

A STUDY OF MATERNAL MORTALITY  
IN THE COMMUNITY OF JAKARTA

BY

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

MASTER OF SCIENCE

Department of Community Health Sciences  
University of Manitoba  
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## Abstract

Although declining, maternal mortality remains a major health problem in Jakarta, Indonesia. Accurate statistics are not available, because there has been no reliable way of calculating the MMR for Jakarta. Information on the causes of maternal mortality is also limited.

A community-based, case-control study was completed. All the cases and controls are women who are officially registered as residents in the village office. All recorded cases occurring in one year are included in the study. The maternal mortality ratio was 106 per 100,000 live births in 1991. The significant determinants of maternal death for Jakarta are age, parity, loss of previous fetus and/or child, the absence of prenatal care, low educational level, plural marriages, had been married more than once, unwanted pregnancy and the lack of health insurance coverage for delivery/maternity care.

These findings suggest there is a clear need for prenatal care to focus on high parity and older age mothers, providing them not only with physical monitoring and care, but also with social and psychological support. Policy makers and program planners need to be aware of the problem faced by the poorer families in accessing the appropriate health care through established government programs and policies. It is recommended that every maternal death should be reported as such to the woman's own village office. The recording and reporting of maternal mortality would then be based on a registered population. To reduce the maternal morbidity and mortality, policy makers and planners have to ensure both that services are available to "higher-risk" mothers and that financial and other barriers to access are removed.

To my mother, R.L. Tiurlan Hutagalung Tobing  
To my daughter, Melissa Bryna Montyclara Simbolon  
To my husband, Luhut Simbolon

"Not that I am looking for a gift, but I am  
looking for what may be credited to your account"

*(Philippians 4:17, N.I.V. Holy Bible)*

## CHAPTER 1

### Introduction

#### *The problem*

"Health for all by the year 2000" is the goal of the World Health Organization (WHO).<sup>1</sup> To achieve this goal, a major effort has to be made to improve the health status of the world population. Widely accepted indicators of population health status include the Infant Mortality Rate, the Perinatal Mortality Rate, the Postneonatal Mortality Rate and the Maternal Mortality Ratio.

Infant Mortality Rates (IMRs) are decreasing globally. For example, Indonesia's IMR was 142 per 1,000 live births in 1971, 112 in 1980, 71 in 1985 and 54 in 1990.<sup>2</sup> While Indonesia's IMR is declining, there is a need for continuing action to reduce these figures to the levels that have been achieved by the developed countries. For example, in 1990, the U.S.A.'s IMR was 10 per 1,000 live births and in Japan the IMR was 6 per 1,000 live births.<sup>3</sup> Canada's IMR was 7.9 per 1000 live births in 1986.<sup>4</sup>

Maternal mortality remains a problem in many developing countries. Therefore, developing countries are focusing their efforts on decreasing the Maternal Mortality Ratio (MMR), a sensitive indicator of population health status. According to the WHO Chronicle (1986), "one of the widest health disparities between rich and poor [countries] is in maternal mortality."<sup>5</sup> Kwast stated that the MMR of the world in 1983 was 390 per 100,000 live births<sup>6</sup> due largely to the influence of the extremely high number of maternal deaths in developing countries. Maternal deaths in developing countries were several hundred times those of developed countries. It was estimated by WHO<sup>7</sup> that, in 1983,

the MMR of Africa was 640, Asia was 420, Latin America was 270, while developed countries had an MMR of 30 per 100,000 live births. Developed countries have had low MMR for several decades. For example, in Manitoba,<sup>8</sup> Canada, in 1966, the MMR was 11 per 100,000 live births. In 1991, there were only 3 maternal deaths in this province.<sup>9</sup>

In Indonesia, maternal mortality is a significant public health problem. Kwast<sup>6</sup> states that Indonesia's MMR varies from 100 to 800 per 100,000 live births among various regions of the country and between rural and urban areas. Based on the annual Survey of Health and Household ("SKRT") in 1986, Indonesia's MMR was 4.5 deaths per 1000 live births or 450 per 100,000 live births.<sup>10</sup> Developed countries have had a low MMR for several decades. Therefore, an improvement in the world health status is dependent on efforts to lower the MMR in developing countries.

Experts argue that most maternal deaths are preventable.<sup>5,6,11,12</sup> Nevertheless, the first requirement is to establish reliable statistics that will define the regions, communities, and individual women that are "at risk" and that will provide a basis for assessing progress over time. Secondly, there is a need for a clear understanding of the factors related to the causes of maternal death. Hence, in pursuit of their policy of "helping women off the road to death," WHO recommended that, by 1995, all member states of WHO should be able to produce reliable statistics on their MMR and should have started research "on the underlying causes" of maternal death.<sup>5</sup>

Differences in maternal mortality between rich and poor countries have been explained by differences in access to medical care. But it is now accepted that maternal mortality is influenced by many factors as well as the lack of medical care. These factors include social inequality, lack of education for women, and social and cultural barriers to family planning. Pinotti, President of FIGO (International Federation of Gynaecology

and Obstetrics), in his editorial "Safe Motherhood: An International Priority," wrote that the actions to lower the MMR "should come from many directions,"<sup>12</sup> including the enforcement of existing regulations, legislation, and a political commitment to reducing maternal mortality. In developing its own policy, each region or country must study which factors are important in determining the MMR in their jurisdiction.

Indonesia, a country consisting of 13,000 islands in South East Asia with about 180 million population, is still struggling to improve the health status of its population, and, in particular, to achieve a reduction in its MMR (Map 1, Appendix A). The health care services in Indonesia are provided by the Ministry of Health. Services are organized at the provincial level with health centers providing services at the subdistrict level and the village level. Public and private hospital and medical practice systems co-exist in Indonesia. At a provincial level, the health services are provided by the local government, which reports to the Ministry of Internal Affairs. Health related programs are implemented in coordination with the Ministry of Health. The National Bureau of Coordination of Family Planning, which is at the same structural level of the Ministry, also joins in providing maternal care services. At the village level, the health center gives operational, technical and facility support to integrated service posts known as "POSYANDU" ("POS pelaYANan terpaDU") which are organized by the members of the village community themselves. POSYANDU services encompass preventive and promotive activities including maternal health and family planning, immunization, nutrition and development, child health and diarrheal disease prevention.

Obstetric and delivery services are provided by hospitals in both the public and private sectors. Some are provided by public "maternity homes" in coordination with the health center in the subdistrict level. Maternity homes offer 24-hour service where



mothers can deliver their babies, helped by nurse-midwives but supervised by a general practitioner or an obstetrician-gynecologist. Some maternity homes have an operating room available in case the mother needs a cesarean section. Private "maternity homes" of varying degrees of sophistication also provide maternal care and obstetric services.

Deliveries in Indonesia are performed by a range of care providers including obstetrician-gynecologists, general practitioners, nurse-midwives, midwives and trained and untrained Traditional Birth Attendants (TBAs). Gunawan found that in rural areas of Indonesia 80% of women had home deliveries attended by TBAs.<sup>13</sup>

Estimates of the MMR in different regions of Indonesia vary. In 1986, the Health and Household Survey ("SKRT") found that MMR in Indonesia was 450 per 100,000.<sup>2,10</sup> At the Interregional Meeting on the Prevention of Maternal Mortality, 1985, held by the WHO, the MMR in the province of Bali in Indonesia was reported to be 718.<sup>5</sup> Based on a 1988 survey of MMR in the province of Central Java, the MMR was found to be 230 per 100,000 live births<sup>14</sup> however, another survey of Central Java reported that the MMR was 343 per 100,000 live births.<sup>15</sup> The reliability of these figures is not known, but the report on this study,<sup>15</sup> recommended that all deaths of women in reproductive ages should be recorded in the village offices. This recommendation, however, has not been implemented.

Further, while it may not be surprising that reliable maternal mortality statistics are difficult to maintain in the widespread islands and communities that make up the archipelago of Indonesia, there are no reliable data about maternal mortality in the capital city of Indonesia, Jakarta, a city which is also classified as a province (Map 2, Appendix A). Because of Jakarta's very large population, over 9,000,000 residents, this city/province is central to the planning of maternal health services in Indonesia.

Although it is believed that Jakarta has a high number of women dying in childbirth, there is no reliable way of calculating the MMR for Jakarta and little information available on the factors contributing to maternal deaths. Therefore, it appeared that there was an urgent need for a study of maternal mortality in Jakarta to measure the MMR and to assess the determinants of maternal mortality.

### *Goals*

The goals of the present study are as follows:

1. To explore methods by which statistics can be obtained to establish reliable figures of the Maternal Mortality Ratio.
2. To determine what factors determine the causes of maternal mortality in Jakarta and how these factors interact.
3. To provide policy makers with data which they can use in developing both medical and social programs capable of influencing these factors and reducing the MMR.

### *Hypothesis*

It is hypothesized that maternal mortality is influenced by many factors in both health and social sectors; that maternal mortality factors within health care include prenatal care education, health insurance coverage; that factors within the social sphere include sociodemographic characteristics such as age, marital status, religion, culture/ethnic group, parity, education and socioeconomic status.

## CHAPTER 2

### Literature review

#### *Definition of maternal mortality*

A number of different definitions of maternal mortality have been used, including:

1) The American Medical Association's Committee on Maternal and Child Care defines maternal death<sup>16</sup> as the "death of a woman within 90-day limit of termination of pregnancy." It classifies maternal deaths into three groups: (a) direct obstetric death, caused by one or combination of obstetric complications; (b) indirect obstetric death, caused by previously existing illness or complications developed during pregnancy, labour or puerperium; (c) non-obstetric death.

2) The Committee on Maternal Mortality of the International Federation of Gynaecologists and Obstetricians (FIGO)<sup>17</sup> defines maternal death as:

the death of any woman dying of any cause while pregnant or within 42 days of termination of pregnancy irrespective of the duration and the site of pregnancy.

3) WHO<sup>18</sup> defines maternal mortality:

as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

While these definitions share common factors, most countries have now adopted the definition proposed by WHO. Use of the same definition makes it easier to monitor, evaluate, and compare the number of maternal deaths between regions or countries and across time.

### *The maternal mortality ratio*

It is important at the outset to define the concept of "Maternal Mortality Ratio," a term that must not be confused with "maternal mortality rate." It is generally accepted that the best indicator of maternal mortality experience is the number of maternal deaths per 100,000 live births. An alternative measure is the number of maternal deaths per 100,000 women in the reproductive years in the population.<sup>19</sup> This measure does not take into account the varying fertility rate between populations nor the differential fertility rate within the various age groups in the reproductive years. The maternal mortality ratio, therefore, is the measure that is now accepted and used.

Analyses of maternal mortality ratios on a world-wide basis have shown a major difference between the "developed" and "developing" countries. According to Rosenfield,<sup>20</sup> the range of MMR in developed countries is between 10 to 15 per 100,000 live births, compared to figures between 200 to 1000 or even higher per 100,000 live births in developing countries. Harrison<sup>21</sup> has estimated the differences to be 30 per 100,000 in developed countries compared to 270 to 640 in developing countries. In Manitoba,<sup>8</sup> Canada, in 1966, the MMR was 11 per 100,000 live births. In Massachusetts,<sup>22</sup> U.S.A., the MMR decreased from 50 in the 1950s to 10 per 100,000 live births in the 1980s. The range of MMRs in Asia presented at the WHO's Interregional Meeting on the Prevention of Maternal Mortality, 1985, was between 13 per 100,000 in China and 874 per 100,000 live births in India. The MMR of the province of Bali in Indonesia was estimated to be 718 per 100,000.<sup>5</sup> Kwast<sup>6</sup> said that Indonesia's MMR varied between rural and urban areas, 100 and 800 per 100,000 live births respectively. Based on the Survey of Health and Household ("SKRT") in 1986, Indonesia's MMR was 4.5 deaths per 1000 live births or 450 per 100,000 live births.<sup>10</sup>

## *Causes of maternal mortality*

Many different causes of maternal mortality have been identified. The eight major causes of maternal deaths are: haemorrhage, complications of induced abortion, obstructed labour and ruptured uterus, puerperal sepsis, anaemia, infection, eclampsia and hypertensive disease.<sup>6,23,24</sup> These are the direct causes of maternal death, but they reflect a number of underlying and interacting factors.

Most experts agree that many of these causes are preventable. Smith<sup>25</sup> for example wrote that "...seventy-five percent of maternal deaths...(are) associated with 'preventable factors'" which can be identified in pregnant women. Therefore, the early identification of high risk women is essential.

Sachs et al<sup>26</sup> found that, in a study of maternal mortality in Massachusetts from 1976 through 1985, 43% of the maternal deaths were preventable. Doctors were responsible in 41% of these deaths, the patients in 15%, and both the doctors and patients in another 15%. He suggested that a better understanding of the causes and their underlying factors of maternal death is badly needed.

Doh, Nasah, and Kamdom-Moyo<sup>27</sup> demonstrated a reduction in MMR in The University Teaching Hospital, Yaounde, Cameroons "without sophisticated technologies." A retrospective study was carried out to analyze the obstetric records of patients who delivered during 5 years (January 1982 - December 1986). The University Teaching Hospital had what might be considered to be a low maternal mortality ratio (for Africa) of 60 per 100,000 deliveries. They found that two factors contributed to the relatively low rate. First, the partogramme, a graph recording the dilatation of the uterus, monitored the progress of delivery and facilitated early intervention when the labour was in difficulty. Second, the use of the pinnard stethoscope monitored the heart rate of the

baby in the uterus and, again, allowed for early intervention if the infant was in trouble. The authors noted that the reduced maternal mortality was also related to proximity to hospital, patient bookings, and the existence of a referral system. Since partogrammes and pinnard stethoscopes are simple technologies and have been available throughout the country since 1975, the authors conclude that reductions in the MMR do not require sophisticated interventions but only the availability of basic prenatal and perinatal services.<sup>27</sup>

### *Determinants of maternal mortality*

During the past few years, increasing effort has been put into reducing the MMR by trying to understand the determinants which lead to maternal death. This was already recognized in 1957 by the AMA (American Medical Association)<sup>16</sup> which stated that:

It is more desirable to determine avoidable factors involved in the death, rather than to label the death as preventable...resulting in better maternal care and reduction of obstetric cause of death.

It is common for studies to find more than one factor in each case of maternal mortality. Wallace,<sup>28</sup> classified these factors into two groups:

#### Community factors:

- Marriage and family formation patterns.
- Cultural patterns, religious practices, and taboos.
- Education of women, their status, and employment outside the home.
- Economic patterns-socioeconomic indices.
- Nutrition, dietary habits, and availability of foods.
- Age distribution of pregnant women.
- Parity distribution-spacing, birth order.
- Fetal and child loss.
- Environmental sanitation.
- Prevalent infections and other endemic diseases.
- Acceptability and utilization of available maternal and child health/family planning services.

Patient factors:

Education.

Age.

Parity.

Obstetric history.

Previous fetal and child loss.

Socioeconomic status.

Nutrition.

Signs of clinical dysfunction (dyspnea, edema, pallor).

Selected clinical measurements.

This listing highlights the need to focus on cultural factors that are specific to Indonesia and may impact on MMR. Although Indonesian women are struggling for emancipation, women still face gender discrimination. In most ethnic groups, women are not allowed to achieve their full educational potential. Marriages of young women are often arranged and may include culturally acceptable polygamous relationships. Marriages may be triggered by poor socioeconomic circumstance of the parents leading to young women being "married off" for economic gain. Young women in these situations often become pregnant at a young age with the inherent obstetric risks. Even well educated women face social pressures from family members to have children until a son is born that can carry on the father's name. As women carry on having children and become older, their risk status increases. Male children have an inherent value beyond that of female children. In other regions, people believe that "many more children will be giving you much more richness." Hence, there are cultural pressures to place women in the "high risk" situation that is associated with four or more births.

