gaps. The informants identified a need for access to substance abuse treatment for

pregnant women, as well as discussions about future orientations (Rogers & Dilworth, 2002). The outcomes of programs implemented as a result of this joint initiative are not available at the time of writing but should be investigated in years to come as evaluative data becomes available.

The Institute of Medicine's Committee on Unintended Pregnancy

The (American) Institute of Medicine's Committee on Unintended Pregnancy (IMCUP) reviewed 23 programs and subsequently proposed a widespread campaign to reduce unintended pregnancies among adolescents and adults. The IMCUP identified five core goals. The first goal was to improve knowledge of contraception and reproductive health through age-specific educational family programs, and a media campaign that would bring accurate sexuality information to the public and promote a healthy image of sexual behavior. The second goal was to increase access to reliable contraception. Thirdly, the IMCUP set a goal to address the role that feelings, attitude and motivation play in using contraception. Fourth, the committee determined there was a need to develop and evaluate a variety of local programs. The final goal of IMCUP was to stimulate research in the areas of new contraceptive methods for women and men, and how to best organize contraceptive services, and recognize the antecedents of unintended pregnancy (Brown & Eisenberg, 1995). The goals set out by the IM Committee on Unintended Pregnancy appear to be aligned with the components of successful pregnancy prevention programs that have been outlined in numerous studies and are described below (Brown & Eisenberg, 1995).

Systematic Reviews and Meta-Analyses

An examination of the literature reveals that a number of well-intentioned efforts have failed to demonstrate a significant impact on behavior and pregnancy rates. Di Censo, Guyatt and Griffith (2002) conducted a systematic review of randomized controlled trials that

investigated adolescent pregnancy prevention interventions. Twenty-six published and unpublished randomized controlled trials involving adolescent girls aged 11-18 were included in the review. Studies were included that evaluated a delay in initiation of sexual intercourse, consistent use of birth control or the avoidance of unintended pregnancy. All studies took place in the U.S. and Canada. The majority of the trials focused on adolescents of low socioeconomic status and evaluated pregnancy prevention programs including sex education classes, school based clinics, and community based programs. The programs provided education around problem solving, decision-making, parent teen relationships, the effect of early child bearing, birth control methods, and other related topics. Overall, the interventions did not delay the initiation of sexual intercourse in young women, did not improve use of birth control by young women at last intercourse, and did not reduce pregnancy rates in adolescents. Four abstinence programs and one school based sex education program were associated with an increased number of pregnancies.

In the one Canadian study reviewed by Di Censo et al. (2000) that was conducted in Ontario, Mitchell-Di Censo et al. (1997) enrolled 3289 students from 21 schools. The program involved ten sessions on problem solving, decision-making, puberty, male-female roles, media and peer pressure, and responsibility in relationships, intimacy, teenage pregnancy, and parenting. Unfortunately, no difference in the use of consistent birth control, the age of first intercourse, or incidence of pregnancy was reported in the intervention group over the control. In the review completed by Di Censo et al. (2002), only two published programs were associated with favorable outcomes: Teen Outreach, reported by Allen et al. (1997) and another multifaceted program reported by Aarons et al. (2000) which will be described in the section to follow. It is interesting to note that the elements described in these programs were not unlike the

programs that did not show favorable results. This finding supports the assertions of Card (1999) who notes that one program might be more successful than another due to various location-specific factors that come into play, such as unique methods of instruction, the characteristics and skill of the instructors, timing of the interventions, and characteristics of the population. It is possible that different people could implement the same program in different locations at different times and get different outcomes (Card, 1999).

Dryfoos (1990) reviewed over 100 prevention programs related to a variety of risk-taking behaviors including teen pregnancy, substance abuse, school drop out, and juvenile delinquency. This review suggested that successful programs involved intense individualized attention, interventions at several stages of the child' life, early identification of, and intervention in the development of problem behaviors, training in social skills, and engagement of peers and parents in the intervention (Dryfoos, 1990). Dryfoos (1990) categorizes prevention strategies to include those that increase the capacity to control fertility, including education and skills enhancement programs to enable responsible decision making, and life options programs that assist adolescents to develop a more hopeful future.

Franklin, Grant, Corcoran, Miller, and Bultman, (1997) completed a meta-analysis of 32 outcome studies on the prevention of adolescent pregnancy. Sexual activity, contraceptive use, and pregnancy rates or child birth were the outcome variables used. Franklin et al. (1997) examined the programs from the perspective of the locus of intervention (community or school based), the type of programs (clinic vs. non clinic), type of intervention (abstinence-only, contraception with education, contraception without education), the focus of the intervention (skill building or no skill building), the design (experimental or non-experimental), and subject related variables (age gender, ethnicity, socioeconomic status, and sexual status). Fifteen

studies consisting of 25 independent outcomes reported pregnancy rates. Franklin et al. (1997) found in general that programs had no effect on sexual activity, but had a small but significant positive effect on contraception use and pregnancy rates. Program characteristics impacted pregnancy rates in that, for example, community based programs were more effective than school based programs and clinic based programs were more effective than non-clinic based programs. Specific findings from individual studies will be reported under "Components of successful programs."

Nation, Crusto, Wandersman, Kumpfer, Seybolt, Morrissey-Kane, and Davino (2003) reviewed literature from 1990-1999 to compile key principles that underlie effective prevention programs. These programs were not directed solely at pregnancy prevention, but rather had been designed to prevent various forms of risk-taking behavior including risky sexual behavior, drug abuse, and delinquency. Multiple selection criteria were identified for the review including that the article had to be a narrative review that summarized the results of prevention research in one of the selected content areas and the articles had to go beyond listing best practices or describing the status of research to provide an explicit discussion of the common features of effective program recommendations. Thirty-five review articles published between 1991 and 1997 were found to meet the criteria. Based on the review, Nation et al., (2003) found that there were nine principles associated with effective programs. The first group of principles are considered program characteristics: and include being comprehensive, including varied teaching methods, proving sufficient dosage, being theory driven, and providing opportunities for positive relationships. The second group of principles relate to matching the programs to the target population and included being appropriately timed and being socio-culturally relevant. The final

two principles related to the program implementation and evaluation and included outcome evaluation and well-trained staff.

Robin, Dittus, Whitaker, Crosby, Ethier, Mezoff, Ches, Miller and Pappas-Deluca (2004) reviewed adolescent sexual risk-taking programs that employed experimental or quasi-experimental methods and were published in the 1990's. One hundred and one articles were reviewed and twenty-four programs met their inclusion criteria. Behavioral outcomes that were assessed included delay in the initiation of sexual intercourse, condom use, contraceptive use, and frequency of sexual intercourse. These researchers concluded that four overall factors impact program effectiveness: the extent to which programs focus on specific skills for reducing sexual risk behavior, program duration and intensity, what kind of training is available for facilitators, and being clear on what constitutes the total content of the evaluated program.

Card (1999) reports on a group of pregnancy prevention programs that have been successful in the U.S. and are collectively referred to as the Pregnancy Archives on Sexuality, Health, and Adolescents (PASHA). The Archives holds a collection of 30 pregnancy prevention programs that have been successful in reducing teen pregnancy rates, increasing contraceptive use, or delaying the onset of intercourse (Card, 1999). Programs such as Teen Outreach, and Teen Talk are among the collection. PASHA distributes programs "in-a-box" that contain all of the materials and resources needed to implement these evidence-based programs (Card, 1999).

Teen Outreach is a program that includes a life options and a community services component (Philliber & Allen, 1992). The life options component involves facilitated small group discussion and community service includes volunteerism. The curriculum used in Teen Outreach is common to all sites Nationwide in the U.S. and Canada but there is some variation in other aspects of the program implementation. Most Teen Outreach programs are offered after

school hours, with about one third being offered during school, and slightly less than half are offered for credit. The students in Teen Outreach meet at least once per week throughout the year and engage in discussions on such topics as understanding themselves and their values (Philliber & Allen, 1992).

Allen et al. (1997) conducted a study of Teen Outreach programs in 25 sites in the United States and included 695 students in grades 9-12 with a mean age of 15.8 years, who were primarily female, and from mixed cultural backgrounds, including African American, white and Hispanic. The students participated in three interrelated program elements including supervised community volunteer service, classroom based instructions of service experiences, and facilitated discussions around key social developmental tasks. Allen et al. (1997) demonstrated that Teen Outreach was effective in reducing the rate of adolescent pregnancy among participants. Teen Outreach participants experienced a decline in the rate of pregnancies from the entry level at the beginning of the school year to exit level at the end of the school year; 6.1% of participants in the program had ever been pregnant at entry and 4.2% had experienced a pregnancy since program entry. The control group had a pregnancy rate of 10% at entry and 9.8% had experienced a pregnancy during the study period.

Aaron et al. (2000) evaluated a pregnancy prevention program in which 582 grade 7 students with mean age of 12.8 years were randomized to receive either a conventional sexual education programs or 3 reproductive health classes taught by health professionals, 5 sessions on postponing sexual involvement taught by peer leaders from the 10th and 11th grades, along with completing a health risk questionnaire. "Brown bag" topics (one per week) covering a range of topics from gang violence, drug abuse, personal hygiene, and teen pregnancy were discussed. Students were followed from the beginning of the 7th grade to the end of the 7th grade.

Additional "booster activities" were employed in the eighth grade that included an assembly on sexually transmitted diseases and a contest in which students were invited to create a poem, drawing, or essay, write a song, or design a T-shirt; participants were given a T-shirt bearing a drawing that reinforced the intervention theme: "Be Smart, Don't Start." The study revealed that at the 3-month follow-up, the intervention group had delayed or reduced the frequency of intercourse, and had used birth control at last intercourse more consistently. Regarding the use of birth control/ condoms the last time the female students had sex, the odds ratio was three to four times higher for intervention group females over control i.e. 3.86 at the end of the 7th grade (T1), 7.43 at the beginning of the eighth grade (T2), and 3.39 at the end of the eighth grade (T3). Less difference between intervention and control were observed among males with the odds ratio being 1.47 at T1, 1.03 at T2, and 1.53 at T3.

Components of successful pregnancy prevention programs

Broadly speaking, the components of successful pregnancy prevention programs include interventions that address all of the factors that have a role in predisposing, precipitating and protecting against risk-taking behavior including: biological, psychological, cognitive, social, and environmental factors (Igra & Irwin, 1996; Stevens-Simon & McAnarney, 1996). These components of pregnancy prevention will be described followed by an explanation of the underlying principles that have been found to be critical to prevention program's success (Dryfoos, 1990; Nation et al., 2002). The components and principles of successful adolescent pregnancy prevention programs have been compiled and are depicted in tables 5 and 6 respectively. It is interesting to note that bio-psycho/cognitive, social/ environmental risk-taking factors are aligned with the broad determinants of health, that include biology (genetic endowment, family history, and physical and mental health problems acquired during life),

health practices and coping skills, the social and economic environment, education, and access to health care services, and which serve as a guide to all holistic population health initiatives (WHO, 2004.)

Biological components of pregnancy prevention

The first component of a pregnancy prevention program relates to biology and incorporates interventions that address biological factors of risk-taking. This component is directed toward primary, secondary and tertiary forms of prevention. The biological component includes interventions that address the role of hormones, provides access to free and confidential contraception (Dryfoos, 1990), and screens for predisposing factors including a family history of risky sexual behavior, or asynchronous pubertal development (Igra & Irwin, 1996). Providing access to "free" (or minimal charge) and confidential contraception is critical in addressing the biological component of pregnancy prevention (Brown & Eisenberg, 1995; Dryfoos, 1990). Brown and Eisenberg (1995) report that providing access to contraception has a positive impact on the use of contraceptives and should be more consistently incorporated into pregnancy prevention programs. More information about this component of pregnancy prevention is provided under the program principles described below.

In addressing the biological component of pregnancy prevention, it is noted that males have a greater predisposition to risk-taking behavior than females (Igra & Irwin, 1996). Based on their review of the literature, Brown and Eisenberg (1995) recommend that there should be further expansion of contraception, sexuality education, life skills training, and career support for males in pregnancy prevention programs. This aspect of pregnancy prevention has not been thoroughly investigated and should be incorporated and evaluated in future endeavors (Brown & Eisenberg, 1995).

Psychological/ Cognitive component of pregnancy prevention

The psychological component of pregnancy prevention speaks to the need to address emotional factors that predispose or precipitate adolescent risk-taking (Igra & Irwin, 1996). Interventions targeting psychological factors include screening for depression, and low self-esteem, as well as counseling about feelings, attitudes, motivations, and beliefs about sexuality, contraception, and becoming pregnant (Brown and Eisenberg, 1995). According to Elfenbein and Felice (2003), exploring an adolescent's knowledge and perceptions about contraception provides an opportunity to dispel myths about how contraceptives should and should not be used, and the role that each type plays in preventing pregnancy, STIs, and HIV transmission. It is also important to use this opportunity to explore the adolescent's fears related to side effects such as weight gain, infertility, and cancer, as well as their perceptions about the likelihood of getting pregnant or the "it can't happen to me" idea. Ambivalence about pregnancy prevention and romanticized ideas about having a baby may play a role in determining how the adolescent uses contraception and must be addressed (Elfenbein & Felice, 2003). Interventions that foster hope for a brighter future such as those that have been incorporated in the Teen Outreach programs, such as life skills, career counseling, and vocational training speak to the psychological components of adolescent pregnancy prevention (Allen, et al., 1997; Philliber & Allen, 1992).

Interventions directed at cognitive factors include increasing knowledge about reproductive health, developing skills in the area of communication and decision-making, and supporting performance in school (Nation et al., 2003). Bolstering school and community involvement, and academic attainment serves as protective factors in pregnancy prevention, while school transitions or failures are red flags for risk-taking behavior (Igra & Irwin, 1996).

More information about the psychological/ cognitive component of risk-taking and pregnancy prevention is provided under "Program principles."

Social/ environmental component of pregnancy prevention

In the social component of pregnancy prevention programming, interventions include screening for disruptive peer relationships, providing support for family intactness, and enabling positive relationships with peers, parents, teachers or other community role models (Igra and Irwin, 1996). This component of pregnancy prevention has been implemented using various measures that include utilizing peer instructors in sexual education, and enhancing communication skills for dealing with parents and peers (Allen, 1997). To attend to the environmental influence, interventions to address poverty, lack of educational opportunities, and deficient community resources are called for. Prevention programs developed to help adolescents within their school and community context have reported some success in reducing the rates of pregnancy (Aaron, 2000; Allen, 1997). Successful programs such as Teen Outreach incorporated skill development, life options (career planning and training), and community volunteerism (Allen, 1997). Plotnick (1993) suggests that policies and programs that target adolescents' educational and earnings opportunities (such as job training, and guaranteed student loans) hold promise in indirectly reducing teenage pregnancy.

Principles of successful pregnancy prevention

In implementing the components of pregnancy prevention programs, a number of principles have been shown to be associated with success in changing adolescent sexual behavior. The principles and characteristics of effective prevention programs as described by Nation et al, (2003), and Card (1999) are strongly represented in this discussion. The principles

described by these researchers have been supported in other studies of successful programs that will be cited.

Principle 1: Approach adolescent risk-taking behavior from a *holistic* (bio-psycho/cognitive, *and* social/ environmental) perspective

This program principle speaks to the need to holistically consider all of the factors that are involved in predisposing, precipitating, or protecting adolescents from risk-taking behaviors. Programs that only address one component of adolescent risk-taking, such as a lack of knowledge, may miss some fundamental precipitating factor such as low self-esteem or the absence of hope for the future. The principle of tackling the problem from a holistic perspective is applicable to primary, secondary, and tertiary prevention. A holistic approach emphasizes the importance of life circumstances and the context of pregnancy as much as the sexual behavior itself. The literature pertaining to pregnancy prevention consistently advocates for a more holistic approach to adolescent problem behavior (Brown & Eisenberg, Burt, 2002; Card, 1999; Igra & Irwin, 1996; Kirby, 2002; Stevens- Simon & McNarney, 1996). While every component of pregnancy prevention is important, each component by itself is unlikely to achieve the desired results unless the other components are taken into consideration (Brown & Eisenberg, 1995; Burt, 2002; Stevens-Simon & McNarney, 1996).

Burt (2002) supports the principle of a holistic pregnancy prevention strategy in noting that there is a tendency to address single problems and symptoms rather than underlying conditions. Burt (2002) maintains that programs fail because they do not take a holistic approach to youth, their families, their environment, and the overall context in which the behavior occurs. If programs only address one symptom of a systemic problem, the pressure from life conditions may divert the adolescent into another health threatening outlet. Robin et al. (2004) note that

broad-based programs are less likely to raise community objections because they focus more on youth development and behavior in general as opposed to sexuality itself.

One tactic that may enable a more holistic approach to pregnancy prevention involves completing a health risk assessment on children and adolescents that evaluates their needs in all areas of risk-taking. Harrison, Beebe, Park and Rancone (2003) successfully employed an electronic Adolescent Health Risk (AHR) self-assessment tool to help identify teens who were at risk for a variety of risky behaviors. This approach addresses primary and secondary prevention in the hopes of reaching adolescents before problem behaviors develop or become ingrained. Although the study that evaluated the risk assessment tool did not assess the long term impact of using the tool on the frequency of sexual activity or the rate of adolescent pregnancy, Harrison et al. (2003) point out that using the instrument did enable self reporting of risky behavior in a non-threatening manner. The usefulness of this screening tool in changing behavior has yet to be evaluated. However, screening for other risk-taking behavior may be useful given that, for example, substance abuse by adolescents contributes to bad judgment, greater impulsiveness, and poor memory regarding contraceptive use (Franklin and Corcoran, 2000). Kirby (1997) asserts that successful programs focus on reducing one or more sexual behaviors that lead to pregnancy. Burt (2002) adds that system markers such as poor school performance, the need for child protection, and out-of-home placement may offer warnings about risk taking. Problems with, for example, depression, low self- esteem, and peer relationships should also serve as warning signs for potential risk-taking or problem behavior. Programs should use these red flags to identify the children who will benefit most from getting special care and attention (Burt, 2002). Empirical evidence for a more holistic approach to reducing risk-taking behavior and adolescent pregnancy is implicit in the principles of successful programs described below.

Principle 2: Use a theory-driven approach

Successful programs are theory driven or based on a solid theoretical and empirical framework (Card, 1999; Dryfoos, 1990, Kirby, 2002; Nation et al., 2003). This principle of successful programming is relevant to all forms of pregnancy prevention including primary, secondary and tertiary. Kirby (2002) reviewed 73 pregnancy prevention programs and notes that curricula that demonstrated a reduction in unprotected sexual activity were based on theoretical approaches that had been effective in influencing other risk-taking behaviors and on research that identified determinants of sexual behavior.

Franklin and Corcoran (2000) reviewed pregnancy prevention programs and found that sex education curricula based on social learning theory was more effective than other types in delaying sexual activity. Social influence and learning theories allow a program to go beyond the cognitive level to focus on changing individual values and group norms as well as building social skills. Kirby et al. (1997) assessed the impact of a new curriculum that was based on social learning and social inoculation theory on risk taking behavior. The social inoculation theory proposes that people develop resistance to social pressure when they can recognize the various forms of pressure. With this insight, people become motivated to resist pressure, and they have the capability to do so. Furthermore, Kirby notes that social learning, as applied to pregnancy prevention, posits that an understanding of what must be done to avoid pregnancy, a youth's belief that he or she will be able to use the method, the belief that the method will work, and the anticipated benefit of accomplishing the behavior, determines the likelihood of actions such as using birth control. In the curriculum presented by Kirby et al. (1997), instructors model socially desirable behaviors and students practice these behaviors through role-play and experience. In the study completed by Kirby et al (1997), the program (based on social learning

theory) was effective in reducing the percentage of students who engaged in unprotected sexual intercourse 18 months after the program to 3% among participants compared to 11% in the control group. The Teen Outreach program (previously described) also achieved favorable results in reducing risky behavior and is grounded in the social learning theory (Allen et al., 1997).

Kirby, Barth, Leland and Fetro (1991) studied the "Reducing the Risk" curriculum that was based on the social learning, social inoculation, and cognitive-behavioral theory. The specific use of the social learning theory and the cognitive behavioral theories in providing sexuality education speaks to the psychological and cognitive factors involved in risk-taking, such as deficient parental relationships and dysfunctional peer relations that tend to precipitate risk-taking behavior (Irwin & Ryan, 1989). The study examined the influence of the curriculum on sexual risk taking in a quasi-experimental design in 13 high schools with 758 students. Adolescents were interviewed pre exposure and again after 6 and 18 months. Among the students who had not initiated intercourse prior to the pre test, the curriculum significantly reduced the likelihood of them having intercourse by 18 months later. After 18 months, only 29% of the treatment group had initiated intercourse, compared with 39 % of the comparison group ($p<0.05$). Among lower risk students, and those who had not already initiated sex, the curriculum significantly reduced unprotected sex, either by delaying sex or by increasing the use of contraceptives. According to chi square analyses, at 18 months, females and lower risk youths were more likely to use birth control most or all of the time than were their counterparts in the comparison group.

Principle 3: Employ comprehensive, multi-faceted interventions

Successful adolescent pregnancy prevention programs are comprehensive and multifaceted to address risk-taking behavior and its precipitating factors (Brown and Eisenberg, 1995; Card, 1999; Nation et al. 2003). The idea of using multiple interventions aligns well with the bio-psycho-social models of risk-taking that assert that multiple factors are involved in risk taking and therefore multiple approaches are also called for. The concept of using multiple interventions is further explained by Nation et al (2003) to include three facets:

- Increasing knowledge and awareness
- Providing reproductive health services
- Promoting skill development

Increasing knowledge and awareness

The notion of increasing knowledge and awareness speaks to the psycho-social/ cognitive aspects of risk-taking. The Canadian Guidelines for Sexual Health Education (Health Canada, 2003) state that programs should:

- foster self esteem and personal insight by promoting self worth and dignity
- instill the impact of behavior
- reflect a balanced approach to sexual health and prevention of negative outcomes
- deal with sexual health as a lifelong process requiring consideration of age and stage of life
- assist with behavioral change
- be culturally sensitive and relevant
- ensure that the content does not discriminate against individuals on the basis of race, ethno-cultural backgrounds, sexual orientation, or disability

- the content counters misunderstandings about these groups; and
- establish an atmosphere where adolescents feel safe to ask questions

Stevens-Simon and McAnarney (1996) point out that parents also need to be engaged in education around sexuality and risk-taking so that they are informed and motivated, can participate in teaching their adolescent children, and they can create a protective environment for them. Kirby (2002) added that sexuality education should provided accurate information about the risks of unprotected sex, and focus on reducing one or more sexual behaviors that lead to unintended pregnancy, or sexually transmitted infections (STIs).

Support for tackling the issues of pregnancy prevention and STI/HIV prevention jointly came from a review of multiple programs conducted by Whaley (1999). Whaley found that some adolescents are more concerned about pregnancy prevention than disease prevention while others other more worried about acquiring disease. By addressing the two together, there is potential to change behavior. Gillmore et al. (1997) adds that "dual protection" approaches to pregnancy and STI/HIV may help those who are ambivalent towards pregnancy but concerned about disease; the converse may be true for other adolescents who deny the risk of STIs but who are fearful of becoming pregnant.

An example of an effective educational program is Safer Choices, a multi-component HIV/STI and pregnancy prevention program for high school students. This 2-year, school based intervention is based on social cognitive and social influence theories and is unique because it focuses on school wide change and the influence of the total school environment on student behavior. The program consists of five primary components (1) school organization, (2) curriculum, (3) peer resources and school environment, (4) parent education and (5) school-community linkages. Five schools were randomly assigned to use the Safer Choices while five

other schools used the standard, knowledge-based HIV prevention curriculum. Safer Choices was found to have reduced the number of incidences of unprotected sex in the last three months p=0.03, lowered the number of sexual partners with unprotected sex, near significance at p=0.07, and increased the use of contraceptives among sexually experienced students and use of an effective pregnancy prevention method, including birth control plus condoms p=0.03 (Coyle et al., 1999).

Providing reproductive health services

A variety of approaches to reproductive health services have been employed to address the biological components of risk-taking which include discussion around abstinence and/ or contraception, access to contraceptives, and contraceptive counseling. After a review of multiple programs, Kirby (2002) and Brown and Eisenberg (1995) report that "abstinence-only" approaches generally do not work, although some studies were inconclusive. For example, Postponing Sexual Involvement (PSI) is a program designed for students aged 16 years and younger and is aimed at deterring teens from having sexual intercourse. Participants learn about human relationships, sources of sexual pressure, and assertiveness responses to use in high-risk situations using role-play and peer interaction. Evaluations of the PSI program revealed that girls who had participated in the program were significantly less likely to have engaged in sexual activity before Grade 9, but the favorable results declined after that and there was no significant effect on pregnancy rates.

Card (1999) reviewed thirty adolescent pregnancy programs and found that the most successful programs convey abstinence as the safest options, and "safer sex" (consistent use of reliable dual purpose forms of contraception) the best alternative. Based on the review of thirty adolescent pregnancy programs, Card (1999) asserts that the most successful approach to

preventing pregnancy and STIs is to puts forward a "simple two-part message: " a) abstinence is the gold standard for sexual protection among middle and high school students because it is the only way to be 100% sure you will not get pregnant or cause pregnancy to happen. b) If, however, you do chose to have sex while still an unmarried teenager, you must use contraception and protect yourself every time you have intercourse, including the first time." (p. 280).

Access to affordable contraceptive agents is a vital component of teenage pregnancy programs (Brown & Eisenberg, 1995; Dryfoos, 1990; Franklin & Corcoran, 2000; Stevens-Simon & McAnarney, 1996) and speaks to the biological component of risk-taking and pregnancy prevention. Kirby, Waszak and Ziegler (1991) reviewed six school-based programs and suggested that dispensing contraceptives alone was not sufficient to dramatically increase contraception use, but in combination with other education, positive outcomes could be achieved. Stevens-Simon and McAnarney (1996) assert that to be successful, access to contraceptives includes programs that address the requirement for contraceptive use early in an adolescent's life and before the initiation of sex if possible.

Providing timely access to suitable forms of contraception and information are critical aspects of tertiary pregnancy prevention. Successful programs document that discussions around contraception should begin prenatally and be resumed soon after birth, at least by 4 weeks post partum (Klerman, Baker, & Howard, 2003). Stevens-Simon, Kelly and Kulick (2001) found that using a long-term hormonal contraceptive during the puerperium was associated with pregnancy prevention during the first two postpartum years, and note that long term contraceptives such as Depo-Provera may be particularly valuable for adolescent mothers because contraceptive use may be less vigilant in the absence of a regular boyfriend and due to various social pressures around further child-bearing.