Researchers do not always agree on what is the most important factor contributing to a high MMR. For example, Harrison<sup>29</sup> emphasizes basic formal education. Compared to illiterate women, educated women avoid harmful cultural practices such as early marriage, avoid high parity through family planning, and obtain

regular prenatal care. He pointed out, for example, that, although Hongkong's population rose by 70% in two decades, its maternal mortality ratio was comparable to the lowest European ratios. This was attributed to a high degree of "modernization," including universal basic formal education for its population.

In a study of the Acute Gynecology Ward, Kenyatta National Hospital, Nairobi, Kenya, Rogo<sup>30</sup> emphasizes the need for improved maternal care in Kenya. He found that 41.6% of the deaths in gynecology ward were deaths resulting from pregnancy and were, by definition, maternal deaths. He found that many maternal deaths, including septic abortion on gynecology wards, were excluded when compiling the figures for the MMR in Kenya. He discussed the need for improved maternal care, including family planning and cytological screening linked to family planning services, in order to define risk groups.

Balde & Bastert<sup>31</sup> in Conakry, Guinea, found that uterine rupture can be reduced by better "transfer management." An effort at program integration was established in January 1988 between two teaching hospitals and seven peripheral units. Six months later, data were compared to the figures from the two preceding years. The incidence of uterine rupture had declined from 0.20% to 0.12% and the percentage of maternal deaths after uterine rupture declined from 27.6% to 21.4%. These decreases were attributed to the improvements in patient transfer and management.

As is shown in these examples, the roots of maternal mortality can be found in the wider social context of women's lives, including their education, in the care provided during pregnancy and birth, and in the system of providing access to the most appropriate level of care.



### *Current efforts to improve maternal mortality*

As developing countries try to reduce their MMR, there have been a number of studies and reports suggesting ways to improve maternal health, medical services, health education, policy and legislation, and advance research.

The first priority is to improve maternal health. Howard<sup>32</sup> argued that maternal health is usually ignored and that programs in Maternal-Child Health (MCH) focused on the child, not on the mother. She asked "...where is the 'M' in MCH?" In her view, in any attempt to reduce MMR, it is important to emphasize maternal health care. Nutrition, for example, is an important element of maternal care. Poor nutrition contributes to short stature in young females, often associated with pelvic disproportion, contributing to the incidence of obstructed labour<sup>32</sup> and hence to maternal mortality.

The second priority is to improve health services. WHO<sup>33</sup> suggests that "effective services should be provided at the most peripheral level of the health care system." They must include family planning and emergency services. Family planning services will reduce the incidence of high-risk pregnancies such as the grand multiparae, will space births enhancing the health of the mothers, and will prevent unwanted pregnancies that may result in the risk of illegal abortions. Emergency services should include networks of district hospitals or health centers that are equipped to handle difficult deliveries. Training of traditional birth attendants can also contribute to improved outcomes. For example, the introduction of protocols emphasizing sanitary delivery conditions will reduce the number of deaths due to infection. The availability of prenatal care at the community level will identify cases of pre-eclampsia and reduce the incidence of toxemia.

The third priority is health education. Konje, Odukoya, and Ladipo<sup>34</sup> suggest starting ".... more purposeful and goal oriented health education campaign(s)." They

had found that patients who presented at hospital with prolonged labour and subsequently died, had delayed seeking appropriate and available services. They believed that the prevention of maternal deaths lay primarily in health education that made women aware of the risks and of the need to seek help early.

In Gambia, Greenwood<sup>35</sup> found that using local women's groups as a focus for health education increased the utilization of trained TBAs who had been taught to encourage women with high risks to deliver in a health center. Trained TBAs may also improve the outcome of pregnancy because of their role in family planning. The empowerment of women and the use of TBAs as health promotion processors can have a positive impact on pregnancy outcomes.

Fourth, Dixon<sup>36</sup> found that 25% of maternal deaths are caused by unsafe induced abortion. He suggested the development of new policies that would provide legal access to abortions for unwanted pregnancies.

Fifth, social change is needed in order to lower maternal mortality. WHO<sup>11</sup> has stated:

The fact that women have a unique role in the creation of a new generation must not lead to the assumption that the whole responsibility should lie with them. There is no reason why women should carry the main burden, as well as pay the price of higher mortality, more ill-health, lesser opportunities in the labour market, or less pay.

Perhaps in no other health sector than maternal health care is there more need for changes in the economic and social status of women in all societies if the health and life of women are to be protected.

Finally, Cook<sup>37</sup> and Atrash et al<sup>38</sup> suggest that more research is needed in order to reduce the risk of maternal mortality. Cook<sup>37</sup> indicates that it is important to target research so as to identify the "particular" reducible causes in specific individual

countries. Noting that the factors of the maternal deaths in the United States and Puerto Rico for 1979-1986 included age, minority races, unmarried women, live-birth order, Atrash, et al<sup>38</sup> advocated that a "better understanding of factors" contributing to maternal deaths could be advanced by detailed investigations of "each [maternal] death."

## CHAPTER 3

### Description of health care services in Indonesia

Health care services in Indonesia are delivered through the National Health System<sup>39</sup> which is centrally administered by the Ministry of Health. The Indonesian health delivery system emphasizes three central concepts including: (1) development of Community Health Centers; (2) health promotion involving community participation; and (3) provision of an integrated referral system.

#### *Development of community health centers*

The most basic organizational unit in the delivery of health care in Indonesia is the health center which provides preventive, health promotion, curative and rehabilitative services. Health centers coordinate both the delivery of health services by private practitioners and provide acute care and preventive services directly to the individual client. Centers also coordinate other programs which require community participation and act as triage centers for referrals from the community. Services provided by health centers include: maternal and child health programs; family planning; nutrition programs; environmental health; preventive services (including control of infectious diseases and immunization programs); health promotion and health education; medical treatment; school health; oral and dental health; mental health; primary diagnostic laboratory services; patient record-keeping and epidemiological reporting; and, at selected health centers, inpatient facilities. In providing primary care, preventive and health promotion services, the health centers develop cadres ("Kader") of volunteers and trained workers who deliver primary health care, preventive services and health

education. Health centers have a central role in primary care delivery, health promotion and community development functions. Through the "LKMD" (The Institute of Village Community Resilience), the communities are encouraged to promote health-related, sustainable economic development. Health centers encourage development within an appropriate sociocultural context and promote self-sustaining health care.<sup>39</sup>

### *Staffing and professional resources*

The development of the health center concept began in 1974 when Suharto, President of the Republic of Indonesia, developed legislation and programs referred to as "Inpres" ("Instruksi Presiden") or executive orders which regulated the geographical distribution and post-graduate training opportunities for newly trained general practitioners. Physicians who wished to continue their post-graduate medical education in clinical specialties were required to work in communities in the remote areas. Recently trained clinical specialists were also required to work in communities in municipal hospitals and programs. Both general practitioners and clinical specialists were required to work in the communities for two or more years before they were allowed to practice in a major city or facility at the provincial level. Requirements that general practitioners and specialists practice in rural, remote and regional centers varied from area to area. For example, in Java, physicians were required to spend 5 years in assigned practices, while in remote areas such as Irian Jaya, physicians assumed only a single year service obligation.

Insufficient data is available to evaluate the impact of these programs on the distribution of physicians in Indonesia. However, descriptive accounts indicate that they have resulted in the retention of physicians in rural communities, regional centers, and in provincial health facilities. Marriage was one factor in physician retention in rural and

regional centers. If doctors intermarried and formed families in the communities in which they completed their compulsory services they were more likely to remain there. Physician retention has also been associated with opportunities for building practices and other business initiatives in the area where the person was assigned to practice. For example, physicians assigned to health units on Sulawesi Island and Sumatera developed ancillary businesses in a certain kind of spice ("cengkeh") trade. Although the comprehensive data required to assess the degree of success of these programs in rural and regional communities does not exist, there is some evidence to suggest that they have had a margin of success in decentralizing professional resources and retaining physicians in more remote settings.

### *Promotion of community participation in the health sector*

A significant consideration in the organization of health services in Indonesia is the overall linkage between health program and community development initiatives. Policy regulating the development of health services in Indonesia is both implemented through "top down" initiatives from the central and provincial governments and through local "bottom-up" initiatives. Community participation is a significant dimension of health program development at all levels. Community participation<sup>40</sup> is defined as

a social process in which specific groups with shared needs living in a defined geographical area actively pursue identification of their needs and take decisions and establish mechanisms to meet them.

Three different types of participatory initiatives have developed in the Indonesian health care systems. These include (1) community initiated programs, (2) "PKMD" initiated programs, and (3) privately initiated programs.

Community initiated programs involve the active participation of community members in developing and delivering health promotion, preventive and rehabilitative

services. These "participatory initiatives" are initiated by the community itself independently or with minimal collaboration with government programs. In local initiatives, communities analyze their needs, determine their own priorities, and plan and implement programs to encourage health promoting life styles. Community initiatives also facilitate the development of professional and volunteer resources, facilities and fund-raising.<sup>39</sup> Funding for community-based participatory programs may be solicited from non-governmental organizations, private foundations or from monthly donations from members of the community.

An example of a community-initiated program is the "Dana Sehat" program in Central Java. Local communities have initiated "Dana Sehat" (Health Funds) programs through applying the concepts of community development.<sup>41,42</sup> This local program initiative provides a small scale health insurance program organized at the village level. Funds for local programs and benefits are collected on a monthly basis from a high proportion of the families in a community. Individual families contribute small monetary amounts (100 to 300 "rupiah" or 6 - 18 cents in Canadian dollars). When a member of the community becomes sick, he or she can obtain basic primary care supported by the insurance program. Services are provided by minimally trained volunteers. Patients pay a minimal fee and pharmaceuticals are paid for by the "Dana Sehat" program. The "Dana Sehat" program pays for services which community members receive at subdistrict level facilities. The insurance program may not cover hospitalization. A second example of a community initiated program in preventive health care involves collaboration between Jakarta-based ophthalmologists and municipal Lion's clubs. This initiative provided ophthalmological screening services for all urban primary school students in 1987.

A second type of participatory program in Indonesia is the primary health care program based in the Village Community Health Development Program ("PKMD"). These program initiatives are based in the Village Community Resilience Institute ("LKMD"). Program initiatives at this level integrate generalized health and community development objectives. They also involve "top down" administrative control by government health administrators and the local selection and support of volunteer health workers or cadres. Primary care programs based in the development institutes are also delivered by health cadres who are chosen by members of the community and trained by the staff of the health center. Although the cadres are chosen by members of the community, their activities in the delivery of primary care, and preventive services are directed by government administrators. This second type of program is differentiated from the first type of community-initiative in that it is centrally planned and controlled. The programs are selective in their involvement of community members and the cadres who are involved are both more highly trained and receive payment for their transportation expenses.

The third type of health program initiative involves privately funded and administered health programs. Facilities which form part of the maternal health system include: private polyclinics, private maternal and child health centers ("KIA" or "Kesehatan Ibu dan Anak"), general and specialist private practices, general or specialist private hospitals, private maternity hospitals, private practitioners and dispensers of traditional medicine, private pharmacies, private laboratories, education initiatives and privately or charitably funded programs for training health workers, such as the St. Carolus Catholic School of Nursing. These private initiatives are supported by fee for



service and charitable donations. They deliver a major share of the total of maternal health services.

### *Organization of health services in Jakarta*

The levels of organization, facilities and personnel involved in the delivery of maternal health care in Jakarta are summarized in Figure 1. Horizontal referrals can be made between practitioners or facilities at the same level of organization. Vertical referrals occur in situations where patients from primary care facilities are referred to more specialized tertiary care facilities. Reciprocal referrals occur when patients are triaged back to a less specialized care facility following treatment. Vertical, horizontal and reciprocal referrals are made to (a) health promotion and prevention services; (b) diagnostic and primary care services; and (c) specialized treatment facilities offering care for acute and chronic illness and rehabilitative services. More specialized diagnostic and tertiary care services provide technical, financial and operational/administrative support to regional and subdistrict level health facilities. Clinical and administrative specialists at Jakarta provincial and regional levels provide local units with technical and operational support, including expertise in the management of infectious disease outbreaks and health education. Medical care is delivered through primary care units. The tertiary care facilities provide specialist and subspecialist services. Health workers paid by government and private practitioners provide services at all levels of the service delivery.

The Jakarta government, designated administratively as a capital city, is also a province. The organization of health services in Jakarta is unique. The organizational structure of health services and maternal care in Jakarta is shown in Figure 2 and 3. The levels of organization are: provincial programs (including the urban Jakarta catchment

Figure 1: Organization of maternal care in Jakarta: locations, services and workers.

# LOCATION	TYPE OF WORKER	SERVICES PROVIDED
1. Patient's home	Trained/Untrained traditional birth attendant	(1) (2) (3)
2. "Posyandu" (Integrated Services Delivery Post)	Cadres, nurses, midwives or nurse-midwives	(1) (4) (5)
3. Private home office of midwife or nurse-midwife	Midwife, nurse-midwife, (G.P. or Obstetrician)	(1) (2) (3) plus (4)
4. Private Obstetric-Gynecology Clinic	Obstetrician and nurse-midwife	(1-5) plus (6)
5. Maternity home at subdistrict level	Midwives, nurses, nurse-midwives, G.P.(s) (and Obstetrician)	(1-6) plus (7)
6. Health Center	Midwife(s), nurse-midwife(s), nurse(s), G.P., (and Obstetrician)	(1-6) plus (8)
7. (Public & Private) Maternity Hospital	Nurse-midwives, midwives, nurses, G.P.(s) and Obstetricians	(1-8) plus (9) (10)
8. Obstetric-Gynecology Department of General Hospitals	The same as location 7, plus other specialists	(1-10) plus (11) (12)
9. Obstetric-Gynecology Department of Teaching Hospital	The same as location 8, plus subspecialists	(1-12) plus (13) (14)

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CODE KEY FOR  
SERVICES PROVIDED

1. Identification of high risk mother	6. Limited acute care services to stabilize emergency condition	11. Other support services from other departments
2. Prenatal care	7. Caesarean section	12. Intensive Care Units
3. Maternity care	8. Prenatal classes	13. Comprehensive academic programs
4. Family planning	9. Ultrasonography	14. Subspecialists - support consultation services
5. Tetanus-toxoid immunization	10. Ambulance services	

Figure 2: Primary components of maternal care in Jakarta (in 1992).

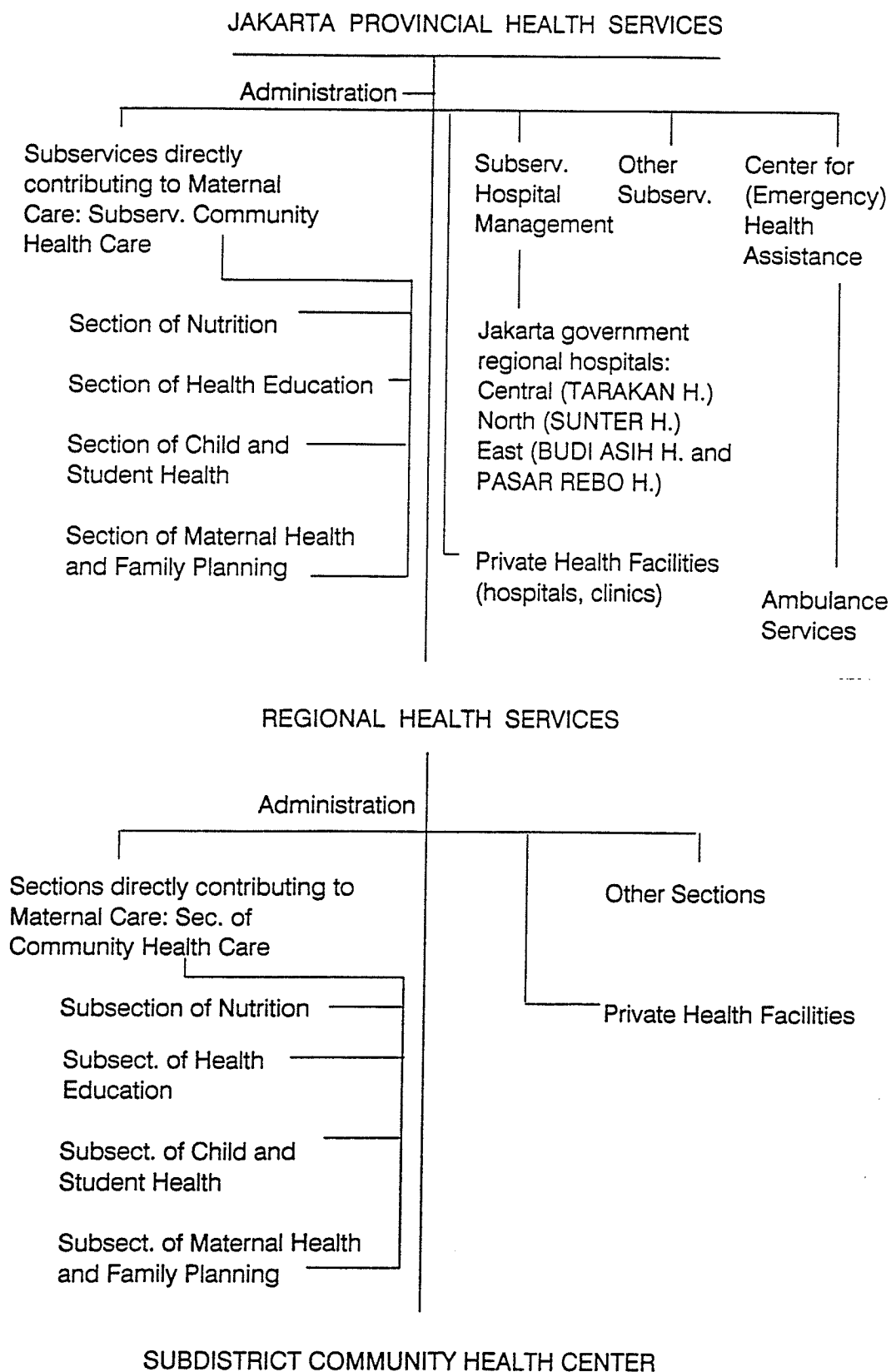
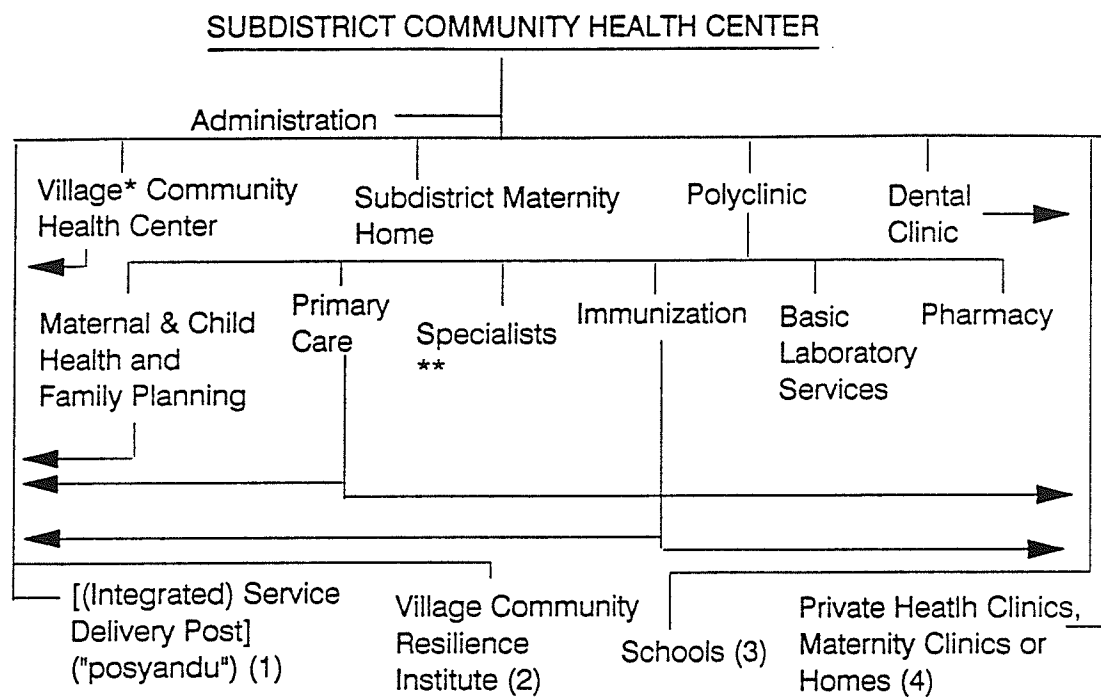


Figure 3: Organizational structure of health centers in Jakarta (in 1992).



\* In Village Community Health Center: the structure is simpler and staffing depends on the work volume.

\*\* Only in some of the Health Centers; specialists can be Pediatricians, Psychiatrists, Obstetricians or/and Ophthalmologists.

(1) Service Delivery Post provides integrated delivery of Maternal and Child Health, Nutrition, Health Education, Immunization, and Diarrhea Control.

(2) Village Community Resilience Institutes deliver economic, social and health-related development programs.

(3) Schools are delivery sites for Team Supported School Health Program ("Tim U.K.S.") and Team Supported Dental Health Program ("Tim U.K.G.S.").

(4) Private health clinics, maternity clinics or homes privately provided obstetric services.

area which is organizationally unique) and regional and subdistrict level programs (or "Kecamatan" level programs). Each of these levels of organization include both management and service delivery components with parallel subsections providing nutrition, health education programs. The highest level of organization is centered at the provincial/Jakarta city level where administrative responsibility is maintained by the Provincial Ministry of Health. At this provincial level the health care delivery system is managed through a dual system of authority in which administrative control is shared between the central government (through the Ministry of Health of the Province) and the municipal government of Jakarta. The stream of authority at the municipal government level is administered by the Ministry of Home Affairs. The Ministry of Health of Jakarta Province is a division of the central government (Ministry of Health of the Republic of Indonesia) and the parallel structure, Jakarta Health Services, is an administrative unit of the municipal government. Local government control extends down to village ("kelurahan") level. The network of health services in Jakarta is managed at both the district level and village health center level by this dual administrative structure. In Jakarta Province, where this research was carried out, both the provincial and urban administrative structures are headed by a single individual who is appointed as both Provincial Minister of Health and Head of Provincial Health Services. This integrated management structure prevents program overlap and duplication.

The organization chart implies that comprehensive and integrated services are accessible at all levels; however, the idealized system and official program description have not been systematically evaluated in terms of their influence on specific outcome variables such as maternal mortality. Reis et al<sup>43</sup> state that "little is known about the quality of service" that the system actually provides. Reis emphasizes that most existing

data is based on self-reports by administrative and service delivery units. The investigator has observed a wide range of variation in service provision and program development, both within subunits of the Jakarta health system and between provincial systems in the Republic of Indonesia. Some program components are more fully developed than others. In the development of epidemiological monitoring and patient record keeping capability, for example, there is currently a wide variability in systems capacity between individual hospitals and health units. In most hospitals, it is difficult to obtain a complete medical record. A few hospitals have initiated a computerized recording and reporting system, but most hospitals continue to use manual systems.

Administrative units at every village-level health centers in Jakarta have full-time staffs and are directed by full-time physicians. Programs implemented at this village level are coordinated by administrators at the subdistrict level. Under the village level ("R.T." or "Rukun Tetangga" or neighbourhood level), the program is called "Posyandu" or integrated service delivery posts which deliver some primary care services using volunteer cadres and staff from Village Health Centers and Subdistrict Health Center. At the service delivery post, traditional and privately employed midwives may also receive some systematic education in maternal and child health.

### *Access to health care*

In Indonesia there are a wide range of insurance programs providing access and financial support to enable people to pay for health services. These plans vary regionally and are frequently based on occupational groups.

The most widely used insurance plan is "ASKES" ("Asuransi Kesehatan," or Health Insurance Program). This coverage is available to government employees and pensioners, their spouses and children. It is financed by withholding 2% of their salaries

or pensions. The national program is administrated by "PERUM Husada Bhakti" which functions as a state cooperative within the Central Ministry of Health.

The second form of health insurance is available to salaried employees who can make a regular payment to a government administrative health insurance program. These plans include "ASTEK" ["Asuransi Tenaga Kerja" (or Manpower/Human Resources Insurance)] and "D.U.K.M." ["Dana Upaya Kesehatan Masyarakat" (or Community Health Efforts Fund)]. In these plans private employers contribute health insurance premiums for their employees and their family members. "ASTEK" is partially supported through administrative support from the Ministry of Manpower and is available to individuals who earn a minimal monthly income. In 1985 monthly premiums were 2,500 rupiah (1.50 Canadian dollars) which represented a significant resource commitment for workers whose daily income was in the range of 2,000 - 3,000 rupiah per day (1.20 - 1.80 Canadian dollars).

The largest proportion of the population, including the majority of low income workers, do not have systematic access to these insurance plans. The working poor constitute the segment of the population with the highest level of need defined in terms of higher mortality and higher morbidity rates, but they also experience the greatest problems in obtaining access to and paying for medical care. Unfortunately, there is no systematic data available to indicate what proportion of the Jakarta and Indonesia population who have no insurance coverage. However, this subpopulation clearly represents the majority of urban dwellers and these individuals depend on a variety of charitable and state-supported programs for their medical care.

A number of programs provide health and social service benefits for this uninsured population. In Jakarta, resources are provided by the "Jaminan Sosial"

("Jamsos") or Social Insurance supported programs. Under these programs health facilities provide primary and tertiary care services for poor patients who have received certification of their inability to pay from the local village official. This care is also subsidized by the "Perum Husada Bhakti" which can also pay for care in hospitals. Hospitals reserve 15-20% of their bed space for "poor" patients. Uninsured patients without resources to pay fees frequently do not take advantage of designated bed space for medically indigent patients because unaware of the program's availability. Poor patients may also be deterred by bureaucratic procedures which require that the patient's inability to pay for care be confirmed before access to subsidized hospital bed space is provided. More general access to basic primary health care and preventive services at community level is provided to poorer urban residents through integrated service delivery posts (or "posyandu"), village health centers, family planning clinics, subdistrict health centers, private polyclinics, public and private general hospitals and specialistic hospitals.

### *Organization of maternal care in Jakarta*

The impact of cost barriers and differences in access among patients across the socioeconomic status spectrum are hypothesized to be primary determinants of maternal health status. More wealthy, more educated patients with insurance benefits are the primary utilizers of specialized diagnostic and treatment services. Poor, uninsured patients are more likely to receive their only care from primary care facilities, although some may receive care from the hospitals which provide bed space for medically indigent patients requiring tertiary care. Government programs also subsidize the provision of vitamins and other medications used in maternal and child health. Free or subsidized pharmaceuticals provided at the primary care level frequently are available



in only limited quantities and poor patients are forced to pay high prices in markets and privately owned pharmacies.

Primary health care and maternal health services are provided by health centers, private clinics, and family planning clinics. In Jakarta, (Figure 1, page 21) there are 43 subdistrict health centers and 271 village health centers. The ratio of health centers (both subdistrict health centers and village health centers) to people in Jakarta in 1990 was 1 health center per 26,186 people.<sup>44</sup> However, within the wider Jakarta metropolitan area there are still 37 villages which have no health center. In addition to access via generalized primary care facilities, women in Jakarta can also access maternal health services through maternity clinics and community maternity homes. Access to primary maternal health care is provided by the government through a system of co-payment through which it augments the minimal fees for services provided by doctors and/or nurse-midwives.

Health education and health promotion programs are administered by Center of Community Health Education within the Ministry of Health. In Jakarta, the Health Education Section is one of the sub-services "Pembinaan Kesehatan Masyarakat" (or Community Health Care) which is organized at both Provincial and Regional Health Services Level (Figure 2 and 3, pages 22 and 23).

Health education in maternal health utilizes printed media (booklets, pamphlets and brochures), public meetings and discussions, recorded media (audio cassettes and video cassettes), and the mass media (such as newspapers, magazines, radio and television programs). In print media, maternal health education messages are delivered through program-specific press releases, informative articles, public information announcements and brochures inserted in mass circulation publications. On radio and

television, preventive messages are communicated through topical songs and serial dramas. Popular and traditional puppet shows are also presented on television and include health promotion messages.

Health education services for Maternal Health in Jakarta are administered by Community Health Care Subservices through the Maternal Health Section. Prenatal education is usually provided to the pregnant woman at her monthly prenatal appointments. Informational programs are also presented in the waiting rooms of health centers, polyclinics, maternity clinics or hospitals to women waiting for prenatal care.

Prenatal care is usually provided by a doctor or a nurse-midwife, although, some women visit traditional midwives for their prenatal care. In Indonesia<sup>45</sup> in 1989, a total of 8,076 nurse-midwives provided prenatal care services to a total population of 180,000,000. It was estimated that prenatal services were provided to 64.2% of the local population and that women using prenatal clinics visited the clinics for an average of 3.5 times. However, it was also estimated that only 30% of pregnant women had received tetanus toxoid. In Jakarta, the availability of maternal services varies significantly from subdistrict to subdistrict.

### *Obstetric care in Indonesia*

As a central component of prenatal care, obstetric care is provided by doctors, nurse-midwives, paramedics and trained or untrained traditional birth attendants. Maternal and child health programs support the education of trained traditional birth attendants. These attendants are provided with sterile instruments for use in assisting with home deliveries. According to Chernichovsky,<sup>46</sup> the majority of the women in 1978 delivered with the support of traditional midwives. The continuing high level of use of traditional birth attendants is understandable given the low physician/patient and

nurse/patient ratio. In 1986 the ratio of physicians to population served was 1 to 11,530 and the ratio of nursing personnel to population was 1 to 2,300.<sup>46</sup> These ratios have not changed greatly. In Indonesia, the average ratio of physicians to patients in all provinces of Indonesia was 8.6 per 100,000 or 1 per 11,600 in 1990. Ratios are higher in urban centers; the ratio of physicians to residents in Jakarta city/province was 28 per 100,000 or 1 per 3,600 compared to ratio of 4 per 100,000 or 1 per 25,000 in rural areas.<sup>2</sup> Thow<sup>47</sup> observed that the problems of obtaining adequate obstetric care in Indonesia involve not only a scarcity of care resources, but also lack of access to care, maldistribution of resources and transportation problems.

In most areas of Indonesia, including Jakarta, local traditional midwives still play an important role in providing obstetric care. Trained traditional birthing attendants were involved in 54.6% of deliveries among the national population in 1990.<sup>2</sup> In contrast, a 1990 survey indicated that traditional births accounted for only 6.7% of the deliveries in Jakarta in 1990.<sup>44</sup> These trends reflect some change from earlier studies; for example, Chernichovsky<sup>46</sup> found in SUSENAS 1978 household data of Central Bureau of Statistics of Indonesia that most deliveries (76%) were assisted by traditional birth attendants.