Counseling in the area of contraception use is an important aspect of pregnancy prevention and has been incorporated into many successful programs (Stevens-Simon & McAnarney, 1996). This principle of pregnancy prevention speaks to biological and psychological-cognitive aspects of risk-taking. Adolescents cite a number of reasons for not using contraception ranging from concern over side effects to fear about infertility (Stevens-Simon & McAnarney, 1996). Stevens-Simon and McAnarney (1996) assert that contraceptive counseling must address the belief that pregnancy is possible (acknowledges the "It can't happen to me" myth in adolescent thinking), strengthens the belief that prescription contraceptives are safe and the only reliable way to prevent pregnancy, enable proper use of contraceptives through evidence based instruction, facilitate a positive sexual concept. This enables conscious decision making about sexual and contraceptive behavior and communication with a male partner about childbearing, and foster a desire to postpone child-bearing

Through contraceptive counseling, it may be possible to uncover other factors including sexual abuse and aggressive partners that may be influencing the adolescent's interest in, or ability to use, contraception (Elfenbein & Felice, 2003). Adolescent mothers who cited a lack of motivation to postpone pregnancy or side effects as the reasons for not using contraceptives are less likely to use hormonal methods and more likely to have a repeat pregnancy (Stevens-Simon et al., 1998). These findings advocate for appropriate counseling and differing approaches for those with easier to modify reasons for not using contraceptives (did not have access to contraceptives, did not plan to have sex, did not know how to use it) and those with more difficult ones (such as ambivalence or the partner/ adolescent's desire to get pregnant) (Stevens-Simon, et al., 1998).

Adolescents who have been sexually abused or in abusive relationships require a special form of counseling in relation to birth control, although the nature of that support is not well studied according to Franklin and Corcoran (2000). "Because of their over-sexualized identity, these adolescents may not act to prevent pregnancy even if given the appropriate knowledge and skills to do so" (Franklin and Corcoran, 2000).

Promote skill development

The third aspect of using multiple interventions as described by Nation et al. (2003) includes the concept of skill development. In a review of multiple programs, Robin et al. (2004) found that effective programs focused on skills that specifically reduce sexual behaviors. The concept of skill development extends from enabling peer-to-peer communication (including the means to refuse sexual pressure), decision-making skills, and proper use of contraceptives to youth development skills that facilitate career planning and vocational training (Franklin & Corcoran, 2000). Skill building addresses the cognitive and psychological component of risk-taking and pregnancy prevention. Successful youth development programs attempt to strengthen a broad spectrum of psychological, social, and behavioral competencies rather than focus on narrowly defined and specific behaviors (Nation et al., 2003). Life options programs involve a more holistic approach to pregnancy prevention by helping adolescents strengthen their academic achievements and career potential (Franklin & Corcoran, 2000).

Lonczek, Abbott, Hawkins, Kosterman, and Catalano (2002) demonstrated several long-term benefits of a youth development program. By helping students stay in school, achieve better grades, and develop vocational plans, adolescents are more likely to delay risk-taking, including sexual activity and childbearing. Lonczak et al. (2002) reported that a Seattle social development program that promoted academic success, social competence, and bonding to

school in elementary grades was able to reduce risky sexual behavior, the likelihood of becoming pregnant before age 21, and the incidence of sexually transmitted disease.

Skill development was also supported in an evaluation of a program that involved age-appropriate social competence training for students as well as their parents and teachers in grades 1, 2, 3, 5 and 6. Fewer students who received the intervention reported engaging in heavy drinking (15.4% vs. 25.6%, p=. 04); having sexual intercourse (72.1% vs. 83.0%, p=. 02); having multiple sexual partners (49.7% vs. 61.5%, p=. 04); and becoming pregnant or causing pregnancy by age 18 (17.1% intervention vs. 26.4% control, p=. 06). The full intervention group demonstrated less risk-taking behavior six years after the intervention than the control group who received partial skills training (Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999).

Volunteer service programs have been incorporated into some of the skill development programs and have been successful in reducing risk-taking/ problem behaviors (Philliber & Allen, 1992). Having programs that facilitate volunteerism for at-risk adolescents provides an opportunity for them to develop their self-efficacy (the belief that skills learned can be used), and self-esteem and bond with positive role models (Philliber & Allen, 1997; Stevens-Simon & McAnarney, 1996.)

Burt (2002) supports the notion of strengthening the skill base of adolescents and providing them with life options that are more appealing than pregnancy. Burt (2002) points out: "without the realistic hope of getting ahead economically, there is little incentive for youth to invest in education or protect themselves from some of the less healthy habits they may acquire during adolescence" (p.137). Burt (2002) suggests that adolescents may be helped to achieve their developmental tasks through "legitimate entrepreneurial activity or community service" (p.138) that provides long-term benefits to the adolescent and society. The Committee on

Unintended Pregnancy recommends programs should speak as much to "planning for pregnancy" as preventing unintended pregnancies and noted that adolescents should be helped to learn how to plan for their futures and how to build family relationships (Brown & Eisenberg, 1995). Brown and Eisenberg (1995) assert that bearing children and forming families are among the most meaningful and satisfying aspects of adult life and should be encouraged as such.

The principle of using multiple interventions was supported in a well-designed study of the successful Children's Aid Society-Carrera Programs (CAS-Carrera) conducted by Philliber, Kaye, Herrling and West (2002). Six agencies in New York City each randomly assigned 13-15 year olds to their usual program or to the intervention being tested. Both program and control participants were followed for three years. There were 242 male and female participants in each group. The Carrera programs provided a variety of approaches including family life and sex education, an education component, a work-related intervention that included a job stipend, opportunities for self-expression, and individual sports (Philliber et al., 2002). The Carrera model focuses on reducing pregnancy, but uses a comprehensive youth development approach with sexuality education and contraceptives to those who become sexually active. The staff is trained and parents are given an orientation to the model. Staff treats children as if they were family and each person is viewed as "pure potential" (Philliber et al., 2002, p.245). A holistic approach is used incorporating multiple services to meet comprehensive needs; contact with participants is continuous and long term (throughout high-school). The major activities are supplemented with two services components- mental health care (counseling, crisis intervention, and weekly discussions led by a social worker) and medical care (which included an annual physical). Throughout the school year, program activities run all five days, for about three hours per day. Over the summer, program activities include maintenance meetings to reinforce

young people's sexuality education and academic skills, as well as job assistance and some social events.

Philliber et al. (2002) found that 3 years after being in the program, girls who had been enrolled were much more likely to have used reliable contraception at last intercourse and had significantly reduced the rates of pregnancy. In the intervention group, 3 females gave birth while enrolled whereas 10 females gave birth in the control group. However, among the males, 4 in the program group fathered a child compared to only 1 in the control. These findings suggest that gender specific interventions may be called for. Some programs have included more emphasis on the male role in pregnancy prevention. While there is limited evidence to demonstrate the success of these efforts, Brown and Eisenberg (1995) suggest that it is time to more actively pursue interventions that are directed toward male involvement in contraception.

Principle 4:Utilize multiple settings and disciplines in program strategy

Providing services in multiple settings implies the need to engage all of the contextual systems such as schools, churches, and the larger community that may precipitate or protect against problem behavior; this principle is consistent with social/environmental theory of risk-taking (Dryfoos, 1990; Irga & Irwin, 1996; Nation et al., 2003). In their review of multiple programs, Nation et al. (2003) noted the importance of being connected to schools, the work-world or other institutions. Schools that had school-based health clinics had lower rates of adolescent pregnancy than schools that did not have such clinics (Franklin, Grant, Corcoran, Miller, & Buitman, 1997). It should be noted that the studies that evaluated school based clinics were in the U.S. No literature was found that demonstrated the effectiveness of school-based clinics in Canada. Because of differences in the health care funding model in the U.S. versus Canada, U.S. findings may not directly to the Canadian situation.

The literature suggests that while multiple settings play a role in prevention, certain settings are more effective than others, and some settings are better suited to particular programs. For example, clinic-based programs have been found to be more effective than non-clinic based programs in improving contraceptive use and reducing pregnancy rates (Franklin & Corcoran, 2000; Franklin et al., 1997; Hofferth, 1991), although, in their meta-analysis of 32 studies, Franklin et al. (1997) were not able to determine what aspects of the clinic-based programs made them more effective than non-clinic based programs. Contraceptive use and pregnancy rates improved in community-based programs more than school-based programs (Franklin et al., 1997).

Implicit in the use of using various settings is the notion of creating partnerships with multiple disciplines. Langille (1999) evaluated a Canadian program implemented in Amhirst, Nova Scotia where members of the community noticed that many adolescents were engaging in unsafe sexual behavior. The group formed a non-profit organization that spearheaded program development in collaboration with existing community structures including school and health agencies. Various approaches were used including school-based health education, a media campaign, creation of a teen health clinic, and the formation of a coalition of parents, educators, teens, and community workers. The organization formed partnerships with people in the community itself and others with varied backgrounds including researchers, educators, policy-makers, and the youth themselves. This program, described as a participatory action research (PAR) approach, proved to be successful in that two years after the interventions, youth in Amhirst were significantly more likely to be using contraception more frequently and consistently (Langille, 1999).

In the area of repeat pregnancy prevention, Key, Barbosa, and Owens (2001) studied the effect of a high school-based intervention for pregnant and parenting adolescents to determine the birth rate among participants. The interventions included weekly group meetings throughout the school year focused on parenting, career planning, adolescent issues, and group support; participation in school events such as a school club; individual case management and home visits; medical care for the adolescent and infant through both a linked university-based clinic as well as the school-based clinic; and service projects selected by the group that provided outreach to the community and to at-risk middle school girls. The project coordinator followed up participants even when they did not attend group meetings or school. Evaluation of this program found that the rate of repeat pregnancies was significantly lower among participants compared to the control group. Within the 3 years measured, repeat births occurred in 3 of the 50 participants (6%), compared with 95 of 255 control subjects (37%) ($p < .05$). Of the three participants who had a repeat birth, each had only one repeat birth. Among 255 control subjects, 74 (29%) had one repeat birth, 18 (7%) had two repeat births, and 3 (1%) had three repeat births. This number of multiple repeat births was significantly different between the participants and control subjects ($p < .05$).

Williams and Sadler (2001) noted that students using the services of a school based child-care centre showed improvement in overall grade point averages, and 100% were educationally successful (i.e. they were promoted to the next grade or they graduated from high school). None of the students experienced a repeat childbirth during the period of enrollment and 90% percent of children were up-to-date with pediatric health visits and immunizations. These results lend support to the idea of extending child-care and social support services to teen parents, and for the implementation of high school-based childcare centers as alternative sites for these services.

Principle 5: Employ a variety of teaching methods

Nation et al. (2003) note that successful programs employ a variety of teaching methods. The type of instruction should be adapted to the individual need since different people have different needs and different learning styles. While one teen may respond best to group sessions, others may need individual instruction (Kirby, 2002). Results of a multi program review found that greater success was achieved when emphasis was placed on the active skills-based component of preventative interventions. Interactive instruction and hands-on experiences increased the participant's skill (Nation et al, 2003). According to Kirby (1997), verbal and written practice was found to be effective in negotiating situations that might lead to sexual intercourse. Audiotapes combined with interactive sessions have been shown to be effective in increasing the use of condoms three months after the interventions (Boekeloo, Schamus, Simmens, Cheng, O'Conner, & D'Angelo, 1999.) Card (1999) found that successful programs shared common techniques for instruction including role-plays, group discussions, lectures, and videos.

Brown and Eisenberg (1995) maintain that pregnancy prevention strategies should include a large-scale media campaign to inform and convince the public about the problem and proposed solutions. The Committee on Unintended Pregnancy also recommends that the popular media be persuaded to screen and refine publications and programming to reflect a more healthy approach to sexuality and relationships (Brown & Eisenberg, 1995.)

Principle 6: Provide enough intervention to achieve and sustain outcomes

Nation et al. (2003) identify the concept of "sufficient dosage" as a factor in influencing the success of prevention programs. This term connotes the need to provide enough intervention and adequate follow-up to produce the desired effects. Dryfoos (1990) adds that programs must

include intensive individualized attention as some adolescents may require a more sustained intervention than others. Robin et al (2004) found that both the length and duration of programs influenced the outcomes. The shortest programs (< 1 hour, two hours, and three hours) evaluated by Robin et al. (2004) all produced null effects. A program called "Becoming a Responsible Teen", evaluated by Robin et al. (2004) involved 90- 120 minute sessions over 8 weeks and achieved higher rates of condom use and lower rates of sexual activity. Unfortunately; the positive effects declined after one year.

Rotherham-Borus, Gwadz, Fernandez and Srinivasan (2004) tested two versions of an intervention that had the same overall duration (10.5 hours) but were delivered in three or seven sessions to participants. The seven-session intervention was associated with significantly more reductions in sexual behavior (for example: reduced number of sexual partners p= .02) than the three-session intervention. This principle of delivering sustained and intense interventions was supported in work published by Philliber, Kaye, Herrling, and West (2002) in evaluating the CAS-Carrera programs, which were successful in reducing the rates of teenage pregnancy (p=.01). In these programs, youth were enrolled at age 13-15 and were encouraged to participate throughout their high school stay. CAS Carrera programs operated 5 days a week and students spent an average of 16 hours per month in the program (Philliber et al., 2002).

In a study that involved a group of 100 African American and Latino adolescents, Koniak-Griffin et al. (2003) found that home visitation sustained for a period of two years postpartum was effective in reducing the number of repeat pregnancies after 2 years by 15% among the intervention group (n= 56) over the control group (n=45). Klerman, Baker and Howard (2002) studied a home visitation program that utilized specially trained nurses visiting teenagers in their homes pre-natally and for 24 months post-natally. The program was successful

in reducing the rates of repeat pregnancies at specific various intervals as well as overall (p= .01). Differences between the intervention and control groups were significant at 24 months (84% vs. 74.4%), 36 months (69.4% vs. 57.1%), and 45 months (56.6% vs. 45.9%). In the program, nurses discussed pregnancy spacing and its relationship to life goals in their visitations, which was credited for some of the program's success (Klerman, Baker, & Howard, 2002).

Principle 7: Promote strong positive relationships among peers and parents

Effective programs promote strong positive relationships among peers and parents (Dryfoos, 1990, Kirby, 2002; Nation et al., 2003). This principle is consistent with psychosocial theories of risk-taking behavior that propose that peer relationships are vital in adolescent development and play an enormous role in precipitating or protecting against risk-taking behavior. Kirby (2002) found that effective programs addressed social pressures that may promote sexual behavior and provided instruction and role-playing in relation of communicating with peers and partners. Allen et al. (1997) report that involving peers as instructors in sexuality instruction yielded favorable results in terms of reduced frequency of intercourse and pregnancy.

Principle 8: Ensure appropriate timing of interventions

Appropriate timing is also an important aspect of successful programs as it relates to targeting the particular population (Nation et al., 2003). This concept clearly aligns with the biological and psycho-cognitive components of risk-taking and pregnancy prevention given that adolescents at differing developmental stages have different needs (Stevens-Simon & McAnarney, 1996). Adolescents who experience early puberty are at greater risk of sexual activity; based on their findings, Kotchick, Shaffer and Forehand (2001) recommend that primary care providers screen and counsel these people at a younger age.

Younger, non-sexually active adolescents may be more easily influenced by education around life options, delaying sexual activity, and abstinence, but these are not effective for adolescents who were sexually active before the intervention (Dryfoos, 1990; Kirby, 1991). Nation et al. (2003) found that successful programs were tailored to the developmental stage of the adolescent and the message delivered was changed to match the age of participants. From a review of programs, Dryfoos (1990) also noted that interventions should be implemented at a younger age, targeted toward various domains in the child's life, and timed to target changeable "pre cursor" or warning type behaviors that may signal the onset of risk-taking behaviors as opposed to the problem behaviors themselves.

Burt (2002) asserts that public policy often ignores adolescents until they are older when behavior becomes bothersome and the consequences become apparent. According to Burt (2002), the problems of adolescents are too often seen as being typical or to be expected during this life stage rather than a sign that something is seriously wrong. Burt (2002) goes on to say that "for a significant portion of our youth, seriously inadequate educational achievement and life threatening habits such as addictions, risky sexual behavior, involvement in crime and violence, and too early childbearing foreclose the possibilities that they will become contributing members of society" (p. 136).

Principle 9: Tailor the program to fit the people and their cultural norms

The most successful programs have planned interventions that are sensitive and responsive to the population and their specific cultural needs (Card, 1999, Kirby, 2002; Nation et al., 2003). To ensure cultural sensitivity, the target group must be included in the program planning and implementation (Nation et al., 2003). Kirby (1997) found that programs that had a

positive impact on sexual behavior, such as unprotected intercourse, tailored statistics and example situations to the culture of the participants.

Principle 10: Incorporate well-trained staff

Programs that have been successful have consistently been associated with staff who are well trained and who understand and support the program (Nation et al., 2003). Philliber and Allen (1992) report that the Teen Outreach programs using peer instructors who serve as mentors and positive role models are the most successful. Specifically, it is important that staff are sensitive and competent and that there be sufficient opportunity for adolescents to develop supporting relationships with staff (Nation et al., 2003, Kirby, 1997).

Card (1993) suggests engaging teachers and peers who believe in the program and then providing them with in-depth training and practice sessions. Kirby (1997) reports that successful programs give teachers and staff from six hours to three days of training depending on the amount of material to cover. The training allows for opportunities to practice the implementation. Robin et al. (2004) found that providing thorough training to adult and peer facilitators was more important in making the programs effective than was matching demographic features of the trainers with participants. Nation et al. (2003) cautions, however, that even if staff members are sufficiently trained, their effectiveness can be limited by high rates of turn-over, low morale or a lack of buy-in.

Principle 11: Set clear goals and systematically evaluate outcomes

Effective programs are those that set clear goals and systematically evaluate the results relative to the goals (Brown and Eisenberg, 1995; Kirby, 2002; Nation et al., 2003). In a meta-analysis of 32 outcome based studies, Franklin, Grant, Corcoran, Miller, and Buitman (1997) report that the many programs are inadequately evaluated and furthermore that the quality of

research in the realm of pregnancy prevention is poor. Reasons cited for this deficiency relate to cost, time, and resource constraints Evaluation of social programs requires that rigorous research methods be utilized to translate the evidence into quantitative terms (Weiss, 1972). While systematic evaluation methods are more costly and time consuming, they provide a rigor that is important when the outcomes to be evaluated are complex, the decisions that follow are important or expensive, and the evidence is needed to convince other people about the validity of the conclusions (Weiss, 1972). In the program implemented in Amhirst, one of the specific goals of the program was: "to determine whether coordinated and intersectoral community action on determinants of sexual health at the level of social, learning, and health services environments of a community could lead to risk-reduction in the sexual behaviors of adolescents" (Dilworth, 2000, p.5). This provided direction for the project and gave the committee a way to evaluate the value of the program (Dilworth, 2000).

Summary

The components of successful programs include aspects that address all of the biological, psychological, cognitive, social, and environmental factors that are involved in risk-taking behavior. It is noted, however, that none of the components should be considered in isolation, but rather from a holistic perspective. By considering each component as one "petal" in the more holistic image of the individual (or "flower"), program planners can begin to visualize how a single component will not address the very complex bigger picture.

The components of pregnancy prevention programs are not new concepts but they each serve to remind program planners about the need to develop a multifaceted approach that addresses all of the applicable factors. The principles that have been identified as being related to successful programs can be applied to primary, secondary, and tertiary prevention

components. Pregnancy prevention must be managed with a full appreciation of all of the overlapping factors that come in to play. Each individual brings a distinct set of beliefs and risk-taking factors to the situation and prevention programs must be addressed with their unique needs in mind. Multifaceted, multi-site programs that have demonstrated success in preventive efforts:

- begin early
- address the biological, psychological, cognitive, social, environmental context
- speak to developmental and cultural factors
- involve evidence-based interactive learning
- enable access to appropriate affordable, reliable contraceptives with education
- assess the role of feelings and motivations for pregnancy
- involve the target population at all levels
- support self-esteem, academic attainment, skill development and life options (Brown & Eisenberg; Card, 1999; Dilworth, 2000; Dryfoos, 1990; Langille, 1999; Nation et al., 2003).

By looking "upstream" to the source of risk-taking, pregnancy prevention can be tackled in concert with other health jeopardizing behavior. Through rigorous short and long-term evaluations, it will eventually be possible to gain a full understanding of the impact of the prevention programming.

Chapter 6

Recommendations and Implications Arising From the Review

Introduction

Just as the components of successful programs are not new concepts, the steps needed to move the plan forward are also steeped in age-old theories of change (Hamer & Collinson, 1999). However, inevitably there are gaps between science and practice (Dilworth, 2000). In this chapter, recommendations and implications of the review will be discussed and the next steps will be put forward. Additionally, a description of the presentations that were given to stakeholder groups in the Brandon RHA will be provided including a synopsis of feedback received.

Making a Change

Nation et al. (2003) suggest that often financial and other resource constraints limit the type of programs and evaluation strategies that can be implemented. Time can be a major limiting factor as well. Additionally, Nation et al. (2003) point out that practitioners may not be getting up-to-date-information on what works in prevention and add that while there are recurrent themes related to prevention programs, additional research is called for to differentiate the levels of importance related to each principle, especially in relation to previously ignored issues such as staff training.

Moving forward with any program or project involves a set of steps that have been characterized by Bullock and Batten (1985) as the phases of planned change. This four-step model includes the exploration phase, when the organization comes together to examine the data and determine whether there is a need for change, and if so, what resources are needed to bring the change about. The second phase involves planning, which includes identification of key

issues, mutually agreed upon goals and actions. The third stage is the action phase when the action plan is agreed upon and an evaluation strategy is defined. The final integration phase involves consolidating the change through appropriate training, communication among stakeholders, and ongoing evaluation (Bullock & Batten, 1985).

Given the framework of successful pregnancy prevention programs, there is an opportunity to review existing programs for the purpose of detecting gaps between what is being done and what could be done. To tackle an initiative such as this, a number of steps would need to be taken; in this chapter, potential "next steps" arising from the review will be discussed.

Exploration phase: Assessing the needs

Before tackling the problem, a full appreciation of the issue and the strategies that are being employed to address it must be achieved. To this end, a community needs assessment (such as the one being undertaken in the Brandon RHA in 2004) is called for. In the assessment, all data relative to the problem need to be uncovered. Secondly, all regional program endeavors should be listed and examined including individual, school, clinic, and community-based programs; the interventions and approaches used in each program should be described in a systematic fashion. Once all of the data is compiled, a decision must be made as to whether change is in order.

Planning phase:

Assembling the team

An early step in approaching the topic of adolescent pregnancy would be to call together the key stakeholders. In planning any program or change, better "buy-in" can be achieved by involving the group that is closest to the problem into the planning (Porter-O'Grady, 1995). As noted by Nation et al. (2003), programs directed at adolescent behavior should be planned from

their perspectives, and their involvement in the process is imperative. Adolescents bring their very relevant and unique perspectives to the discussions; they can enrich the group's understanding of issues and potentially be enriched themselves through the interactions and the process. As members of the peer group, adolescents have strong potential to influence behavior in those around them. Peers tend to prefer hearing messages from peers to hearing them from authority figures (Nation et al., 2003).

In planning a program change, it would be critical to involve those who are in contact with adolescents regularly and at a young age, including parents and teachers. Parents have great potential to impact on risk-taking behavior by providing protective factors like maintaining an intact home, giving the child a strong sense of "family", providing adequate supervision, ensuring reasonable boundaries around behavior, supporting them with homework activities to enable academic achievement, and encouraging involvement in sports, church or other community activities (Igra & Irwin, 1996). Parents are in a key position to provide early education about sexuality and relationships and so are key players in program planning (Igra & Irwin, 1996).

Likewise teachers need to be involved in the overall pregnancy prevention strategy as they can serve as positive role-models and mentors, promoting healthy lifestyles and connections to school activities. Teachers, student advisors, and career counselors can provide early education around risk-taking behavior, sexuality and relationships; they can also raise a red flag when predisposing or precipitating factors for risk-taking become apparent. School Board and Division officials who set policies and budgets have a key role in program planning and, therefore, their involvement is also important (Dilworth, 2000; Dryfoos, 1990; Nation et al., 2003).

Family physicians, pediatricians, nurse practitioners, public health nurses and others who deliver primary care should be involved in the program planning process as they are all in key positions to provide anticipatory guidance around family life, risk-taking, sexuality, and relationships. However, in putting together a team, it would be important to look beyond the traditional providers of "health care" to engage other community partners who potentially have an impact on the determinants of health and risk-taking behavior. Civic officials; the media; agencies such as the Sexuality Education Resource Centre, Child and Family Services, the Addictions Foundation, and Community Mental Health; and self-help groups such as The Friendship Center, and the Manitoba Metis Federation could be involved in the process as they each can play a role in reducing the chance that adolescents will engage in pathogenic forms of risk-taking. Many of these players can assist by being alert to predisposing or precipitating factors that often signal risk-taking behavior, and thereby assisting the child at a pivotal moment.

Setting goals and strategic planning

Once the inter-professional, intersectoral team was convened and the data compiled, it would be useful to begin the process of strategic planning. Goals must be set, interventions planned, timelines drawn out, and evaluative criteria established. Formative and summative evaluations should be incorporated into the plan along with a process for continuous feedback to the steering team (Steven-Simon &McAnarney, 1996; Weiss, 1972). The committee would need to establish communication strategies and plans for the dissemination of information (Brown & Eisenberg, 1995; Burt, 2002; Nation et al., 2003).

As indicated in the literature, the strategic plan should entail the development of a proactive, multifaceted, holistic program that looks beyond single problems toward the broad determinants of health and factors that predispose, precipitate or protect adolescents from

detrimental forms of risk-taking (Brown & Eisenberg, 1995; Burt, 2002; Dryfoos, 1990; Nation et al., 2003; Stevens-Simon & McAnarney, 1996).