Despite these trends, traditional birth attendants still have an important role in obstetric care in Indonesia. Thow<sup>47</sup> found that Indonesian women still used TBAs in assisting delivery because of their lower fees. Traditional birth attendants charge the equivalent of 30.00 Canadian dollars, while nurse-midwives charge \$60.00 and physicians charge from \$180.00 to as much as \$1,200.00. Traditional birth attendants are also willing to do housekeeping and meal preparation during the period of postnatal recovery. Their provision of these services is another factor in the continuing reliance on TBAs.

Midwives are also used widely because the cultural and religious values. Some women do not feel comfortable when they are examined by a male physician.

There are three types of hospitals providing obstetrical and maternal care (A, B, and C). Type A hospitals (tertiary hospital) are staffed by a "full range" of specialists. In Jakarta there is a single Type A hospital, the "R.S.C.M." ("Rumah Sakit Cipto Mangunkusumo" or Cipto Mangunkusumo Hospital). Type B hospitals are staffed by specialists but do provide services in all subspecialty areas. In Jakarta, Type B hospitals include Carolus Hospital, Cikini Hospital, Y.A.R.S.I. Hospital, and Gatot Subroto Hospital. Type C hospitals are limited to providing specialized services including surgery, internal medicine, pediatrics, and obstetric-gynecology. Type C facilities in Jakarta include Pasar Rebo Regional Hospital and Budi Asih Regional Hospital.

### *Family planning*

Family planning services were estimated to have been made available to only 59.3% of Indonesian women in the reproductive age groups; however, in Jakarta in 1990, 79.6% of the target population were found to accept family planning services.<sup>44</sup> Patterns of contraception use among Jakarta women indicated that, 28.5% of acceptors used IUD, 28.2% used Depo Provera (injection), 25.9% used the contraceptive pill and 17.3% used other methods.<sup>44</sup> The contraceptive use patterns of Jakarta women vary slightly from the national pattern. National surveys of contraceptive users in 1990-1991 indicated that 26.8% used the IUD, 22.5% utilized Depo Provera injections, 37.8% used contraceptive pills, 5.2% vasectomy/tubal ligation, 5.3% used implants, and 2.4% used condoms.<sup>2</sup>

## CHAPTER 4

### Methods

#### *Description of the population*

The people of Jakarta are from many different ethnic groups (such as Batakese, Padangnese, Javanese, Sundanese, Menadonese, Ambonnesse) who have come from many other parts of the Indonesian Islands and from many other nations in Asia. The population includes a small number of Jakarta natives, the "Betawi" people. The population of the city has grown rapidly; an estimated 9 million people lived in Jakarta in 1990 relative to 8 million in 1988.

This study was carried out in the Province of "Daerah Khusus Ibukota Jakarta" (Jakarta Special Capital City) in Indonesia. Jakarta has 5 administrative municipalities. Each municipality is divided into 7 - 10 "kecamatan" (subdistricts) and each subdistrict has several "kelurahan" (villages). Each village has several "R.T." or "Rukun Tetangga" (neighbourhoods). There are approximately 300 villages in Jakarta.

All women living in a village are officially registered in the village office ("Kantor Kelurahan") and have citizen identification numbers ("Nomor Pokok Penduduk"). Each village office keeps a Vital Registration of all births ("Buku Index Kelahiran") and another register of all deaths ("Buku Index Kematian") for residents of the village. The Vital Registration of deaths includes the age, gender, name and address of the resident, the date of birth and death. In the case of a death, they keep a one-page form of Death Report ("Surat Laporan Kematian") for each death, which includes name, address, ID Number, date of birth and death, gender, cause of death and who examined the death.

The cause of death is described in seven categories: 1. Illness; 2. Accident; 3. Murder; 4. Suicide; 5. Delivery; 6. Stillbirth; 7. Others. Since a maternal death could be classified as category 1, 5, or 7, the Death Report is of little use in determining the number of maternal deaths. For this reason, it was necessary to establish independently whether the death of a woman in the reproductive ages was a maternal death as defined by WHO.

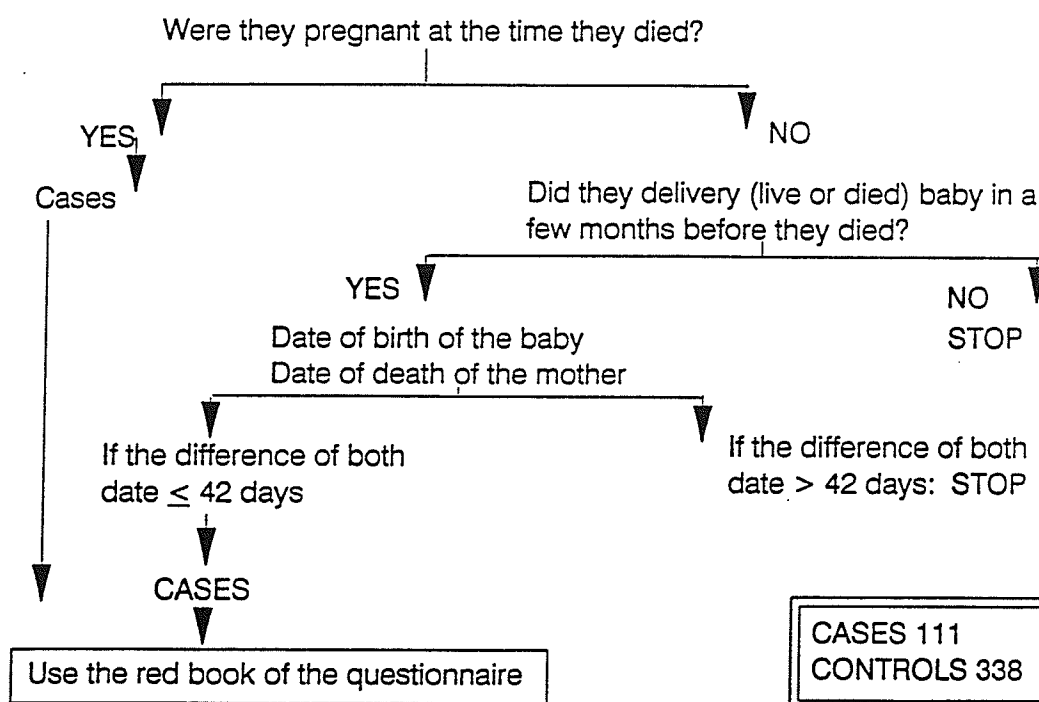
### *Selection of cases*

A list was compiled for each village of all women who died between April 1, 1991 and March 31, 1992 and who were of reproductive age, defined as being from 15 to 49 years of age. A nurse-midwife or a nurse visited the address of each of these women.

In order to determine the circumstances surrounding the death, the interviewer was instructed to interview a close family member using the following order of priority: husband, sister, brother, mother, father. If no relative was available, the interviewer was instructed to interview the "kader" (cadre) or a close neighbour. A simple, one page questionnaire was used (Appendix B). The responses to this questionnaire were used to determine whether the death met the WHO definition of maternal mortality: i.e. "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes." The operational definition is shown in Figure 4.

Deaths meeting the WHO criteria were included in the study as cases. The procedure used to identify the cases ensured that the study captured not only cases who

Figure 4: Selection of cases: from the annual vital registration of death, women who died at 15 - 49 years of age.



died in hospital, but also women attended by traditional birth attendants, physicians or nurse midwives in private practice, or who were cared for in a health center.

### *Selection of controls*

A list of controls was compiled using the Vital Registration of Births kept in each village. For each case of maternal death, three controls were selected from the register for the same village from among women who gave birth within one month (plus or minus) of the day of the birth of the child of the case, or the date of her death if the woman died prior to delivery.

### *Questionnaire*

Questionnaires for the cases and controls were developed based on information collected in a preliminary study conducted in Jakarta. Open ended interviews were used to explore the social characteristics and the health and health care histories of women who died in childbirth in Jakarta in 1989. Based on these interviews, questionnaires were then constructed and pre-tested. They were also reviewed by experts in Jakarta working in the area of maternal and child health. The questionnaire developed for the controls was a modification on the one for the cases.

The questionnaires used in the field (Appendix B) collected information on the following demographic characteristics: age; education level; ability to read; marital status; religion; and number of children. Questions on a woman's previous medical history included: use of family planning; previous miscarriages or the death of children; the history of this particular pregnancy, including questions on attitudes towards the pregnancy, use of prenatal care and prenatal education, who attended the woman when she first went into labour, and whether financial support was available to meet the costs of delivery.



For the cases, a questionnaire was administered to the relatives of the woman who died, or if there was no relative, the interviewer went to the "Kader" responsible for that family.

### *Data gathering*

The study took place between July 1 and August 31, 1992 and was organized based on the following timetable.

#### *Weeks 1-3:*

Obtaining a research license from the Bureau of Government Administration in Jakarta.

Final preparation and printing of the questionnaires.

Nurses and nurse-midwives were assigned as interviewers by the Head of Jakarta Health Services.

One interviewer was assigned from each of the 43 subdistricts in Jakarta.

#### *Week 4:*

Implementation of an interviewer training program (July 27 to August 3). This training program included discussion of the interview manual, a series of interview simulations, and field training for the interviewers in two villages. Interviewers were debriefed and problems discussed following each field trial.

#### *Weeks 5-7:*

Completion of the interviews, collection and checking of the questionnaires, payment of the interviewers.

#### *Week 8:*

Re-checking 5% of the data. Preparation of an interim report on the numbers of maternal deaths which was sent to the Department of Health, Jakarta Governor, CIDA-GTP Jakarta, and OTO-BAPPENAS.

As might be expected, a number of problems were encountered by interviewers. Often they had to return to an address in the evening or on the following day in order to find an appropriate informant who could complete the interview. A family member was not

available for 26 of the cases (23%) and the interview was completed with the "kader" or close neighbour. This may have created problems in terms of missing or unreliable data. For example, neighbours did not always know a woman's date of birth or, if they knew the year, they might not know the day or month. Indeed, even family members were sometimes uncertain about details surrounding the death, particularly as some women had died several months previously.

Problems with data collection were less evident for the control group as women could be interviewed directly. Nevertheless, these data were also retrospective. All of the data gathered in this study must be interpreted with due caution, particularly data dealing with such issues as the availability of prenatal education, attendance at health education classes, the number of visits for prenatal care, who attended a woman in the first stage of labour, and the type of transportation used to convey her to hospital.

### *Analysis of the data*

The questionnaires were coded by the researcher and the coding checked. The data were entered into the version of Epi-Info developed for the personal computer and the entry verified. Epi-Info is a software package produced by the U.S. Centers for Disease Control and Prevention. The same program was used for the statistical analysis of these data. Statistical differences between means were determined using the t-test. The chi-square test was used with categorical data. Odds ratios with 95% CI were estimated for some risk factors.

## CHAPTER 5

### Results

#### *Jakarta's maternal mortality ratio in 1991*

A maternal mortality ratio was calculated based on the number of cases defined by the methods used in this study. A total of 111 cases of maternal death among women aged 15 - 49 were identified by the process described in Chapter 4. The denominator was defined by the number of births between April 1, 1991 to March 31, 1992 as entered in the Vital Registration of Births kept by each village. Given 111 cases of maternal deaths and 104,509 live births, the maternal mortality ratio was calculated to be 106 per 100,000 live births.

Table 1 and 2 show the place and causes of death for each case for whom this information was available from the village registry. When this information was missing, (22% of the cases) the interviewers collected as much information as possible on the circumstances of the death when completing the questionnaire. This material was then reviewed and a probable cause of death assigned for each case by the investigator.

Table 3 shows the relationship between lack of insurance coverage and the causes of death; for example 100% of the cases of puerperal sepsis occurred among women with no insurance coverage.

#### *Demographic characteristics*

**Age:** The age characteristics of women in both the case and control groups are shown in Table 4. The age range is from 14 to 45 years of age. Cases were significantly

Table 1: Place of death (n=111)

Place of death	Cases	
	N	%
Home	29	27.4
Private Clinic	3	2.8
Home of Delivery	2	1.9
Hospital	71	67.0
Other	1	0.9

Table 2: Causes of death

Causes of death	Cases	
	N	%
Haemorrhage	30	27.0
Puerperal sepsis	5	4.5
Anaemia	15	13.5
Eclampsia	14	12.6
Infection	11	9.9
Hypertensive disease	35	31.5
Cardiac disease	5	4.5
Cancer	2	1.8
Pulmonary disease	5	4.5
Other	10	15.3

(More than two causes of death were recorded for some cases)

**Table 3: Cause of death by availability of financial support**

<b>Causes of death</b>	<b>Cases total</b>	<b>Cases with no financial support</b>	<b>% with no financial support</b>
Haemorrhage	24	10	41.7
Puerperal sepsis	5	5	100.0
Anaemia	8	3	37.5
Eclampsia	12	4	33.3
Infection	3	2	66.7
Hypertension	28	13	46.4

Table 4: Age distribution for cases and controls

Age	Cases		Controls	
	N	%	N	%
14 - 19	8	7.2	27	8.0
20 - 29	61	54.9	217	64.7
30 - 34	18	16.2	68	20.3
35 - 45	24	21.6	23	6.8

P = 0.0002

older than women in the control group ( $p = 0.0002$ ) with a mean age of  $28.8 \pm 7.1$  relative to  $26.2 \pm 5.3$  in the control group.

*Education:* Educational levels were lower among cases than among women in the control group ( $p = 0.038$ ); only 15.6% had high school education or beyond compared to 29.2% of the controls. Nevertheless, only 12% of the cases were described as not being able to read and there was no significant difference between cases and controls on this measure (Table 5).

*Marital status:* Marital status is shown in Table 6. Cases were more likely than controls to have been married more than once [O.R. 4.76, 95% C.I. (1.96, 12.5),  $p = 0.00006$ ] and not to be their husband's only wife (Table 7); however, very few women in either group were married to men with two or more wives (7% of cases relative to 3% of controls). Education correlated with being married more than once, being reported by 11% of women with primary education relative to only 3.6% of women at a higher educational level.

### *Obstetric history*

*Parity:* Parity was significantly higher among cases than controls ( $p = 0.002$ ). The mean number of children was  $2.9 \pm 1.9$  in the control group relative to  $3.9 \pm 2.7$  among the cases. (The number of children ranged from 1 to 12). Women in the control group were more likely to be *prima para* ( $p = 0.0007$ ); 41% relative to 23% of the cases (Table 8). The most striking, but expected, finding is the level of mortality risk among women with 5 or more children. These women constituted nearly one quarter of the cases. When cases and controls were combined, younger women had significantly fewer children ( $p = 0.00001$ ), but a woman's level of education was negatively associated with the number of her children.



Table 5: Educational level for cases and controls

	Cases		Controls	
	N	%	N	%
<b>Education*</b>				
Not finish elementary	65	59.6	169	50.4
Junior High	27	24.8	68	20.3
High School and Higher	17	15.6	98	29.2
<b>Ability to read**</b>				
Yes	97	88.1	313	92.6
No	13	11.8	25	7.4

\*  $P = 0.038$ 

\*\* Not significant

Table 6: Marital status for cases and controls

Marital status	Cases		Controls	
	N	%	N	%
Never married	1	0.9	0	0.0
Married	107	97.2	335	99.4
Divorced	1	0.9	1	0.3
Widowed	1	0.9	1	0.3

Not significant

**Table 7: Being their husband's only wife and number of times married for cases and controls (married women only n = 107 cases and 331 controls)**

	Cases		Controls	
	N	%	N	%
<b>If only wife</b>				
Yes	99	92.5	322	97.2
No	8	7.4	9	2.7
<b>If married*</b>				
Married only once	79	83.1	237	95.9
One previous marriage	9	9.4	8	3.2
Two or more previous marriages	7	7.3	2	0.8

Totals vary due to missing data on some items.