Some interventions arising from the review of successful programs include the following:

(1) Assess whether programs address all of the bio-psycho-cognitive, and socio-environmental using a holistic approach to adolescent health and well-being

a) Determine if program is using broad developmentally focused interventions targeting multiple problem behaviors (for eg. drinking, drug use, or unprotected sex)

b) Determine if programs assess for predisposing, precipitating, and protective factors for risk taking as well as the broad determinants of health (including socio-economic factors, housing, education, community support, access to health care and personal health practices).

c) Partner with school and community agencies to ensure optimal general health and well being

d) Facilitate access to health care, social support, education among "at risk" youth; facilitate academic success through educational support, tutorials, and student loans

e) Develop a strategy to engage (target, attract and involve) adolescents who are not are not already accessing programs, services, or primary preventative health care

f) Assess whether adolescents who are experiencing family disturbances or emotional turmoil are being red-flagged by all providers for additional support and intervention (Burt, 2002)

g) Ensure that programs are connecting with adolescents who are engaged in some form of risk-taking behavior, who have friends who are trouble, who have been victims of sexual abuse, or are having trouble in school

h) Assess whether current programs are theory driven (based on social learning theories), empirically supported, structured with clear goals, and organized for systematic evaluation of each component

i) Assess whether current programming is developmentally and culturally sensitive

j) Determine if programming is commencing before the initiation of sex

(2) Assess for the use of peer as well as adult trainers in adolescent pregnancy/ risk taking prevention programs

a. Assess adequacy of training for all facilitators of current programs

(3) Develop a communication strategy to improve awareness among adolescents and their parents about the predisposing, precipitating, and protective factors for risk taking behaviors

a. Involve parent-teacher associations, teachers, and other sectors

b. Create a culture of open communication between parents, students, and teachers

(5) Partner with local ethnic and cultural support groups to learn about potential cultural influences on risk taking behavior, contraceptive use, learning, relationships, and other matters related to pregnancy and parenting

(6) Offer culture and age-specific education about oral, trans-dermal and injectable forms of contraceptives, their safety and benefits

a. Facilitate selection of contraceptives that fit with the individual's needs and beliefs; offer/make provisions for long term contraception options that may enhance compliance

b. Promote use of contraception soon after child bearing among adolescent mothers, at least by the beginning of the first month post partum; discuss family planning before the baby arrives (Steven-Simon & McNarney, 1996)

(7) Assess current programming for communication and decision-making skills, and life skills development

(8) Ensure that curricula of sexual education programming align with the Canadian guidelines (Health Canada, 2003).

a. Ensure that multiple interactive teaching methods are used to involve the participants, remembering that passive dissemination of information tends not to work (Hamer & Collinson, 1999)

(9) Assess the timing, intensity and duration of current programming for appropriateness and adequacy

(10) Investigate evidence-based programs (such as Teen Outreach) that have been successful in other areas to complement existing programs in the area of life options, volunteerism, and other social factors

(11) Ensure the availability of contraceptives in multiple locations through intersectoral partners who are already seeing adolescents who have predisposing, precipitating factors, or who are already engaging in other risk-taking behaviors (Brown & Eisenberg, 1995; Burt, 2002; Nation et al, 2003)

(12) Provide evidence-based contraceptive counseling in multiple setting by various professionals and sectors that includes a discussion around barriers to contraceptive use, fear of side effects, motivations for pregnancy and, lack of negative attitude toward childbearing; use interdisciplinary approach.

a. Encourage primary care providers to assess for risk taking factors at every opportunity

b. Encourage primary care providers to seize the "teachable moments" to provide information and support to adolescents and their parents related to all forms of risk taking (Brown & Eisenberg, 1995; Steven-Simon & McAnarney, 1996)

(13) Engage the media in a pregnancy prevention strategy.

a. Involve media in a campaign to educate and inform adolescents, parents, and the public at large about risk-taking behavior (protective and precipitating factors), the consequences of adolescent pregnancy, and the available programs (Brown & Eisenberg, 1995)

b. Enlist the support of the popular media in monitoring the content of popular programming and positively influencing norms related to sexuality and relationships

c. Collaborate with various sectors (Child and Family Services, religious groups, community organizations) to strengthen role of family; encourage school and community affiliations among adolescents and families (Igra & Irwin, 1996)

(14) Investigate the feasibility of school based clinic (or clinics) to enable education, skill development, contraceptive education and counseling, and other aspects of primary health care (Williams & Sadler, 2001)

(15) Collaborate with the school divisions in and around Brandon, Child and Family Services, Public Health and other services in the Brandon RHA to enable a return to school for pregnant and parenting adolescents through school based day care (Stevens-Simon, Parsons, & Montgomery, 1986;Williams & Sadler, 2001)

(16) Help create a culture in schools and the greater community that discourages risky sexual behavior by lobbying school divisions and government for policies, and legislation that discourages risk taking and the exploitation of promiscuous sexual activity (Brown & Eisenberg, 1995)

Consolidating the change

Consolidating the change involves providing appropriate training for staff, communication among stakeholders, and ongoing evaluation (Weiss, 1972). As Kirby (1997) points out, training should be intensive and interactive allowing staff to become knowledgeable and comfortable with curricula. Communication among the stakeholders is critical to ensure that the team stays informed and connected (Weiss, 1972). A very important aspect of consolidating the change involves developing an appropriate means of ongoing evaluation and then responding to the data as it becomes available (Weiss, 1972.) The evaluation program must identify and track key behavioral indicators such as: age at first intercourse, use of contraception at first intercourse, use of contraception at last intercourse, pregnancy rates, and repeat pregnancy rates. Allen et al. (1997) point out that evaluating broad developmentally- focused interventions targeting the prevention of multiple diverse problem behaviors could highlight potential causal mechanisms, inform policy makers and expand the variety and flexibility of current programming aimed at controversial problems, including teen pregnancy. Continuous quality improvement measures should be incorporated to provide ongoing feed back to program planners so that they can intervene and modify in a timely manner (Brown & Eisenberg, 1995; Weiss, 1972). Finally, to consolidate the change, the committee should support and encourage further research into prevention programs and practices (Brown & Eisenberg, 1995; Burt, 2002).

Presentations made to stakeholder groups

In partial fulfillment of the objectives of this project, presentations have been made to key stakeholders in the Brandon RHA. At the time of writing, presentations have been made to the staff of the Child and Adolescent Treatment Centre (CATC) in Brandon and to a variety of stakeholders, including parents of adolescents, PH nurses, the Family Planning Program Coordinator, Baby First and Health Baby Facilitators, representatives from the Sexuality Education Resource Centre, 7th Street Health Access Centre, and Child and Family Services, parenting adolescents and young adults in the Healthy Baby program, and a group of Aboriginal adolescents at the Brandon Friendship Centre. Representatives from the City and Brandon School Division were invited but have not attended a session yet. Additional presentations and discussions are scheduled in the future for school officials and teachers.

The presentations have included key points derived from the literature review and have been adapted to meet the interests, age, expertise, and education of the target audience. Emphasis was placed on the principles and components of successful pregnancy prevention programs and the model of adolescent risk-taking behavior. Opportunities for questions and comments were offered at the end of the presentations.

Feedback from the presentations has been favorable so far. There were a number of comments supportive of the notion that parents could be informed and involved to a greater extent. One participant commented that parents seem to believe that if they refuse their daughter's access to contraceptives, they will not engage in sex. Another commented that having her parent tell her not to "do it" did not change what she did. One male adolescent reported that girls say they want to have his baby; a adolescent girl noted that having someone's baby provides

hope for a long-term partner. Some participants remarked that alcohol use and being "drunk" were significant contributing factors for sexual risk taking

Support at the presentations was received for changing the social norms in schools and in the community as well as the media depictions around sexuality. Others noted that there was a need to make the school education more interactive and relevant, less focused on, for example, the disease entities. One participant noted that the instructor's level of comfort in speaking about the topic is a critical factor in enabling open and effective discussion. Another participant remarked that role-playing to improve communication was a good idea because, when adolescents are pressured to have sex, they are ill prepared to handle the situation. On the other hand, another participant commented that role-play could be too intimidating for some adolescents with low self-esteem; situation enactments by peer leaders were seen by some to be preferable to role-play.

A number of participants were supportive of the notion that more attention could be paid to preventing sexual risk taking behavior among of males; others noted that low self-esteem and lack of assertiveness among young adolescent girls is a significant factor. It was agreed that more emphasis could be placed on the motivations for pregnancy as well as other barriers for contraceptive use. One participant felt that the desire to find someone to love them and a relationship accounts for a number of adolescent pregnancies. Another pointed out that the financial rewards that are perceived to be associated with having a baby are attractive to some. Participants noted that there is growing problem of students dropping out of school making it increasingly difficult to reach this group. A prevailing theme in the discussions was that adolescents , and in particular adolescents of marginalized groups such as Aboriginals, need to be involved in setting programs and providing leadership within the programs.

Summary

There is an extensive body of literature that demonstrates that sexuality education programs increase adolescents' knowledge of reproductive health, but there is much less evidence that these programs actually change behavior or reduce adolescent pregnancy rates. While many programs have been implemented, a small percentage of these have been rigorously evaluated (Card, 1999; Stevens-Simon & McAnarney, 1996). Many evaluations have not used random assignment or control, and failed to employ measurements of behavior, large sample sizes, long term follow up, or proper statistical analysis It is also recognized that many programs have been implemented that may have been successful, but have not been published. This review does not provide an exhaustive review of all pregnancy prevention programs; additionally, the quality of some of the individual studies may be less than optimal. However, a substantive body of published literature, including meta-analysis, systematic reviews, and government documents have been examined. Through this review, a number of recurrent themes have emerged regarding the components of successful programs. Recommendations for future programming should be considered within the context of these limitations.

Moving forward with pregnancy prevention programs, as with any change entails a systematic and multifaceted approach that is designed to endure and evolve over time. The change process demands that the issue is fully explored, followed by planning, implementation, evaluation, and consolidation of the change. Discovering interventions that will enable and support progress in the area of risky behavior and pregnancy prevention is a challenging but exciting prospect. This very complex issue calls for significant, long-term resources allocation to enable adequate long-term interventions as well as systematic evaluations. While it is unlikely that the problem will disappear in the foreseeable future, it is hoped that by informing, involving,

supporting, motivating, and enabling our children and adolescents, we can create an environment that discourages adolescent pregnancy and other forms of detrimental risk-taking. By screening for factors that predispose and precipitate risk-taking, strengthening those features that protect adolescents from its consequences, involving the target population, and informing the broader public about the issue, it is hoped that society will see eventually garner the results of a more hopeful, enlightened, and protected adolescent population.

References

Aarons, S.J., Jenkins, R.R., Raine, T.R., El-Khorazaty, M.N., Woodward, K.M. Williams, R.L., Clark, M.C., & Wingrove, B.K. (2000). Postponing sexual intercourse among urban junior high school students-a randomized controlled evaluation. Journal of Adolescent Health, 27: 236-47.

Allen, J.P., Philliber, S., Herrling, S., & Kuperminc, G.P.(1997). Preventing teen pregnancy and academic failure: experimental evaluation of a developmentally based approach. Child Development, 64: 729-42.

Allen J.P., Philliber S, & Hoggson N. (1990). School-based prevention of teen-age pregnancy and school dropout: process evaluation of the national replication of the Teen Outreach Program. American Journal of Community Psychology, 18(4): 505-24.

Barrett, K. (2004). Adolescent pregnancy data. Brandon Regional Health Authority Decision Support.

Boekeloo, B.O., Schamus, L.A., Simmens, S.J., Cheng, T.L., O'Conner, K., & D'Angelo, L.J. (1999). A STD/HIV prevention trial of adolescents in managed care. Pediatrics, 103, 107-115.

Brooks-Gunn, G., & Chase-Lansdale, C. (1991), Children having children: Effect on family system. Pediatric Annuals, 20, 467-481.

Brown, S.S., & Eisenberg, L. (1995). The Best Intentions: Unintended Pregnancy and The Well-Being of Children and Families. Committee on Unintended Pregnancy, Division of Health Promotion and Disease Prevention, Institute of Medicine, National Academy Press: Washington, D.C.

Bullock, R.J. & Batten, D. (1985). It's just a phase we're going through: a review and synthesis of organizational development (OD) phase analysis. Group and Organization Studies, 10, 383-412.

Burt, M. (2002). Reasons to invest in adolescents. Journal of Adolescent Health. 31: 136-152.

Catalano, R.F., & Hawkins, J.D. (1995). Risk-focused Prevention: Using the social development strategy. Seattle, WA: Development Research and Programs, Inc.

Card, J.J. (1999). Teen pregnancy prevention: Do any programs work? Annual Review of Public Health, 20: 257-85.

Coard, S.I., Nitz, K., & Felice, M. (2000). Repeat pregnancy among urban adolescents: Socio-demographic, family, and health factors. Adolescence, 35, (137); 193-200.

Coyle, K., Basen-Engquist, K., Kirby, D., Parcel, G., Banspach, S., Harrist, R., Baumler, E., & Weil, M. (1999). Short-term impact of safer choices: A multi-component, school-based HIV, other STD, and pregnancy prevention program. Journal of School Health, 69, 181-188.

Cunnington, A.J. (2001). What's so bad about teenage pregnancy? Journal of Family Planning and Reproductive Health Care, 27, (2): 36-41.

DiCenso, A. Guyatt, G., & Griffith, W.L. (2002). Interventions to reduce adolescent pregnancies among adolescents: systematic review of randomized controlled trials. British Medical Journal, 324, 1-9.

DiClemente, R.J., Hansen, W.B., & Ponton, L.E. (1996). Adolescents at risk: A generation in jeopardy. Di Clemente, R.J., Hansen, W.B., & Ponton, L.E. (Eds). In Handbook of Adolescent Health Risk Behavior (pp 1-4). NY: Plenum Press.

Dilworth, K. (2000). Preventing teenage pregnancy in Canada: A Literature review. Report prepared for the Canadian Institute of Child Health.

Dryfoos, J.G. (1990) A review of intervention to prevent pregnancy. Advances in Adolescent Mental Health, 4, 121-135.

Elfenbein, D.S. & Felice, M.E. (2003). Adolescent pregnancy. Pediatric Clinic North America, 50,(4): 781-800, viii..

Ek, D. N. (2004). Pregnant and Parenting Youth: An evaluation of the impact of the Special Delivery Program: Perceptions of young parents. A report funded by Brandon University Community Outreach Program and the Centre of Excellence for Child and Youth Centered Prairie Communities, Health Canada

Evans, L. (1998). Sexual Health Education: A literature review on its effectiveness at reducing unintended pregnancy and STD infection among adolescents. PROTEEN. Montreal: Canadian Association for Adolescent Health

Fessler, K.B. (2003). Social Outcomes of early childbearing: Important considerations for the provision of care. Journal of Midwifery & Women's Health 48 (3): 178- 85.

Frager, B. (1991). Teenage childbearing: Part I. The problem has not gone away. Journal of Pediatric Nursing, 6, (2). 131-133.

Franklin, C. & Corcoran, J. (2000). Preventing adolescent pregnancy: A review of programs and practices. Social Work, 45 (1), 40-52.

Franklin, C., Grant, D., Corcoran, J., Dell Miller, P., & Bultman, L. (1997). Effectiveness of prevention programs for adolescent pregnancy: A meta-analysis. Journal of Marriage and Family, 59, (3), 551-567.

Furstenberg, F.F. Jr. (1991). As the pendulum swings: Teenage childbearing and

social concern. Family Relations, 40, 127-138.

Garbarino, J. (1985). Adolescent development: An ecological perspective. Toronto: ON: Charles E. Merrill Publishing Co.

Gillmore, M.R., Lewis, S.M., Lohr, M.J., Spencer, M.S., & White, R.D. (1997). Repeat pregnancies among adolescent mothers. Journal of Marriage and Family, 59, 536-550.

Grossman, F.K., Beinashowitz, J., & Anderson, L. (1992) Risk and resilience in young adolescence. Journal of Youth and Adolescence, 21:529-50.

Hamer, S. & Collinson, G. (1999). Achieving Evidence Based Practice: A handbook for practitioners. (Eds). Bailliere Tindal Royal College of Nursing. London UK: Harcourt Publishing.

Harrison, P.A., Beebe, T.J., Park, E., & Rancone, J. (2003). The adolescent health review: A test of a computerized screening tool in school-based clinics. Journal of School Health, 73,(1):15-20.

Hawkins, J.D., Catalano, R.F., Kosterman, R., Abbott, R., & Hill, K.G. (1999). Preventing adolescent health-risk behavior by strengthening protection during childhood. Archives of Pediatric Adolescent Medicine. 153, (3): 226-34.

Health Canada (2000). A framework for action to reduce the rate of teenage pregnancy in Canada. Re-Printed June 5/04 from Web site: http://www.hc-sc.gc.ca/dca-dea/publications/reduce_teen_pregnancy_section_1_e.html

Health Canada (2003). Canadian Guidelines for Sexual Health Education. Accessed June 21/04 from: www.hc-sc.gc.ca/pphb-dgspsp/publicat/cgshe- ldnemss/cgshe_11e.htm

Hoffman, S.D., Foster, E.M., & Furstenberg, F.F. (1993). Reevaluating the costs of

teenage childbearing. Demography, 30, 1-13.

Hofferth, S.L. (1991) Programs for high-risk adolescents. Evaluation and Program Planning, 14, 3-16.

Igra, V. & Irwin, C.E. Jr. (1996) Theories of Risk-Taking Behavior in: DiClemente, R. J., Hansen, W.B., Ponton, L.E. (Eds). Handbook of Adolescent Risk Behavior. Plenum Press: New York.

Irwin, C.E. Jr. & Ryan, S.A. (1989). Problem behavior of adolescence. Pediatrics in Review, 10, 225-246.

Jacoby, M., Gorenflo, D., Black, E. Wunderlich, C., & Eyler, A.E. (1999). Rapid repeat pregnancy and experiences of interpersonal violence among low-income adolescents. American Journal of Preventative Medicine, 16 (4): 318-21.

Jessor, R. (1982). Problem behavior and developmental transition in adolescence, Journal of School Health, May, 295-300.

Kalmuss, D.S., & Namerow, P.B. (1994). Subsequent childbearing among teenage mothers: their determinants of a closely spaced birth. Family Planning Perspectives, 26, (4), 149-153.

Key, Barbosa, G.A., & Owens, V.J. (2001). The second chance club: repeat adolescent pregnancy prevention with a school-based intervention. Journal of Adolescent Health, 28, (3): 167-9.

Kirby, D. (2002). Effective approaches to reducing adolescent unprotected sex, pregnancy, and childbearing. Journal of Sex Research, 39 (1):51-57.

Kirby, D., Barth, R.P., Leland, N., & Fetro, J.V. (1991). Reducing the risk: Impact of a new curriculum on sexual risk-taking. Family Planning Perspectives, 23, (6): 253-63.

Kirby, D., Korpi, M., Barth, R.P., & Cagampang, H. (1997). The impact of postponing sexual involvement curriculum among youths in California. Family Planning Perpsectives, 29, 100-108.

Kirby, D. Waszak, C. & Ziegler, J. (1991). Six school-based clinics: Their reproductive health services and impact on sexual behavior. Family Planning Perspectives, 23, 6-16.

Klerman, L.V. (1993). Adolescent pregnancy and parenting: Controversies of the past and lessons for the future. Journal of Adolescent Health, 14, 553-561.

Klerman, L.V., Baker, B.A., & Howard, G. (2003). Second Births among teenage mothers: Program results and statistical methods. Journal of Adolescent Health, 32: 452-455.

Koniak-Griffin, D., Verzemnieks, M., Anderson, N.L., Brecht, M.L., Lesser, J., & Kim S., Turner-Pluta, C. (2003). Nurse visitation for adolescent mothers: two-year infant health and maternal outcomes. Nursing Research, 52 (2): 127-36.

Nursing Care for adolescent mothers: Impact on infant and selected maternal outcomes at 1-year post birth. Journal of Adolescent Health, 30: 44-54.

Kotchick, B.A., Shaffer, A., Forehand, R., & Miller, K.S. (2001). Adolescent sexual risk behavior: A multi-system perspective. Clinical Psychology Review, 21, (4): 493-

Langille, D.B. (Ed). (1999). The Amhirst Initiative for Healthy Adolescent Sexuality (AIHAS) Final Report. Halifax: Dalhousie University. 519.

Langille, D.B., Beazley, R. Shoveller, J. & Johnston, G. (1994). Prevalence of high-risk behavior in adolescents attending school in a county in Nova Scotia. Canadian Journal of Public Health, 85, (S1), 227-230.

Lonczek, H.S., Abbott, R.D., Hawkins, J.D., Kosterman, R., & Catalano, R.F. (2002). Effects of the Seattle social development project on sexual behavior, pregnancy, birth, and sexually transmitted disease outcomes by age 21 years. Archives of Pediatric & Adolescent Medicine, 156 (5): 438-47.

Manitoba Health (2003). Manitoba RHA Indicators Atlas: Population-based comparisons of health and health care use.

Manitoba Health Decision Support Services (2002). Regional Health Authority Pregnancy Report: Deliveries, therapeutic abortions, and spontaneous abortions. November, 5, 2002.

Manitoba Health (1998). Legislative Electronic Publications: Adolescent Pregnancy Facts. http://www.gov.mb.ca/chc/press/top/1998/05/1998-05-12.html

Manitoba Health (2000) Manitoba Aboriginal and Northern Affairs: Demographics http://www.gov.mb.ca/ana/apm2000/1/n.html Accessed May, 2004.

McPherson, N. (2002) Final report: Focus group involving participants of the Special Delivery Club. Brandon Regional Health Authority.

Millstein, S.G., Irwin, C.E., Adler,N.E., Cohn, L.D., Kegeles, S.M.& Dolcini, M.M. (1992). Health-risk behaviors and health concerns among young adolescents. Pediatrics, 89(3):422-8.

Milan, S., Ickovics, J.R., Kershaw, T., Lewis, J., Meade, C. & Ethier, K. (2004). The Impact of physical maltreatment history on the adolescent mother-infant relationship: Mediating and moderating effects during the transition to early parenthood. Journal of Abnormal Child Psychology, 32(3):249-61.

Mitchell-Di Censo, A., Thomas, B.H., Devlin, M.C., Goldsmith, C.H., Willan, A., & Singer,

J. (1997). Evaluation of an educational program to prevent adolescent pregnancy. Health Education Behavior, 24: 300-12.

Nation, M., Crusto, C., Wandersman, A., Kumpfer, K., Seybolt, D., Morrissey-Kane, E. & Davino, K, (2003). What works in prevention: Principles of Effective Prevention Programs. American Psychologist, 58 (6/7), 449-456.

Panzarine, S., Slater, E., & Sharps, P. (1995). Coping, social support, and depressive symptoms in adolescent mothers. Journal of Adolescent Health, 17, 113-119.

Parks, P.L. & Arndt, Ek. (1990). Differences between adolescent and adult mothers of Infants. Journal of Adolescent Health, 11, 248-253.

Pfitzner, M.A., Hoff, C., & McElligott, K. (2003). Predictors of repeat pregnancy in a program for pregnant teens. Journal of Pediatric Adolescent Gynecology, 16(2):77-81.

Philliber, S. & Allen, J.P. (1992) Life options and community service: Teen outreach program. In B.C. Miller, J.J. Card, R.L. Paikoff, J.L. Peterson (Eds.), Preventing adolescent pregnancy (pp. 139-155). Newbury park, CA: Sage.

Philliber, S. Kaye, J.W., Herrling, S., West, E. (2002). Preventing pregnancy and improving health care access among teenagers: an evaluation of the children's aid society program. Perspectives on Sexuality and Reproductive Health, 34, (5): 244-51.

Phipps, MG., Sowers, M., De Monner, S.M. (2002). The risk for infant mortality among adolescent childbearing groups. Journal of Women's Health (Larchment) 11 (10): 889-97.

Planned Parenthood Nova Scotia. (1996). Just Loosen up and start talking: Advice from Nova Scotian youth for improving their sexual health. Halifax: Nova Scotia Department of Health

Plotnick, R.D. (1993). The effect of social policies on teenage pregnancy and childbearing. Family and Society, 74(6): 324-8.

Porter, L.S. (1998). Reducing teenage and unintended pregnancies through client centered and family focused school-based family planning programs. Journal of Pediatric Nursing, 13 (3): 158-163.

Porter-O'Grady, T. (1995). The leadership revolution in health care. Alerting systems, changing behaviors. Gaithersburg, MD:Aspen.

Robin, L., Dittus, P., Whitaker, D., Crosby, R., Ethier, K., Mezoff, J., Ches, Dr. P.H. Miller, K., & Pappas-Deluca, K. (2004). Behavioral interventions to reduce HIV, STD, and pregnancy Adolescents: A decade in review. Journal of Adolescent Health, 34:3-26.

Rogers, D. & Dilworth, K. (2002). Reducing the rate of teenage pregnancy in Canada: A framework for action. International Journal of Adolescent Medicine and Health, 14, (2): 97-100.

Rotheram-Borus, M.J., Gwadz, M., Fernandez, M.I., and Srinivasan, S. (1998). Timing of HIV interventions on reductions in sexual risk among adolescents. American Journal of Community Psychology, 26: 73-96.

Smith, C. (1996). The link between childhood maltreatment and teenage pregnancy. Social Work Research, 20, 131-141.

Stats Canada (2001). Community profiles. Accessed from web June 21/04 http://www12.statcan.ca/english/profil01/PlaceSearchForm1.cfm

Stein, Z. (1996). Family planning, sexually transmitted diseases, and the prevention of AIDS. Divided we fall? American Journal of Public Health, 86, 783-4.

Stevens-Simon, C., Kelly, L., & Kulick, R. (2001). A village would be nice…but it takes a long-acting contraceptive to prevent repeat adolescent pregnancies. American Journal of Preventative Medicine, 21 (1):60-5..

Stevens-Simon C, Kelly L, & Singer D. (1996). Absence of negative attitudes toward childbearing among pregnant teenagers. A risk factor for a rapid repeat pregnancy? Archives of Pediatric and Adolescent Medicine, 150 (10), 1037-43.

Stevens-Simon C, Kelly L, Singer D., & Nelligan, D. (1998). Reasons for first teen pregnancies predict the rate of subsequent teen conceptions. Pediatrics, 101 (1):pe8

Stevens-Simon, C. & McAnarney, E.R. (1996). Adolescent Pregnancy. In R.J. DiClemente, W.B. Hansen, & L.E. Ponton (Eds.), Handbook of adolescent health risk behaviors (pp.313-329). NY: Plenum Press.

Stevens-Simon & White (1991) Adolescent pregnancy. Pediatric Annals, 20, 322-331.

Stevens-Simon, C., Parsons, J., & Montgomery, C. (1986). What is the relationship between postpartum withdrawal from school and repeat pregnancy among adolescent mothers? Journal of Adolescent Health, 7, 191-194.

Thornberry, T.P., Smith, C.A., & Howard, G.J. (1997). Risk factors for teenage fatherhood. Journal of Marriage and the Family, 59 (3):505-522.

Ventura, S.J., Mosher, W.D., Curtin, S.C., Abma J.C., & Henshaw, S. (1999). Highlights of trends in pregnancies and pregnancy rates by outcome: estimates for the United States, 1976-96. National Vital Stat report, 47 (29): 1-9.

Voydanoff, P. & Donnelly, B. W. (1990). Adolescent Sexuality and Pregnancy. Newbury Park, CA: Sage. ea/publications/pdf/reduce_teen_pregnancy_section_1_e.pdf

Weiss, C.H. (1972). Evaluation Research: Methods of Assessing Program Effectiveness. Englewood Cliffs, NJ: Prentice-Hall, Inc.