\*P = 0.00006

Table 8: Parity for cases and controls

Parity	Cases		Controls	
	N	%	N	%
Number of children				
0	23	23.5	141	42.2
1 - 2	30	30.6	100	29.9
3 - 4	21	21.4	57	17.1
5 + up	24	24.5	36	10.8

Totals vary due to missing data on some items.

P = 0.0007

*Loss of a previous child:* Cases are more likely than women in the control group to have lost a previous child, either through an early miscarriage or after the birth had taken place [O.R. 2.29 (1.29, 4.05),  $p=0.001$ ]; 27.2% of cases compared to 14.0% of controls. The difference between cases and controls was most marked in terms of fetal loss; previous miscarriages were reported for 40% of cases relative to only 14% of women in the control group. Women with primary education or less were the most likely to report a miscarriage or the death of a child.

*Family planning history:* Asked about the use of family planning before becoming pregnant, women in the control group were more likely to have practised some method of family planning [O.R. 1.57 (1.0, 2.51),  $p = 0.04$ ]; 65% relative to 54% of the cases. There was also a significant difference in the methods used. Cases were more likely than controls to have used the contraceptive pill as their method of contraception ( $p=0.002$ ); 44% of cases relative to 24% of women in the control group. Other methods of family planning used by women included the I.U.D., condom, injections, implants and the calendar system. Women in the control group were more likely than cases to report using the injection method (Table 9). Education level did not correlate with whether or not family planning was practised, but age was significant ( $p = 0.003$ ); women under 20 years of age were the least likely to have used any method of family planning.

### *History of last pregnancy and birth*

*Whether the pregnancy was wanted:* Asked about attitudes towards their last pregnancy, cases were more likely than women in the control group not to have wanted to be pregnant [O.R. 3.03 (1.61, 5.56),  $p = 0.0001$ ]; 25% of cases relative to 10% of controls (Table 10). Age was associated with an unwanted pregnancy ( $p = 0.00001$ );

**Table 9: Whether a woman had used family planning and methods of family planning**

	Cases		Controls	
	N	%	N	%
<b>Family planning*</b>				
No	50	46.3	119	35.4
Yes	58	53.7	217	64.5
<b>Method of family planning used** (n = 58)</b>				
Pill	27	44.2	54	24.4
Injection	21	34.4	123	55.6
Other than pill and injection	10	16.3	37	16.7
Condom	3	4.9	7	3.1

\*P = 0.002

\*\*Some women reported more than one method.

Table 10: Whether a woman had wanted the pregnancy

	Cases		Controls	
	N	%	N	%
Whether pregnancy wanted				
A wanted pregnancy	83	76.8	303	90.9
An unwanted pregnancy	25	23.1	30	9.0

P = 0.0001

women aged 35 and above were less likely than younger women to have wanted the pregnancy. Women with primary education or less were also less likely than more educated women to have wanted to be pregnant ( $p = 0.02$ ). Termination of an unwanted pregnancy had been tried by both cases and women in the control group. Those women who had not wanted to be pregnant had an average of two more children than women who wanted the pregnancy ( $p = 0.0001$ ). There was no relationship however, between a positive or negative attitude toward pregnancy and whether a woman had been married more than once or whether her husband had more than one wife.

*Prenatal care:* The majority of women saw a doctor or a midwife for prenatal care, though there is a significant difference between cases and controls ( $p = 0.00003$ ); (90.9% of cases compared to 98.8% of women in the control group). Among women not using prenatal care, four mentioned not having money for transportation, although none said that the Health Center was too far away. Four cases were said not to have gone for prenatal care because they felt nothing was wrong with their pregnancy. There is a significant difference ( $p = 0.000002$ ) in the frequency of visits for prenatal care between cases and women in the control group;  $5.5 \pm 3.1$  visits relative to  $7.9 \pm 3.1$  visits for women in the control group. These figures may be biased by underreporting by those answering the questionnaire for the case; however, the difference may also be explained by the fact that women who died before the end of term would have fewer visits than women whose pregnancy went to term.

*Prenatal education:* Cases were more likely than controls to have known of the existence of prenatal education classes ( $p = 0.03$ ) but women in the control group attended these classes more often ( $p = 0.02$ ). These figures may also reflect bias due to underreporting.



Table 11 shows use of prenatal care, awareness and use of prenatal education classes varied with the district of Jakarta in which women lived. Adequate levels of prenatal care were assessed as seven or more visits.

*Choice of health care provider:* The majority of women were attended by a health professional (a midwife, a general practitioner or an obstetrician) rather than a traditional birth attendant (TBA) when they were first in labour; 83.5% of cases relative to 92.2% of women in the control group (Table 12). Traditional birth attendants were seen by only 40 women, but the difference between cases and controls was significant [O.R. 2.33 (1.09, 4.97),  $p = 0.01$ ]. Choice of a traditional birth attendant was related to both educational level and age; less educated women and women 35 and over were more likely to have made this choice (17.6% of older women relative to 7.8% of women aged 20-34.)

*Choice of health facility:* Cases were more likely than women in the control group to have been in hospital rather than at a delivery clinic when they were first in labour (Table 13). Their use of a higher level of health facility is probably a reflection of their higher risk status. The majority also died in hospital (67%) although 27% died at home (the remainder died elsewhere).

*Transfer and modes of transportation:* Some women were transferred to a higher level of care after they had started labour. Such transfers were rare among women in the control group, being reported by only 17 women, only one of whom had needed an ambulance. Among the cases, 63% were transferred. The modes of transportation used are shown in Table 14. As the speed of transfer can be critical to the outcome when a woman is in labour, those answering the questionnaire were asked if they could estimate

**Table 11: Use of prenatal care and prenatal education classes by district (controls only n = 338)**

District	Awareness of prenatal class	Attend prenatal class $\geq 2x$	Prenatal care (yes)	Adequate care $\geq 7x$
Central	86.5	75.0	98.1	80.0
North	76.9	65.4	100.0	66.2
West	84.6	69.2	100.0	48.9
South	81.9	78.3	98.8	60.9
East	65.7	53.7	97.6	64.6

**Table 12: Care-giver seen when first in labour for cases and controls**

First care-giver seen	Cases		Controls	
	N	%	N	%
Non-trained traditional birth attendant	8	9.4	9	2.7
Trained traditional birth attendant	6	7.0	17	5.1
Midwife	51	60.0	279	83.3
Nurse	1	1.2	0	0.0
Physician	19	22.4	30	9.0

**P = 0.001**

Table 13: Medical care during delivery

Place where labour started	Cases		Controls	
	N	%	N	%
At home	17	19.3	54	16.1
In a delivery clinic	26	29.5	175	52.1
In a hospital	33	37.5	34	10.1
Other institution	12	13.6	73	21.7

Table 14: Referral to higher level of care and type of transportation used

	Cases		Controls	
	N	%	N	%
Referral to higher level of care*				
Yes	66	63.5	17	5.4
No	38	36.5	297	94.6
If yes: kind of transportation (n=62)				
Ambulance	11	17.7	1	6.6
Taxi	17	27.4	6	40
Pedicab	1	1.6	0	0
Bus	8	12.9	2	13.3
Car	18	29.0	3	20
Other	7	11.2	3	20

\*P = 0.00001

the length of time elapsing before an ambulance arrived; a third of the 12 women who went by ambulance had to wait from thirty to sixty minutes for the ambulance to arrive.

*Insurance coverage and the cost of delivery:* Coverage of the costs of delivery was available for only 18% of all women, sometimes paid in full and sometimes as a part payment only. Among women with coverage, almost half the controls (45%) received full payment for delivery, but only 11% of the cases had full coverage ( $p = 0.05$ ). There was no relationship between whether or not a woman had coverage and whether she wanted the pregnancy. The costs of delivery were higher for cases than controls ( $p = 0.01$ ). This reflects both the place where they were delivered (cases were more likely than controls to be delivered in hospital), but also the level of medical intervention required.

*Use of neighbours as informants:* All the preceding analyses were repeated, but excluding those cases for whom the questionnaire had been answered by a neighbour rather than a family member. None of the significant relationships changed except that the difference between cases and controls in their use of different types of health care provider when they first went into labour was no longer statistically significant; however, there was still a trend towards cases being more likely to have seen a traditional birth attendant.

## CHAPTER 6

### Discussion

In this chapter, Jakarta's MMR, the determinants of maternal mortality, and the implications of the findings are discussed.

#### *Jakarta's maternal mortality ratio*

It is believed that MMRs are often underestimated. Hospital deaths may be wrongly classified and hospital data do not capture women that may have died in the community.<sup>30</sup> The cause of death assigned to women who die in the community may be unreliable. In the present study, therefore, maternal mortality was not derived from the secondary statistics but an innovative method was employed that began with the Vital Registration of Death ("Buku Index Kematian"), not from the Death Report Forms ("Surat Laporan Kematian") that are available in each Village office ("Kantor Kelurahan").

As described in Chapter 4, death and the circumstances surrounding it were scrutinized to determine whether it fitted the WHO definition of a maternal death. The method used in this study, therefore, provided a direct count of deaths of women in Jakarta that could be classified as maternal mortalities.

It should be noted that this method, because it is based on the village registers, would not include deaths of women whose "home" village was not in Jakarta, but who were living in or had come to Jakarta close to the time of their death. The deaths of these women would be recorded in their "home" villages. Similarly, the number of live births was based on the births recorded in the village registers. Live births to women who were not registered within Jakarta would not be included. The MMR reported in

this study, therefore, is a ratio that refers specifically to the registered population of Jakarta.

Jakarta's 1991 MMR as determined by this method, was 106 per 100,000 live births. This is in contrast to the reported 1990 MMR of 260 per 100,000 live births.<sup>44</sup> Since the two ratios were based on different methods of compiling maternal deaths and live births, no conclusions can be drawn as to the apparent reduction in maternal mortality. It is likely that temporary residents and migrants contribute a disproportionate amount of maternal mortality if all maternal deaths that take place in Jakarta are included in the denominator. For example, very high risk women from outside of Jakarta may find their way to the city for care in secondary and tertiary hospitals. Migrants from other regions and islands may constitute particularly high risk groups as they settle into the urban slums.

### *The determinants of maternal mortality*

This study identified many of the same determinants of maternal mortality that had been found in other studies in other countries and jurisdictions. These included: education; age; family planning; prenatal care; loss of previous fetus or/and child; and high parity. Four additional determinants that had not been previously identified proved to be significant in this study:

1. Had been married more than once.
2. Not the only wife -- i.e. a polygamous marriage.
3. A pregnancy that was stated to be unwanted.
4. Lack of health insurance coverage for delivery/maternity care.

These determinants of maternal mortality strengthen the case that maternal mortality has its roots as much in the social as in the medical status of the mother.



## *Implications of the findings and their limitations*

*Significance of the finding of MMR:* The method that was used in this study to identify MMR is original. It is a direct estimation based on the primary records of deaths of women in their reproductive years at the village level. It is different, for example, to the indirect estimation of the Sisterhood Method used by Graham et al in maternal mortality research in Gambia, Africa.<sup>48</sup>

The method depends on two conditions: first, obtaining the permission of the Bureau of Government Administration of Jakarta Governor Offices to access the primary death records from the Village Offices. The second condition is having the resources necessary to follow up in the community to establish whether a woman's death occurred in association with pregnancy. Despite these conditions, this method should be considered as the basis for determining annual MMRs. Valid and reliable ratios are essential for policy makers and program planners.

### *The importance of the maternal mortality - ratio for health and social policy:*

The implications of these findings suggest that changes at the social and cultural level are needed in order to reduce the ratio. Nevertheless, deep-seated cultural factors are not readily amenable to change nor to social policy intervention. For example, the factor "had been married more than once" and "being not the only wife of her husband" reflect cultural conditions and may also be related to the low status of women. Some women marry when very young with a high risk of divorce and becoming a second or third wife. There is no policy, law, nor regulation that restricts polygamous marriages. The regulation known as "P.P. No 10" (literally = Government Regulation Number Ten) restricts government officials from polygamy, but has not been generalized to the population.

Secondly, this study also demonstrated the contribution of the factor of "having an unwanted pregnancy." The analysis showed that there are significant interactions between this variable, "high parity" and "age." These associations suggest that being older and already having several children have a negative impact on a woman's attitude towards pregnancy. While highly speculative, it may also be that women with unwanted pregnancies were aware of their higher risk. Finally, the unfavourable outcomes may have involved deeply rooted and complex psychological factors. Whether or not such factors are involved, there is a clear need for prenatal care to focus on these "high risk" mothers, providing not only the physical monitoring and prenatal care that is necessary, but also providing social and psychological support.

A major determinant of maternal mortality was shown to be "the lack of health insurance coverage specifically for delivery/maternity care." The importance of this determinant was supported by the open-ended interviews of the husbands or family members of the deceased mother. When asked why the mothers were referred to hospital too late or not referred at all, their answer was that they had no money to take the mother to hospital. They frequently attributed the lack of funds to the cost of a previous hospitalized delivery or of surgery. Such episodes could leave a family destitute for a year or more.

These families were usually not aware of the availability of "Jaminan Sosial" ("Jamsos"), literally Social Insurance, (see the description of Jakarta Health Care Services in Chapter 3). Those families that knew about "Jamsos" also said that it was embarrassing to go through the bureaucratic process necessary to obtain the officially stamped letter from the local village official. This embarrassment delayed them from seeking help or precluded seeking help at all. Policy makers and program planners need

to be aware of the problems faced by the poorer families in accessing the appropriate health care through established government programs and policies.

## CHAPTER 7

### Conclusions and recommendations

In this Chapter, the major findings of this study are summarized and recommendations made with respect to the policy implications and for further research.

#### *Maternal mortality in Jakarta*

The World Health Organization recommended that all member states should produce reliable statistics related to maternal mortality by the year 1995.<sup>5</sup> The present study has explored an innovative method of measuring maternal mortality based on the ascertainment of cases at the village level. This method proved to be feasible although the retrospective nature of the study left unanswered major questions as to the reliability and validity of the classification of the deaths as related to maternal mortality.

The ratio that was calculated for 1991 for the city/province of Jakarta was 106 per 100,000 live births, a ratio that was lower than reported in the "official" statistics in 1990. While it is not claimed that the ratio calculated by the method used in this study is the "true" ratio, the study has shown that it is important that the classification of maternal deaths is validated at the village level. It is also necessary to ensure that ratios are calculated based on the attribution of both deaths and births to the village in which a woman is registered as a resident.

#### *Determinants of maternal mortality in Jakarta*

As expected, the medical factors associated with maternal mortality included parity, loss of previous fetus and/or child, and the absence of prenatal care. The study

also found that the lack of health insurance coverage, was a factor in a percentage of the deaths.

The causes of death included hypertensive disease, haemorrhage, anaemia, eclampsia, infection, and puerperal sepsis. While a detailed analysis was not carried out, it appears that a majority, if not all, of these deaths could be prevented by early intervention whether for management of pregnancy or of the labour and postnatal care.