Whaley, A.L. (1999) Preventing the High-risk sexual behavior of adolescents: Focus on HIV/AIDS transmission, unintended pregnancy, or both? Journal of Adolescent Health, 24: 376-382.

Williams, E. Sadler L. (2001). Effects of an urban high school based child care center on self-selected adolescent parents and their children. Journal of School Health, 71 (2) 47-52.

Wood, R.G., Bloom, D., Fellerath, V., & Long, D. (1995). Encouraging school enrollment and attendance among teenage parents on welfare: Early impacts of Ohio's LEAP program. Children and Youth Services Review, 17, (2): 277-307.

World Health Organization (2004). Determinants of Health. Accessed from Web: June15/04: http://www.who.int/hia/evidence/doh/en/print.html

Table 1: Pregnancy Rates in Canada and Manitoba:

Source Stats Canada (2001)

Location	Year	Number of total pregnancies among 15-19 year olds	Rate per 1000	Pregnancies among 15-17 year olds	Rate per 1000	Pregnancies among 18-19 year olds	Rate per 1000	Number of live births	Number of induced abortions	Spontaneous abortions
Canada	1998	41,588	41.7	14,630	24.5	26, 958	67.5	19,721	20,859	1,008
MB	1998	2,518	65.2	970	41.7	1548	101.1	1492	894	132
Canada	1999	40,370	40.2	13,591	22.7	26,779	65.9	18,805	20,610	955
MB	1999	2,427	62.3	887	37.7	1,540	99.8	1,389	923	115
Canada	2000	38,600	38.2	13,012	21.6	25,588	62.8	17,350	20,426	824
MB	2000	2,318	58.7	859	35.9	1,459	93.8	1,323	896	99

Table 2a: Brandon Regional Health Authority: Population Demographics
Source: Stats Canada (2001)

Population in 2001	46,273
Population in 1996	46,395
1996 to 2001 population change (%):	-0.3
Aboriginal identity population in 2001:	3,905
Percent of population of aboriginal identity	8.5%

Table 2b: Brandon RHA demographics by age, and sex compared to Manitoba
Source: Stats Canada, 2001

Characteristics	Brandon Regional Health Authority			Manitoba		
	Total	Male	Female	Total	Male	Female
Age Characteristics of the Populations						
Total - All persons	46,275	22,075	24,200	1,119,580	549,600	569,980
Age 0-4	2,690	1,325	1,370	70,670	36,385	34,285
Age 5-14	6,150	3,120	3,030	163,045	83,320	79,720
Age 15-19	3,490	1,695	1,800	80,425	41,220	39,210
Age 20-24	3,770	1,815	1,955	72,850	36,445	36,415
Median age of the population	36.5	35.3	37.5	36.8	35.8	37.8

Table 2c Brandon RHA demographics in comparison to Canada
Source: Stats Canada, 2001

Characteristics	Brandon Regional Health Authority			Canada		
	Total	Male	Female	Total	Male	Female
Immigration Characteristics						
Total - All persons	45,490	21,740	23,755	29,639,035	14,564,275	15,074,755
Canadian-born	42,965	20,490	22,475	23,991,910	11,841,705	12,150,200
Foreign-born	2,410	1,200	1,215	5,448,480	2,622,615	2,825,870
Aboriginal						
Total - All persons	45,495	21,740	23,755	29,639,030	14,564,275	15,074,755
Aboriginal identity population	**3,910 (8.5%)**	1,880	2,025	**976,305 (3.2%)**	476,700	499,605
Non-Aboriginal population	41,585	19,855	21,730	28,662,725	14,087,570	14,575,150

Table 3a: Brandon RHA average income compared to Manitoba averages
Source: Stats Canada, 2001

Characteristics	Brandon Regional Health Authority			Manitoba		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Earnings						
All persons with earnings (counts)	26,655	13,695	12,960	609,575	320,670	288,900
Average earnings (all persons with earnings ($)	**25,592**	31,019	19,857	**27,178**	32,312	21,480
Worked full year, full time (counts)	14,470	8,500	5,970	337,100	197,990	139,115
Average earnings (worked full year, full time	**34,436**	38,887	28,094	**36,729**	41,153	30,433

Table 3b Brandon RHA average income compared to Canadian averages

Characteristics	Brandon Regional Health Authority			Canada		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Earnings						
All persons with earnings (counts)	26,655	13,695	12,960	16,415,785	8,664,545	7,751,235
Average earnings (all persons with earnings ($))	**25,592**	31,019	19,857	**31,757**	38,347	24,390
Worked full year, full time	14,470	8,500	5,970	8,685,225	5,093,705	3,591,525
Average earnings (worked full year, full time ($))	**34,436**	38,887	28,094	**43,298**	49,224	34,892

Table 4: Brandon Regional Health Authority Pregnancy Report 2001- 2002
(Includes deliveries, therapeutic abortions, spontaneous abortions)

Source: K. Barrett, Brandon Regional Health Authority Decision Support, May, 2004.

Age →	10-14	15-19	Total
Cases	2	82	84
RHA Rate per 1000	1.2	46	47.2
Provincial Rate per 1000	0.6	46.9	47.5

Table 4b: Brandon Regional Health Authority Pregnancy Report 2002- 2003
(Includes deliveries, therapeutic abortions, spontaneous abortions)

Age →	10-14	15-19	Total
Cases	2	95	97
RHA Rate per 1000	1.2	54.8	56
Provincial Rate per 1000	0.6	44.8	45.4

Table 5: Components of pregnancy prevention programs in relation to model of risk-taking behavior- a holistic approach

Component	Examples of Approaches	Type of prevention	Evidence
Biological	• Screen for family history/ genetic predisposition, synchronous pubertal development and physical maturity that does not match cognitive • Provide access to free and confidential contraceptives • Offer STI/HIV protection simultaneously • Provide individualized contraceptive counseling; • Encourage primary care providers to screen for risk taking at all check ups/ appointment • Involve male gender in education and contraceptive counseling and gender specific education) • Start "protective" interventions before sexual Activity is initiated -pre puberty; (start early) Follow young people at risk through high school	Primary	Aaron et al. (2000) Brown & Eisenberg, 1995; Dryfoos, 1990 Igra and Irwin, 1996 Brown & Eisenberg, (1995) Nation et al, 2003
Psychological	• Address self esteem issues, depression, emotional distress, feelings, attitudes, • Assess motivation for pregnancy • Use social learning/ social inoculation theory	Primary and secondary	Brown & Eisenberg (1995) Allen et al. (1997) Philliber & Allen, (1992) Kirby et al (1997)
Cognitive	• Offer age / stage specific education • Increasing knowledge about reproductive health, • Developing skills in the area of communication, assertiveness training and decision making, • Supporting performance and attendance in school. • Red flagging students who are having problems in school • School based child care	Primary, secondary and Tertiary prevention Tertiary prevention	Nation et al., (2003); Brown & Eisenberg, 1995; Burt, 2002; Philliber et al, 2002 Igra & Irwin (1996) Key et al., (1997)
Social	• Providing support for family intactness, and • Enabling positive relationships with peers, parents, teachers or other community role models). • Screening for disruptive peer relationships • Utilize peer instructors in sexual education, enhance communication skills for dealing with parents and peers • Incorporate volunteerism to enhance communication with other adults/ peers	Primary prevention	Aaron (2000); Allen et al. (1997) Igra and Irwin, 1996, Nation et al., (2003) Philliber et al. 2002 Philliber, et al 2002
Environmental	• Include interventions to address socio economic conditions (poverty, housing) and deficient community resources; • Develop policies that target adolescents' educational and earning opportunities such as guaranteed student loans, help with school work • Develop prevention programs developed to help adolescents within their school and community; • Promote/create the right culture in the schools through individual/ group norms • Skill development, life options (career planning and training), volunteerism • Lobby for changes in popular media that portray sexual promiscuity	Primary, secondary and tertiary prevention	Nation et al, 2002 Plotnick, 1993 Philliber et al, 2002 Aarons et al., 2000; Allen, et al. (1997) Philliber et al, 2002 Brown & Eisenberg, 1995

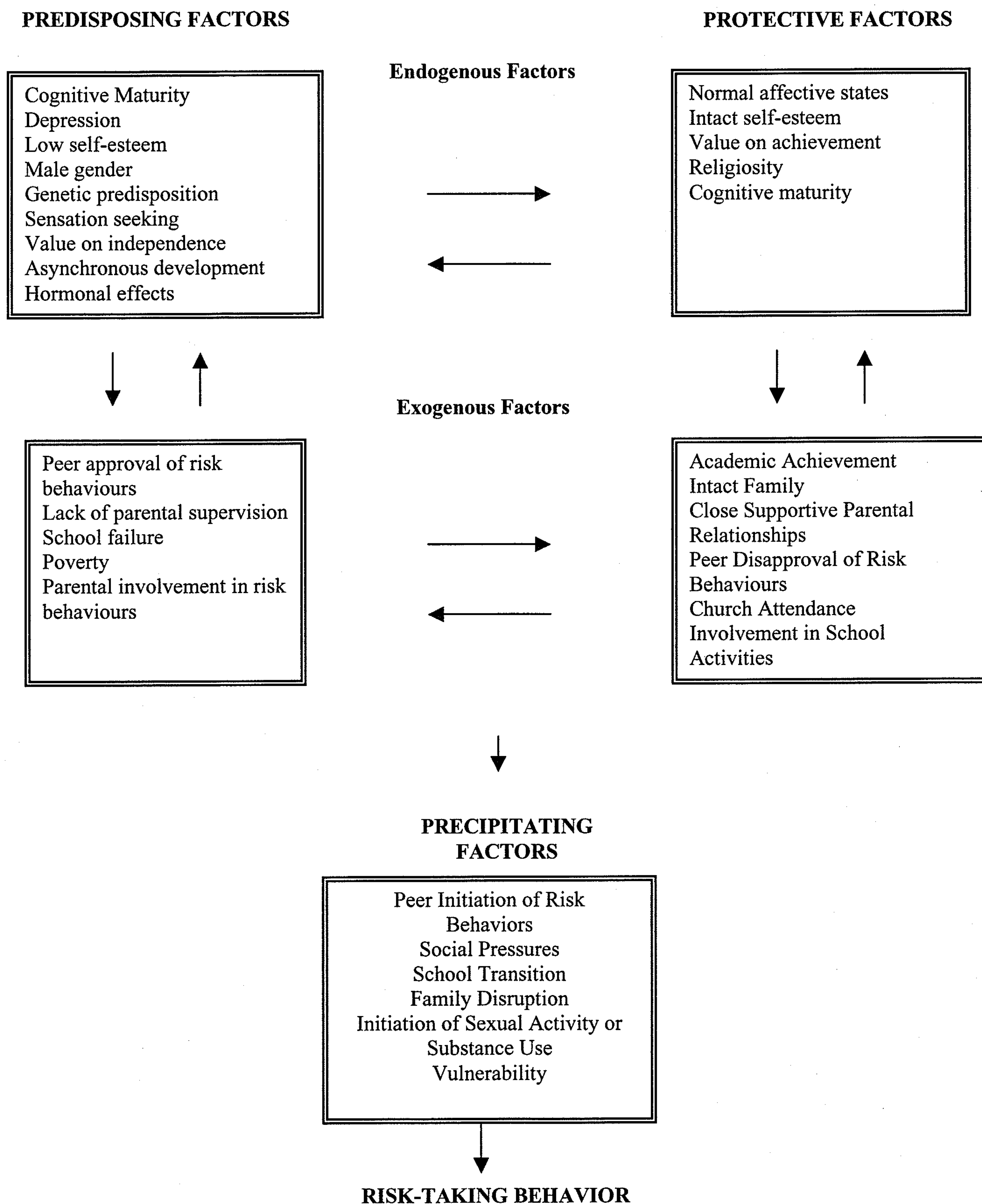
	Table 6: PRINCIPLES OF SUCCESSFUL ADOLESCENT PREGNANCY PROGRAMS: (A summary of the outcomes of individual studies, systematic reviews, and meta-analysis)			
	Principles	**Type of Prevention**	**Risk taking Framework/ Prevention Component**	**References**
1.	**Program approaches adolescent risk-taking behavior from a holistic bio-psycho-cognitive, social and environmental perspective using broad developmentally focused interventions targeting multiple problem behaviors** • Program enables on ongoing assessment of adolescent "risk taking behavior" for: ▪ Predisposing factors (family history, depression, school failure, poverty) ▪ Precipitating factors (family breakdown, school transition, substance abuse, peer initiation of risk behavior) and ▪ Protective factors (family support, authoritative parenting, community/ church/ school participation, involvement in school activities, academic achievement) ▪ Other risk taking behaviors (drug and alcohol use, delinquency) serve as red flags	Primary/ secondary/ tertiary	Bio Psycho Social/ environmental components	DiCenso et al. (2002); Dryfoos, 1990; Nation et al. (2002); Card (1999); Kirby (2002); Stevens-Simon & McNarney (1996); Irwin & Ryan, 1989 Burt (2002); Harrison et al. (2003)
	• Programs employs an interdisciplinary/ intersectoral approach involving mental health counsellors, family support agencies, child welfare programs that support psychosocial needs and manage other risk taking behaviours (alcohol & drug use), and schools. Bring together all of the relevant stakeholders to develop a comprehensive strategy	Primary/secondary/ tertiary	Social/environmental	Ek, (2004); Langille et al (1999)