It is clear, however, that factors such as obstetric history, the non-availability of care, and the specific causes of death have their roots in the socioeconomic and cultural conditions of the mothers at risk. Low educational levels, absence of family planning, plural marriages, and high parity, all have cultural and social roots. Interventions need to focus on these issues as well on the enhancement of medical care.

### *Recording and reporting maternal mortality*

It was clear from this study that the existing process for identifying, recording, and reporting maternal deaths does not lead to complete ascertainment nor to valid classification. The study suggests that, assuming that the Vital Registration of deaths at the village level is complete, a starting point for the ascertainment of maternal deaths should be with this register.

All deaths of women in the reproductive years can then be followed up to determine the cause of death, particularly when it is not attributed to maternal mortality in the register. This method has the advantage of being based on the residents of the defined population, providing a consistent denominator and numerator. It needs to be emphasized, however, that this method does not encompass those maternal deaths of women who are not registered as resident in Jakarta villages but take place in Jakarta.

Given that there may be a large number of families in Jakarta at any one time whose village residence is in another province, the maternal mortality that occurs in these families will not be included in this method of measuring the maternal mortality rate. Hence, there is also a need to enhance the capture of maternal mortality that occurs in hospitals and other reporting jurisdictions. It was found, for example, that the Obstetrics-Gynecology Departments of General Hospitals may not classify deaths that occur on the wards as maternal deaths but rather attribute the death to the medical cause. Hence, it is suggested that hospitals should review the deaths of all women in the reproductive ages and follow-up to establish whether or not their death fitted the definition of a maternal mortality.

This study has made a modest start towards establishing a methodology for determining the maternal mortality rate. It is hoped that, if feasible, this methodology might be further tested and elaborated.

### *Reducing maternal morbidity and mortality*

It is written in the Indonesian Constitution that "....the wealth of the earth of Indonesia is to be used for the prosperity of the people." Since this study has shown that the determinants of maternal mortality lie largely in the cultural and social spheres, it is incumbent upon policy makers to ensure that those health services that will prevent the toll of maternal mortality are made available to all in Indonesia.

It is recognized that to do this requires not only the existence of maternal services and hospitals, but strategies designed to ensure that women are aware of the need to access these services and have the resources to do. Such strategies encompass every sector of society including education about the risks and hazards of childbirth, economic

support for those who need it, as well as improvement of access to maternal care at the village level.

There are, of course, risk factors that are more difficult to change since plural marriages, family planning, the cultural value of large families, and beliefs and expectations about the course of pregnancy and its management are deeply embedded in the social fabric. Planners and policy makers can only ensure that services are readily available to "high-risk" populations and remove the barriers to access.

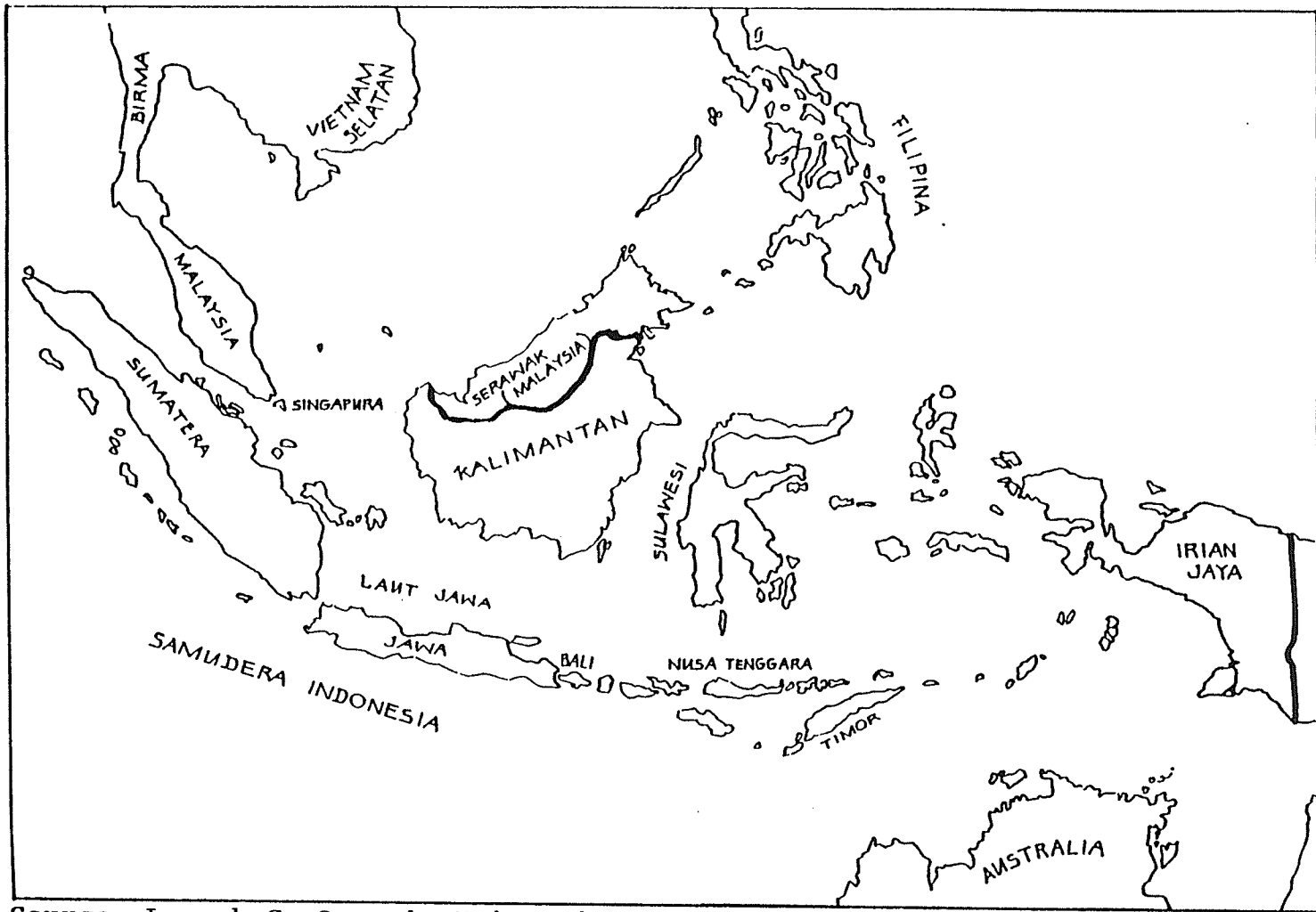
The goal of reducing maternal mortality in Indonesia to levels similar to those in the developed countries can be achieved within this century (by the year 2000) if the risk factors identified in this study can be translated into healthy public policy and programs of intervention at the community levels. It is hoped that this thesis has provided some elements of the "road map" towards achieving this goal.

## APPENDICES



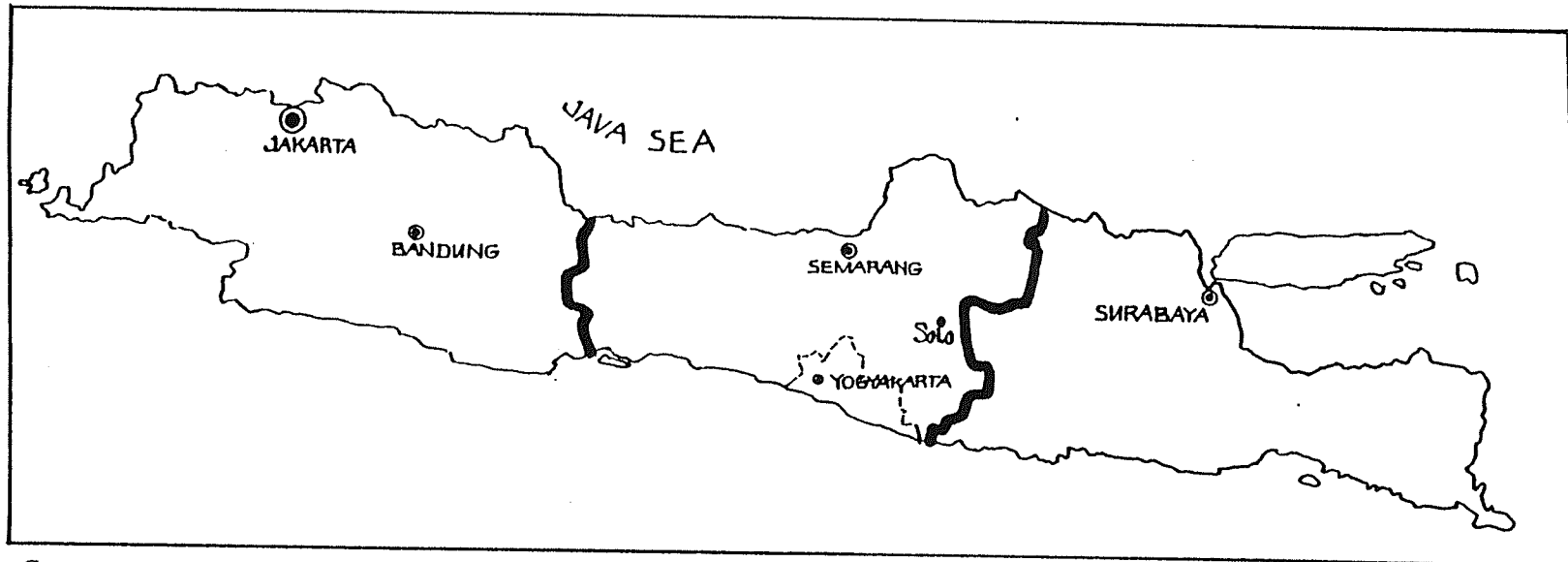
## Appendix A

Map 1 Indonesia



Source: Lysack C, Queen's University, MSc Thesis 1992.  
Source: Dwi Atmo, YPAC artist, Solo, Indonesia.

**Map 2 Java\***



Source: Lysack C, Queen's University, MSc Thesis 1992.

Source: Dwi Atmo, YPAC artist, Solo, Indonesia

\* Map indicates West, Central and East Java and the two special provinces Jakarta and Yogyakarta.

## Appendix B

**QUESTIONNAIRE UNTUK IBU MATI USIA SUBUR (15-49 TAHUN)  
PADA PENELITIAN KEMATIAN IBU BERSALIN  
DI D.K.I. JAKARTA**

Tanggal kunjungan : ..... / ..... / .....

Nama pewawancara : .....

Alamat pewawancara : .....

---

Nama lengkap ibu M.U.S. : .....

Alamat lengkap ibu M.U.S. : Wilayah kota .....  
Kecamatan .....  
Kelurahan .....  
RT/RW ..... Jalan ..... No .....

Tgl. kelahiran ibu M.U.S. : ..... / ..... / .....

Tempat kelahiran : .....

Tanggal kematian : ..... / ..... / .....

Tempat kematian : .....

Selidiki apakah kematian ibu tersebut sesuai dengan definisi.

**DEFINISI** Kematian ibu bersalin adalah kematian dari seorang perempuan yang terjadi "ketika hamil atau dalam 42 hari sesudah pengakhiran kehamilan, tanpa mempertimbangkan lama dan lokasi kehamilan, dengan sebab apapun yang berkaitan atau diperburuk oleh kehamilan tersebut atau penatalaksanaannya, kecuali dari sebab-sebab kecelakaan." (W.H.O.)

Apakah ibu tersebut sedang hamil pada saat kematiannya ? YA / TIDAK

1 Jika YA, berapa bulankah usia kehamilan pada saat kematiannya?

..... bulan

- bila demikian halnya, ia cocok dengan definisi, berarti terpilih sebagai kasus. Teruskanlah wawancara tersebut dengan menggunakan questionnaire untuk kasus ( buku merah )

2 Jika TIDAK sedang hamil pada saat kematiannya, apakah ibu tersebut melahirkan bayi hidup atau mati dalam beberapa bulan sebelum kematiannya ?

- Tanggal kelahiran anak .....

- Tanggal kematian ibu M.U.S. ....

\* Jika perbedaan dari ke 2 tanggal tersebut lebih dari 42 hari, ini tidak cocok dengan definisi, tidak dapat terpilih sebagai kasus. Hentikan wawancara tersebut saat ini juga!

\* Jika perbedaan dari ke 2 tanggal tersebut kurang dari (atau sama dengan) 42 hari, ini terpilih sebagai kasus. Teruskanlah wawancara tersebut dengan menggunakan questionnaire untuk kasus.

# **PENELITIAN**

**FAKTOR-FAKTOR DI BELAKANG  
PENYEBAB KEMATIAN IBU BERSALIN  
DAN  
ANGKA KEMATIAN IBU BERSALIN  
DKI JAKARTA – 1991**

**JULI - AGUSTUS 1992**

**PEMERINTAH DAERAH D.K.I. JAKARTA**

**QUESTIONNAIRE UNTUK KASUS (IBU BERSALIN MATI) PADA PENELITIAN  
KEMATIAN IBU BERSALIN  
DI D.K.I. JAKARTA**

Tanggal kunjungan : ..... / ..... / .....

Nama pewawancara : .....

Alamat pewawancara : .....

Nama lengkap dari kasus : .....

Alamat lengkap : Wilayah kota .....  
Kecamatan .....  
Kelurahan .....  
RT/RW ..... Jalan ..... No .....

Tanggal kelahiran kasus : ..... / ..... / .....

Tempat kelahiran kasus : .....

Tanggal kematian kasus : ..... / ..... / .....

Tempat kematian kasus : .....

Tanggal melahirkan (untuk kasus yang sempat melahirkan) : .....

Nama lengkap ibu dari kasus : ..... Mati/Hidup. Umur : .....

Daerah asal-usul ibu dari kasus : .....

Nama lengkap ayah dari kasus : ..... Mati/Hidup. Umur : .....

Daerah asal-usul ayah dari kasus : .....

**RESPONDEN ( yang menjawab pertanyaan-pertanyaan )**

Nama responden .....

Hubungan keluarga dengan kasus (Lingkari nomor).

1 Suami

2 Saudara perempuan

3 Saudara laki-laki

4 Ibu

5 Ayah

(Untuk dibacakan kepada responden)

NAMA ANDA TIDAK AKAN DIPUBLIKASIKAN.  
JAWABLAH PERTANYAAN-PERTANYAAN INI DENGAN BENAR DAN JUJUR.  
DENGAN MEMBERIKAN JAWABAN-JAWABAN YANG BENAR DAN JUJUR, ANDA TELAH  
MENOLONG PEMERINTAH KITA DALAM MENEMUKAN JALAN KELUAR DARI MASALAH-  
MASALAH KEMATIAN IBU BERSALIN YANG MASIH TETAP TINGGI DI NEGARA KITA YANG  
TERCINTA. TERIMAKASIH!

- P-1 Dapatkah ia membaca tulisan berbahasa Indonesia? (lingkari nomor)  
 1 Ya  
 2 Tidak
- P-2 Bila ya, apakah pendidikan tertinggi yang telah diselesaikan? (lingkari nomor)  
 1 Sekolah Dasar  
 2 SLTP  
 3 SLTA  
 4 Tingkat Sarjana Muda  
 5 Tingkat Sarjana atau lebih tinggi
- P-3 Apakah agamanya? (lingkari nomor)  
 1 Islam  
 2 Kristen  
 3 Katholik  
 4 Hindu  
 5 Budha  
 6 Lain-lain (tuliskan) \_\_\_\_\_
- P-4 Apakah ia masih bekerja pada saat sebelum dirawat di rumah sakit? (lingkari nomor)  
 1 Ya  
 2 Tidak
- P-5 Apakah ia melakukan kegiatan-kegiatan ini pada minggu sebelum ia dirawat di rumah sakit? (lingkari nomor)  
 1 Mencuci banyak pakaian  
 2 Mengambil air dari sumber air yang jauh  
 3 Menimba air dari sumur  
 4 Menjaga anaknya dengan menggendongnya  
 5 Hanya kegiatan-kegiatan ringan, a.l. memasak, mencuci piring, mencuci sedikit pakaian, dll.
- P-6 Apakah pusat kesehatan atau pusat pengobatan jauh dari rumah kasus? (lingkari nomor)  
 1 Ya, jauh dari rumahnya  
 2 Kira-kira 1 - 2 kilometer jauhnya  
 3 Kurang dari 1 kilometer jauhnya
- P-7 Pernahkah dia dalam kira-kira 1 tahun terakhir sebelum kematian (atau sebelum melahirkan) mengikuti penyuluhan kesehatan? (lingkari nomor)  
 1 Ya  
 2 Tidak
- P-8 Jika ya, berapa kalikah dia pernah pergi menghadiri penyuluhan kesehatan tersebut? (sebutkan)  
 \_\_\_\_\_ kali
- P-9 Dan dimanakah penyuluhan kesehatan itu diterima? (lingkari nomor)  
 1 di Puskesmas (Kecamatan)  
 2 di Puskesmas pembantu (Kelurahan)  
 3 di Posyandu  
 4 di rumah salah satu tetangga  
 5 di tempat lainnya (sebutkan) \_\_\_\_\_
- P-10 Mengenai apakah penyuluhan kesehatan tersebut? (sebutkan masing-masing satu-persatu)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



- P-11 Apakah pusat kesehatan atau pusat pengobatan memberikan penyuluhan kesehatan kepada ibu-ibu hamil (pendidikan prenatal)? (lingkari nomor)
- 1 Tidak
  - 2 Ya
- P-12 Jika ya, dimanakah penyuluhan itu biasanya diberikan? (lingkari nomor)
- 1 di Puskesmas (Kecamatan)
  - 2 di Puskesmas pembantu (Kelurahan)
  - 3 di Posyandu
  - 4 di rumah salah satu tetangga
  - 5 lain-lain (sebutkan) \_\_\_\_\_
- P-13 Jika ya, berapa kali dia pergi selama kehamilan ini? (sebutkan)
- \_\_\_\_\_ kali
- P-14 Apakah dia mengunjungi dokter atau bidan selama kehamilannya untuk pemeriksaan prenatal (pemeriksaan kehamilan)? (lingkari nomor)
- 1 Ya
  - 2 Tidak
- P-15 Jika tidak, mengapa? (lingkari nomor)
- 1 tidak sempat, banyak pekerjaan yang harus dilakukan di rumah
  - 2 tidak punya uang untuk transportasi
  - 3 terlalu jauh
  - 4 tidak ada kendaraan umum yang menuju kesana
  - 5 merasa buang waktu, karena tidak tepat waktu mulai dan selesai
  - 6 dia merasa tidak ada kelainan dengan kehamilannya
  - 7 alasan lain (tuliskan) \_\_\_\_\_
- P-16 Jika ya, berapa kali dia mengunjungi dokter atau bidan untuk pemeriksaan kehamilan? (jawablah & sebutkan pilihan pertama yang dia kunjungi, dokter atau bidan)
- \_\_\_\_\_ kali. Yang dia kunjungi pertama-tama adalah: dokter / bidan
- P-17 Berapakah biaya untuk satu kali kunjungan pemeriksaan kehamilan? (sebutkan)
- Rp \_\_\_\_\_
- P-18 Apakah ada pihak ke III yang membantu (misalnya perusahaan tempat bekerja, asuransi)? (lingkari nomor)
- 1 Ya. Sebutkan \_\_\_\_\_
  - 2 Tidak
- P-19 Apakah dibantu /diganti penuh atau sebagian? (lingkari nomor & sebutkan)
- 1 Diganti penuh, Rp \_\_\_\_\_
  - 2 Diganti sebagian, Rp \_\_\_\_\_
- P-20 Berapakah biaya untuk melahirkan? (sebutkan) Rp \_\_\_\_\_
- P-21 Apakah ada pihak ke III yang membantu (misalnya perusahaan tempat bekerja, asuransi)? (lingkari nomor)
- 1 Ya. Sebutkan \_\_\_\_\_
  - 2 Tidak
- P-22 Apakah dibantu /diganti penuh atau sebagian? (lingkari nomor & sebutkan)
- 1 Diganti penuh, Rp \_\_\_\_\_
  - 2 Diganti sebagian, Rp \_\_\_\_\_
- P-23 Berapakah biaya untuk pemeriksaan masa nifas? (sebutkan)
- Rp \_\_\_\_\_

- P-24 Apakah ada pihak ke III yang membantu (misalnya perusahaan tempat bekerja, asuransi?)  
(lingkari nomor)  
1 Ya. Sebutkan \_\_\_\_\_  
2 Tidak
- P-25 Apakah dibantu /diganti penuh atau sebagian? (lingkari nomor & sebutkan)  
1 Diganti penuh, Rp \_\_\_\_\_  
2 Diganti sebagian, Rp \_\_\_\_\_
- P-26 Siapa yang pertama-tama membantu pada saat dia melahirkan? (lingkari nomor)  
1 Dukun (tak terlatih)  
2 Dukun terlatih  
3 Bidan  
4 Perawat  
5 Dokter umum  
6 Dokter kebidanan
- P-27 Dimanakah tempat yang pertama pada saat-saat melahirkan? (lingkari nomor)  
1 di rumah  
2 di klinik bersalin  
3 di rumah sakit  
4 di institusi lain (sebutkan) : \_\_\_\_\_
- P-28 Apakah status perkawinannya pada saat-saat kematiannya (atau saat-saat melahirkan)?  
(lingkari nomor)  
1 Belum pernah menikah  
2 Menikah  
3 Cerai  
4 Janda
- P-29 Jika menikah, apakah suaminya mempunyai istri (atau istri-istri) lain pada saat itu? (lingkari nomor)  
1 Tidak, ia adalah istri satu-satunya dari suaminya  
2 Ya
- P-30 Jika ya, apakah statusnya? (lingkari nomor)  
1 Istri pertama  
2 Istri ke 2  
3 Istri ke 3  
4 Istri ke 4
- P-31 Perkawinan sebelumnya: (lingkari nomor)  
1 Tak pernah menikah sebelumnya.  
2 1  
3 2  
4 Lebih dari 2
- P-32 Berapa rupiahkah jumlah pengeluaran untuk kebutuhan rumahtangga setiap bulan? (tuliskan)  
Rp \_\_\_\_\_
- P-33 Berapakah orang yang biasanya tinggal bersama di dalam rumahnya? (tuliskan)  
\_\_\_\_\_ orang
- P-34 Apakah ia atau keluarganya mengikuti keluarga berencana (KB) sebelum ia menjadi hamil?  
(lingkari nomor)  
1 Tidak  
2 Ya

P-35 Jika tidak, mengapa? (lingkari nomor)

- 1 ia tidak mau mengikuti KB
- 2 suaminya tidak mau mereka mengikuti KB
- 3 dalam kebudayaannya/atau kebudayaan mereka laki-laki adalah lebih berharga daripada perempuan, sehingga ia/mereka masih berharap mendapatkan seorang anak laki-laki, walaupun ia/mereka telah memiliki anak/banyak anak
- 4 dalam kebudayaannya/kebudayaan mereka perempuan adalah lebih berharga daripada laki-laki, sehingga ia/mereka masih berharap mendapatkan seorang anak perempuan, walaupun ia/mereka telah memiliki anak/banyak anak
- 5 dalam kebudayaannya/kebudayaan mereka, ia/mereka percaya bahwa makin banyak anak makin banyak rejeki
- 6 alasan-alasan lain (tuliskan) \_\_\_\_\_

P-36 Jika ya, metode/cara KB apakah yang mereka pilih? (lingkari nomor)

- 1 pil
- 2 suntikan
- 3 spiral
- 4 kondom
- 5 susuk
- 6 sistim kalender
- 7 lainnya (tuliskan) \_\_\_\_\_

P-37 Kapanakah persalinan/melahirkan yang terakhir?

\_\_\_\_\_ bulan yang lalu

P-38 Apakah persalinan ini merupakan persalinan yang pertama? (lingkari nomor)

- 1 Ya
- 2 Tidak

P-39 Jika tidak, kapanakah persalinan yang terdahulu (sebelum persalinan yang terakhir ini) ? (sebutkan)

\_\_\_\_\_ bulan yang lalu

P-40 Berapakah jumlah anak yang telah ia lahirkan sebelumnya (termasuk lahir mati dan lahir hidup)? (sebutkan) \_\_\_\_\_ anak

P-41 Apakah kehamilan pada saat itu merupakan kehamilan yang diinginkan atau kehamilan yang tak diinginkan? (lingkari nomor)

- 1 Kehamilan yang diinginkan
- 2 Kehamilan yang tak diinginkan

P-42 Jika tak diinginkan, apakah yang ia lakukan untuk menggugurkannya? (lingkari nomor)

- 1 minum jamu tradisional
- 2 memijat - mijat
- 3 makan pil
- 4 suntik
- 5 kuret
- 6 lain-lain, sebutkan \_\_\_\_\_

P-43 Untuk itu, siapa yang ia kunjungi? (lingkari nomor)

- 1 tidak mengunjungi siapa-siapa, usaha sendiri
- 2 dokter
- 3 perawat atau bidan
- 4 dukun

- P-44 Apakah ia pernah kehilangan anak atau kehilangan janin (abortus) sebelumnya? (lingkari nomor)
- 1 Ya
  - 2 Tidak
- P-45 Jika ya, berapa kali & sebutkan \_\_\_\_\_ kali, kehilangan anak / janin
- P-46 Pada saat-saat sebelum melahirkan (atau sebelum kematian) apakah ia dirujuk ke institusi perawatan yang tingkatnya lebih tinggi? (lingkari nomor)
- 1 Tidak
  - 2 Ya
- P-47 Jika ya, dengan apakah ia menuju ke institusi tersebut?  
(sebutkan) \_\_\_\_\_
- P-48 Jika dengan ambulans, dari pengalaman anda, apakah anda menemukan bahwa kedatangan ambulans sangat segera menuju tempat tinggal setelah dipesan melalui panggilan telepon? (lingkari nomor & sebutkan berapa menit)
- 1 Ya, \_\_\_\_\_ menit
  - 2 Tidak, \_\_\_\_\_ menit
- P-49 Apakah anda mendapatkan pemberitahuan dari dokter tentang apa yang menyebabkan kematiannya? (lingkari nomor)
- 1 Ya
  - 2 Tidak
- P-50 Jika ya, menurut dokter tersebut apakah yang menyebabkan kematiannya? (boleh lebih dari satu jawaban)
- 1 Perdarahan Ya / Tidak
  - 2 Komplikasi dari keguguran yang diinduksi/disengaja Ya / Tidak
  - 3 Tertahan/tersumbatnya kelahiran & pecahnya kandungan Ya / Tidak
  - 4 Infeksi masa nifas Ya / Tidak
  - 5 Kekurangan zat gizi darah (anaemia) Ya / Tidak
  - 6 Kejang eklampsia Ya / Tidak
  - 7 Infeksi Ya / Tidak
  - 8 Penyakit tekanan darah tinggi Ya / Tidak
  - 9 Lain-lain (tuliskan) \_\_\_\_\_
- P-51 Jika tidak, ceritakanlah kelainan, keadaan yang memperburuk kehamilannya, dan/atau penyakit yang anda ketahui diderita olehnya pada saat-saat sebelum kematiannya?  
Pewawancara melakukan anamnesa lengkap, termasuk apakah ada keguguran, hamil anggur, kehamilan di luar kandungan yang terganggu (perdarahan sedikit, sakit perut hebat mungkin sampai pingsan), masa melahirkan dan masa nifas (lihat lembaran pedoman khusus)

### Hasil anamnesa untuk P-51:

(Untuk dibacakan kepada responden)

TERIMAKASIH ATAS PEMBERIAN JAWABAN - JAWABAN YANG BENAR DAN JUJUR !

APAKAH ANDA MEMPUNYAI PERTANYAAN-PERTANYAAN?

JIKA YA, TOLONG TULISKAN DENGAN KATA-KATA ANDA SENDIRI. TERIMAKASIH !

.....

.....

.....

.....

.....

Nama responden : .....

Tandatangan : .....

Nama pewawancara : .....

Tandatangan : .....

Setelah anda selesai mewawancarai keluarga dari kasus ini, dapatkan kontrol (ibu bersalin hidup) yang cocok untuk kasus ini, yaitu:

- 1 bertempat-tinggal di kelurahan yang sama dengan kasus ini (atau bila tidak ada, boleh diambil dari kelurahan yang berbeda asalkan dari kecamatan yang sama)
- 2 bertanggal melahirkan sama dengan tanggal melahirkan dari kasus ini (maximal berbeda 1 bulan), atau bertanggal melahirkan sama dengan tanggal kematian kasus ini (maximal berbeda 1 bulan) bila kasus ini meninggal sebelum sempat melahirkan bayinya.

**CATATAN : KONTROL TIDAK BOLEH DIPAKAI LEBIH DARI SATU KALI.**

# **PENELITIAN**

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**JULI - AGUSTUS 1992**

**PEMERINTAH DAERAH D.K.I. JAKARTA**

**QUESTIONNAIRE UNTUK KONTROL (IBU BERSALIN HIDUP) PADA PENELITIAN  
KEMATIAN IBU BERSALIN  
DI D.K.I. JAKARTA**

Tanggal kunjungan : ..... / ..... / .....

Nama pewawancara : .....

Alamat pewawancara : .....

Nama lengkap dari kontrol : .....

Alamat lengkap : Wilayah kota .....  
Kecamatan .....  
Kelurahan .....  
RT/RW ..... Jalan ..... No .....

Tanggal kelahiran kontrol : ..... / ..... / .....

Tempat kelahiran kontrol : .....

Nama lengkap ibu dari kontrol : ..... Mati/Hidup.Umur : \_\_\_\_

Daerah asal-usul ibu dari kontrol : .....

Nama lengkap ayah dari kontrol : ..... Mati/Hidup.Umur : .....

Daerah asal-usul ayah dari kontrol : .....