2.	**Program is theory driven, and empirically supported. Programs that employ the social learning theory have been successful**	Primary/ secondary/ tertiary	Bio-Psych-Social Components	Brown & Eisenberg, (1995); Card (1999); Franklin & Corcoran (2000); Kirby et al (1991); Kirby et al. (1997), Nation et al. (2003)
3.	**Employs comprehensive, multifaceted interventions** **Increasing knowledge** Program includes a media campaign to inform children, adolescents and parents about: • The problems related to unintended and intended adolescent pregnancy • The role of positive family relationships, as well as community, church and schools involvement in pregnancy prevention • The various programs that are offered to support adolescents • Include parents in education • Offer specialized/ individualized education for abused adolescents **Reproductive health services** (abstinence best but if not safe sex every time, contraceptive access and counseling) **Program addresses the requirement for contraceptive and incorporates counseling with contraceptive distribution** a) Explores feelings/ attitudes/ barriers b) Addresses belief that pregnancy is possible early in life (acknowledges the "It can't happen to me" myth in adolescent thinking) c) Strengthens the belief that prescription contraceptives are safe/ only reliable way to prevent pregnancy d) Enables access to affordable contraceptive agents e) Enables proper use of contraceptives through evidence based instruction	Primary/ secondary/ tertiary	Psycho-social/ cognitive component Social/cognitive/ environmental component Biological component Psycho-social Psychological Biological component Cognitive	Brown & Eisenberg, 1995; Card, (1999); Kirby (2002); Nation et al. (2003); Philliber et al, (2002); Steven-Simon & McNamey, 1996. Coyle et al, 1999) Franklin & Corcoran, (2000) Brown & Eisenberg, (1995); Card, (1999); Brown, &Eisenberg (1995); Elfenbein & Felice, (2003) Dryfoos, (1990); Franklin & Corcoran (2000) Hawkins, Catalano,

	f) Facilitates a positive sexual concept which enables conscious decision making about sexual and contraceptive behavior and communication with a male partner about childbearing g) Fosters a desire to postpone child-bearing h) Involves boys/ male adolescents in education. Strengthens boys understanding of their role in pregnancy prevention and positive relationships i) Begins discussion around contraception soon after child birth (by 4 weeks post partum) j) Consider long term contraception k) Combines HIV/STI, preg. prev. **Incorporates skill development/ life options** to encourage staying in school and career plans that are more attractive than adolescent parenting **Includes school based child care** for parenting mothers			Kosterman, Abbott, & Hill, (1999) Klerman et al, (2003) Stevens-Simon &McNamey (1990; Whaley Allen et al, (1997); Franklin & Corcoran (2000); Hawkins et al. 1999); Kirby, (2002); Lonczek et al. (2002); Philliber & Allen, 1992) Key et al, (2001).
4.	**Program utilizes multiple settings (school, clinics, community) for prevention programming involving social context** • Establish school based clinics to address health promotion/ prevention • Employs home visitation/ follow up for parenting adolescents • Create partnership between disciplines and stakeholders	Primary/secondary/tertiary prevention	Environmental Component	Nation et al. (2003) Franklin et al. (1997) Koniak-Griffin et al. (2003) Langille (1999)
5.	**Program employs varied teaching methods including:** Role play active, skills based components, interactive sessions and the use of technology like audio/ video tapes	Primary/secondary/tertiary prevention	Psychosocial cognitive component	Boekeloo etal (1999); Brown & Eisenberg, 1995; Card, (1999); Kirby, 1997); Nation et al. (2002);

6.	**Programs provide enough interventions "sufficient dosage" to produce the desired effects and provides long term follow up for at-risk and/ or parenting adolescents** • Offer enough intervention over a sustained period of time to cover all topics • Provide adequate follow up • Offer intensive individualized attention • Provide intensive long term visitation to post partum adolescents	Primary/ secondary/ tertiary	Psycho-social component	Burt 2002;Dryfoos, 1990; Nation 2002; Robin et al. (2004) Philliber et al, (2002) Koniak-Griffin et al. (2003)
7.	**Program promotes strong positive relationships among peers and parents**	Primary prevention	Social component	Dryfoos, Kirby, 2002); Nation et al. (2002)
8.	**The program is appropriately timed to meet the developmental needs of the target population** Start early before puberty and adjust education to meet developmental needs	Primary/ secondary/ tertiary	Social/ environmental component	Nation et al. (2003) Langille, (1999); Kotchick et al (2001) Stevens-Simon & McNarney (1996)
9.	**Program is tailored to community and cultural norms** Education is sensitive to cultural expectations; involves the population in planning and interventions	Primary/ secondary/ tertiary		Card, (1999); Kirby, (1997); Nation et al. (2003)
10	**Program enables well trained, sensitive, and supportive instructors** A. Program provides intensive training about the interventions B. Program allows for development of personal involvement/ relationship building and individual attention C. Use peer leaders as instructors	Primary/ secondary/ tertiary	Psycho-social/ cognitive component	Card (1999); Dryfoos, (1990); Ek, (2004); Allen, (1997); Philliber & Allen, (1992) Robin et al. (2004) Langille, (1999)
11	**Program has clear goals and there is an effort to systematically document the results relative to the goals (evaluate)**	Primary/ secondary/ tertiary	Evidence based practice	Brown & Eisenberg, (1995); Card, (1999); Dilworth, 2000); Nation et al (2003);Robin (2004) Weiss (1972)

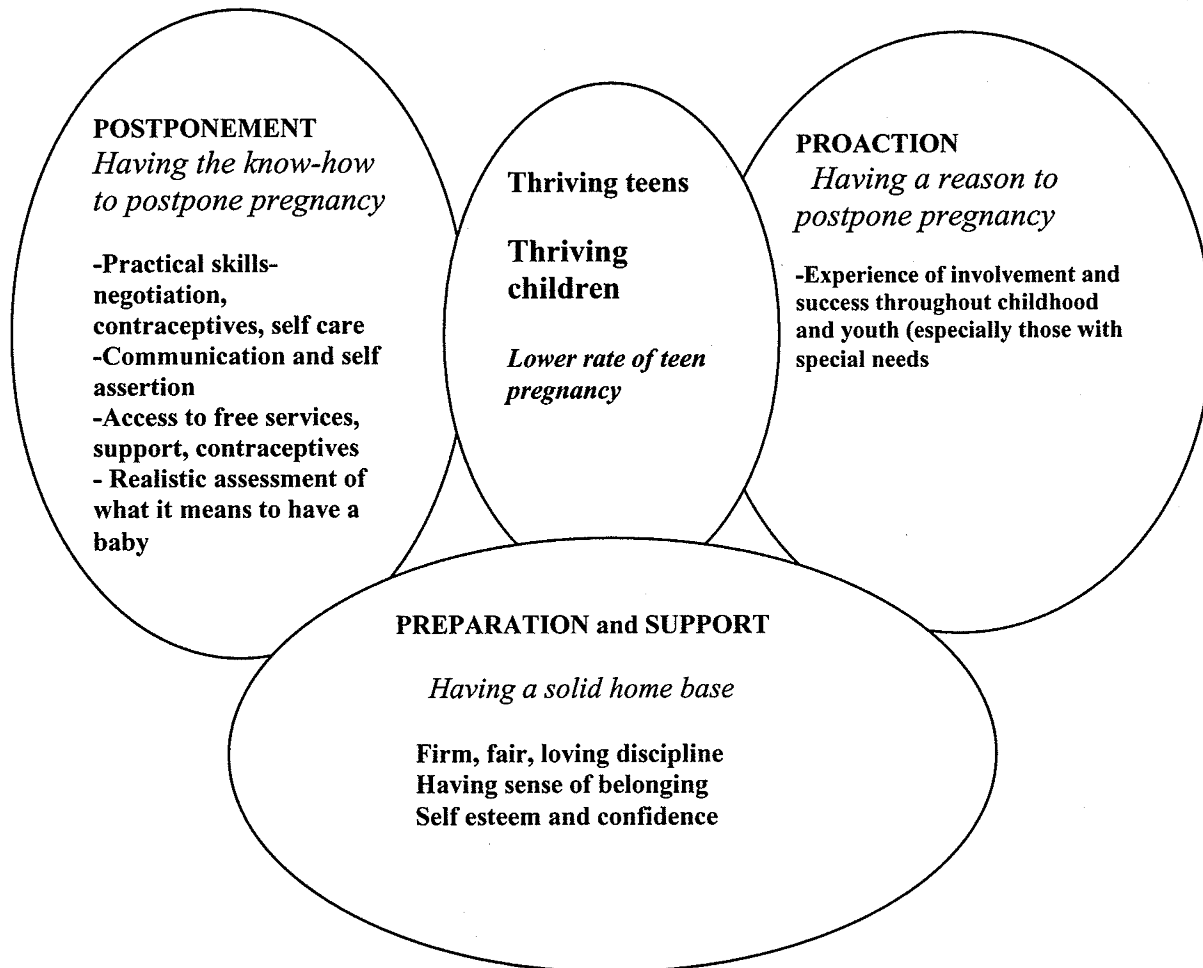
Figure 1 – Model of Adolescent Risk-Taking Behavior



Factors contributing to the onset of risk-taking behaviors during adolescence (Irwin & Ryan 1989)

Figure 2

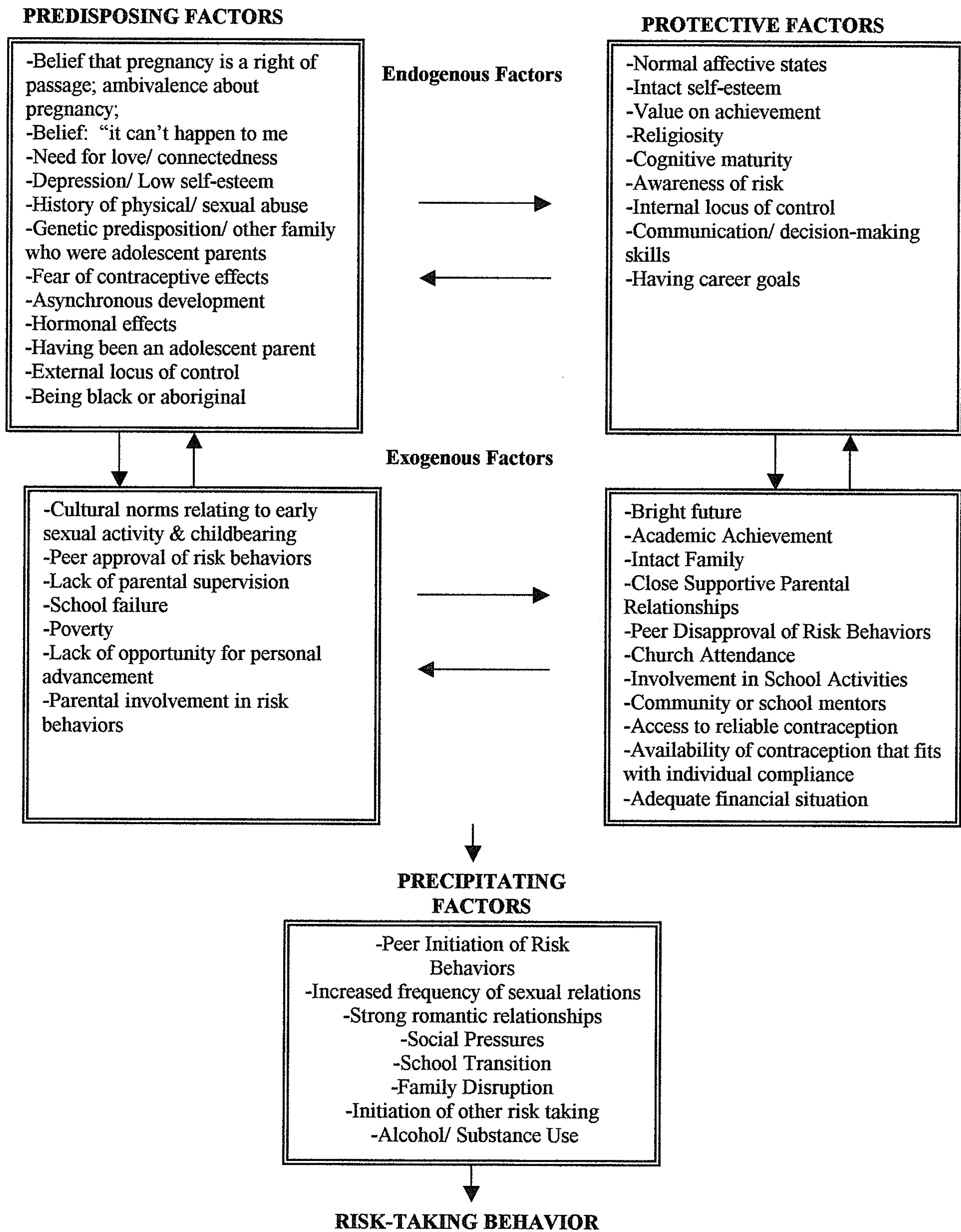
Model depicting the interlocking spheres of PRO ACTION, POSTPONEMENT, PREPARATION and SUPPORT



Source:

Rogers, D. & Dilworth, K (2002). Reducing the rate of teen pregnancy in Canada: A framework for action. International Journal of Adolescent Medicine, 14(2): 97-100.

Figure 3 – Factors that influence sexual risk taking and adolescent pregnancy



Adapted from Irwin & Ryan, 1989
Incorporating other sexual risk-taking factors cited by Burt, 2002; Card, 1999; Stevens-Simon & McAnarney, 1992