Tanggal melahirkan bayi : ..... Hidup / Mati

(Untuk dibacakan kepada responden)

**NAMA ANDA TIDAK AKAN DIPUBLIKASIKAN.**  
**JAWABLAH PERTANYAAN-PERTANYAAN INI DENGAN BENAR DAN JUJUR.**  
**DENGAN MEMBERIKAN JAWABAN-JAWABAN YANG BENAR DAN JUJUR, ANDA TELAH**  
**MENOLONG PEMERINTAH KITA DALAM MENEMUKAN JALAN KELUAR DARI MASALAH-**  
**MASALAH KEMATIAN IBU BERSALIN YANG MASIH TETAP TINGGI DI NEGARA KITA YANG**  
**TERCINTA. TERIMAKASIH!**

- P-1 Dapatkah anda membaca tulisan berbahasa Indonesia? (lingkari nomor)  
 1 tidak  
 2 ya
- P-2 Bila ya, apakah pendidikan tertinggi yang telah anda selesaikan? (lingkari nomor)  
 1 Sekolah Dasar  
 2 SLTP  
 3 SLTA  
 4 Tingkat Sarjana Muda  
 5 Tingkat Sarjana atau lebih tinggi
- P-3 Apakah agama anda? (lingkari nomor)  
 1 Islam  
 2 Kristen  
 3 Katholik  
 4 Hindu  
 5 Budha  
 6 Lain-lain (tuliskan) \_\_\_\_\_
- P-4 Apakah anda masih bekerja pada saat-saat sebelum melahirkan? (lingkari nomor)  
 1 Tidak  
 2 Ya
- P-5 Apakah anda melakukan kegiatan-kegiatan ini pada minggu sebelum anda melahirkan? (lingkari nomor)  
 1 Mencuci banyak pakaian  
 2 Mengambil air dari sumber air yang jauh  
 3 Menimba air dari sumur  
 4 Menjaga anak anda dengan menggendongnya  
 5 Hanya kegiatan-kegiatan ringan : a.l. memasak, mencuci piring, mencuci sedikit pakaian, dll.
- P-6 Apakah pusat kesehatan atau pusat pengobatan jauh dari rumah anda? (lingkari nomor)  
 1 Ya, jauh dari rumah anda  
 2 Kira-kira 1 - 2 kilometer jauhnya  
 3 Kurang dari 1 kilometer jauhnya
- P-7 Pernahkah anda dalam kira-kira 1 tahun terakhir sebelum melahirkan mengikuti penyuluhan kesehatan? (lingkari nomor)  
 1 Ya  
 2 Tidak
- P-8 Jika ya, berapa kalikah anda pernah pergi menghadiri penyuluhan kesehatan tersebut? (sebutkan) \_\_\_\_\_ kali
- P-9 Dan dimanakah penyuluhan kesehatan itu anda terima? (lingkari nomor)  
 1 di Puskesmas (Kecamatan)  
 2 di Puskesmas pembantu (Kelurahan)  
 3 di Posyandu  
 4 di rumah salah satu tetangga  
 5 di tempat lainnya (sebutkan) \_\_\_\_\_
- P-10 Mengenai apakah penyuluhan kesehatan tersebut? (sebutkan masing-masing satu-persatu)  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_



- P-11 Apakah pusat kesehatan atau pusat pengobatan memberikan penyuluhan kesehatan kepada ibu-ibu hamil (pendidikan prenatal) ? (lingkari nomor)
- 1 Ya
  - 2 Tidak
- P-12 Jika ya, dimanakah penyuluhan itu biasanya diberikan? (lingkari nomor)
- 1 di Puskesmas (Kecamatan)
  - 2 di Puskesmas pembantu (Kelurahan)
  - 3 di Posyandu
  - 4 di rumah salah satu tetangga
  - 5 lain-lain (sebutkan) \_\_\_\_\_
- P-13 Jika ya, berapa kali anda pergi selama kehamilan ini? (sebutkan) \_\_\_\_\_ kali
- P-14 Apakah anda mengunjungi dokter atau bidan selama kehamilan ini untuk pemeriksaan prenatal (pemeriksaan kehamilan)? (lingkari nomor)
- 1 Ya
  - 2 Tidak
- P-15 Jika tidak, mengapa? (lingkari nomor)
- 1 tidak sempat, banyak pekerjaan yang harus dilakukan di rumah
  - 2 tidak punya uang untuk transportasi
  - 3 terlalu jauh
  - 4 tidak ada kendaraan umum yang menuju kesana
  - 5 merasa buang waktu, karena tidak tepat waktu mulai dan selesai
  - 6 anda merasa tidak ada kelainan dengan kehamilannya
  - 7 alasan lain (tuliskan) \_\_\_\_\_
- P-16 Jika ya, berapa kali anda mengunjungi dokter atau bidan untuk pemeriksaan kehamilan? (jawablah & sebutkan pilihan pertama yang anda kunjungi, dokter atau bidan) \_\_\_\_\_ kali. Yang anda kunjungi pertama-tama adalah: dokter / bidan
- P-17 Berapakah biaya untuk satu kali kunjungan pemeriksaan kehamilan? (sebutkan) Rp \_\_\_\_\_
- P-18 Apakah ada pihak ke III yang membantu (misalnya perusahaan tempat bekerja, asuransi)? (lingkari nomor)
- 1 Ya. Sebutkan \_\_\_\_\_
  - 2 Tidak
- P-19 Apakah dibantu /diganti penuh atau sebagian? (lingkari nomor & sebutkan)
- 1 Diganti penuh, Rp \_\_\_\_\_
  - 2 Diganti sebagian, Rp \_\_\_\_\_
- P-20 Berapakah biaya untuk melahirkan? (sebutkan) Rp \_\_\_\_\_
- P-21 Apakah ada pihak ke III yang membantu (misalnya perusahaan tempat bekerja, asuransi)? (lingkari nomor)
- 1 Ya. Sebutkan \_\_\_\_\_
  - 2 Tidak
- P-22 Apakah dibantu /diganti penuh atau sebagian? (lingkari nomor & sebutkan)
- 1 Diganti penuh, Rp \_\_\_\_\_
  - 2 Diganti sebagian, Rp \_\_\_\_\_
- P-23 Berapakah biaya untuk pemeriksaan masa nifas? (sebutkan) Rp \_\_\_\_\_

- P-24 Apakah ada pihak ke III yang membantu (misalnya perusahaan tempat bekerja, asuransi?)  
(lingkari nomor)  
1 Ya. Sebutkan \_\_\_\_\_  
2 Tidak
- P-25 Apakah dibantu /diganti penuh atau sebagian? (lingkari nomor & sebutkan)  
1 Diganti penuh, Rp \_\_\_\_\_  
2 Diganti sebagian, Rp \_\_\_\_\_
- P-26 Siapa yang pertama-tama membantu pada saat anda melahirkan? (lingkari nomor)  
1 Dukun (tak terlatih)  
2 Dukun terlatih  
3 Bidan  
4 Perawat  
5 Dokter umum  
6 Dokter kebidanan
- P-27 Dimanakah tempat yang pertama pada saat-saat melahirkan? (lingkari nomor)  
1 di rumah  
2 di klinik bersalin  
3 di rumah sakit  
4 di institusi lain (sebutkan) : \_\_\_\_\_
- P-28 Apakah status perkawinan anda pada saat-saat melahirkan? (lingkari nomor)  
1 Belum pernah menikah  
2 Menikah  
3 Cerai  
4 Janda
- P-29 Jika menikah, apakah suami anda mempunyai istri (atau istri-istri) lain pada saat itu? (lingkari nomor)  
1 Tidak, anda adalah istri satu-satunya dari suami anda  
2 Ya
- P-30 Jika ya, apakah status anda? (lingkari nomor)  
1 Istri pertama  
2 Istri ke 2  
3 Istri ke 3  
4 Istri ke 4
- P-31 Perkawinan sebelumnya: (lingkari nomor)  
1 Tak pernah menikah sebelumnya.  
2 1  
3 2  
4 Lebih dari 2
- P-32 Berapa rupiahkah jumlah pengeluaran untuk kebutuhan rumahtangga setiap bulan? (tuliskan)  
Rp \_\_\_\_\_
- P-33 Berapa orangkah yang biasanya tinggal bersama didalam rumah anda?  
(tuliskan) \_\_\_\_\_ orang
- P-34 Apakah anda atau keluarga anda mengikuti keluarga berencana (KB) sebelum anda menjadi hamil? (lingkari nomor)  
1 Tidak  
2 Ya

P-35 Jika tidak, mengapa? (lingkari nomor)

- 1 anda tidak mau mengikuti KB
- 2 suami anda tidak mau kalian berdua mengikuti KB
- 3 dalam kebudayaan anda/atau kebudayaan anda berdua laki-laki adalah lebih berharga daripada perempuan, sehingga anda/kalian berdua masih berharap mendapatkan seorang anak laki-laki, walaupun anda/kalian berdua telah memiliki anak/banyak anak
- 4 dalam kebudayaan anda/kebudayaan anda berdua perempuan adalah lebih berharga daripada laki-laki, sehingga anda/kalian berdua masih berharap mendapatkan seorang anak perempuan, walaupun anda/kalian berdua telah memiliki anak/banyak anak
- 5 dalam kebudayaan anda/kebudayaan kalian berdua, anda/kalian berdua percaya bahwa makin banyak anak makin banyak rejeki
- 6 alasan-alasan lain (tuliskan) \_\_\_\_\_

P-36 Jika ya, metode/cara KB apakah yang kalian pilih? (lingkari nomor)

- 1 pil
- 2 suntikan
- 3 spiral
- 4 kondom
- 5 susuk
- 6 sistim kalender
- 7 lainnya (tuliskan) \_\_\_\_\_

P-37 Kapanakah persalinan / melahirkan yang terakhir? (sebutkan)

\_\_\_\_\_ bulan yang lalu

P-38 Apakah persalinan ini merupakan persalinan yang pertama? (lingkari nomor)

- 1 Ya
- 2 Tidak

P-39 Jika tidak, kapanakah persalinan yang terdahulu (sebelum persalinan yang terakhir ini ? (sebutkan) \_\_\_\_\_ bulan yang lalu

P-40 Berapakah jumlah anak yang telah anda lahirkan sebelumnya (termasuk lahir mati dan lahir hidup)? (sebutkan) \_\_\_\_\_ anak

P-41 Apakah kehamilan pada saat itu merupakan kehamilan yang diinginkan atau kehamilan yang tak diinginkan? (lingkari nomor)

- 1 Kehamilan yang diinginkan
- 2 Kehamilan yang tak diinginkan

P-42 Jika tak diinginkan, apakah yang anda lakukan untuk menggugurkannya? (lingkari nomor)

- 1 minum jamu tradisional
- 2 memijat - mijat
- 3 makan pil
- 4 suntik
- 5 kuret
- 6 lain-lain, sebutkan \_\_\_\_\_

P-43 Untuk itu, siapa yang anda kunjungi? (lingkari nomor)

- 1 tidak mengunjungi siapa-siapa, usaha sendiri
- 2 dokter
- 3 perawat atau bidan
- 4 dukun

- P-44 Apakah anda pernah kehilangan anak atau kehilangan janin (abortus) sebelumnya? (lingkari nomor)  
 1 Ya  
 2 Tidak
- P-45 Jika ya, berapa kali? Dan sebutkan kehilangan anak atau janin \_\_\_\_\_ kali, kehilangan anak / janin
- P-46 Pada saat-saat sebelum melahirkan apakah anda dirujuk ke institusi perawatan yang tingkatnya lebih tinggi? (lingkari nomor)  
 1 Tidak  
 2 Ya
- P-47 Jika ya, dengan apakah anda menuju ke institusi tersebut?  
 (sebutkan) \_\_\_\_\_
- P-48 Jika dengan ambulans, dari pengalaman anda, apakah anda menemukan bahwa kedatangan ambulans sangat segera menuju tempat tinggal setelah dipesan melalui panggilan telepon? (lingkari nomor & sebutkan berapa menit)  
 1 Ya, \_\_\_\_\_ menit  
 2 Tidak, \_\_\_\_\_ menit

(Untuk dibacakan kepada responden)

TERIMA KASIH ATAS PEMBERIAN JAWABAN-JAWABAN YANG BENAR DAN JUJUR!  
 APAKAH ANDA MEMPUNYAI PERTANYAAN-PERTANYAAN?  
 JIKA YA, TOLONG TULISKAN DENGAN MEMAKAI KATA-KATA ANDA SENDIRI.  
 TERIMA KASIH!

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Nama responden : \_\_\_\_\_

Tandatangan : \_\_\_\_\_

Nama pewawancara : .....

Tandatangan : .....

## References

1. World Health Organization. *Alma-Ata 1978: primary health care (1978)*, Geneva, WHO "Health For All" Ser. No. 1, 1978
2. *Profil Kesehatan Indonesia 1991*, Departemen Kesehatan Republik Indonesia 1992
3. *Profil Kesehatan Indonesia 1990*, Departemen Kesehatan Republik Indonesia 1991
4. Canada. Epidemiology and Community Health Specialties Indian and Northern Health Services, Medical Services Branch, Department of Health and Welfare with the assistance and participation of the Department of Health, Government of the Northwest Territories. *Health status of Canadian Indians and Inuit 1990*, by Bernice L. Muir, Ottawa, Minister of Supply and Services Canada 1991
5. Maternal mortality: helping women off the road to death. *WHO Chronicle* 1986; 40(5):175-183
6. Kwast BE: Maternal mortality: levels, causes, and promising interventions. *J Biosoc Sci* 1989; 10: 51-67
7. *U.N. demographic indicators of countries: estimates and projections as assessed in 1980*, Department of International Economic and Social Affairs, United Nations, New York, 1982
8. Mitchell JR: Early obstetric in Manitoba. *Manitoba Medicine* 1992; 62(4): 153
9. *Perinatal and maternal welfare committee report for 1991*, The College of Physicians and Surgeons of Manitoba
10. *Profil Kesehatan Indonesia 1989*, Departemen Kesehatan Republik Indonesia 1990
11. *Towards a better future, maternal and child health*, WHO publication, Geneva, 1980
12. Pinotti JA: Safe motherhood: an international priority. *Int J Gynecol Obstet* 1989; 29: 105-106
13. Gunawan N: A long-term strategy for reducing maternal mortality. *World Health Forum* 1991; 12: 20-21
14. Agoestina et al: *A report of maternal and perinatal mortality study: as a part of a health services action program to decrease maternal and infant mortality*, DEPKES - BKS PENFIN - WHO, 1988; 2

15. Agoestina T, Soejoenoes A: *Technical report on the study of maternal and perinatal mortality*, Badan Kerja Sama Penelitian Fertilitas Indonesia (BKS PENFIN - 1989)
16. American Medical Association. *Maternal and child care: a guide for maternal deaths studies, with causes of obstetric deaths, direct and indirect, and report on a study of seven programs (Chicago)*, 1957; 2
17. Hogberg U, Brostrom G: The demography of maternal mortality - seven Swedish Parishes in the 19th century. *Int J Gynecol Obstet* 1985; 23: 489-497
18. *Manual of the international classification of diseases, injuries, and causes of death: based on the recommendations of the ninth revision conference, 1975, and adopted by the twenty-ninth World Health Assembly*. Volume I. Geneva, WHO, 1977; 764
19. Fortney JA: The distinction between rate and ratio is important. *Letter in Public Health Reports* March - April 1989; 104(2): 200
20. Rosenfield A: Maternal mortality in developing countries: an ongoing but neglected 'epidemic'. *JAMA* 1989; 262(3): 376-379
21. Harrison KA: Maternal mortality. *Transactions of the Royal Society of Tropical Medicine & Hygiene* 1989; 83(4): 449-453
22. Sachs et al: Haemorrhage, infection, toxemia, and cardiac disease, 1954-85: causes for their declining role in maternal mortality. *AJPH* June 1988; 78(6): 671-675
23. Royston E, Armstrong S: *Preventing maternal deaths*, Geneva, WHO, 1989
24. Starrs A: *Preventing the tragedy of maternal deaths. A report on the International Safe Motherhood Conference*, Nairobi, Kenya, 1987
25. Smith DC: Principles and practice of prevention. In: Wallace HM, ed. *Maternal and child health practices*, USA, John Wiley & Sons, 1982: 117
26. Sachs et al: Maternal mortality in Massachusetts. *N Engl J Med* 1987; 316: 667-672
27. Doh AS, Nasah BT, Kamdom-Moyo J: The outcome of labor at the University Teaching Hospital (CHU), Yaounde, Cameroon. *Int J Gynecol Obstet* 1989; 30: 317-323
28. Wallace HM: Application of the concept of high risk to the health care of mothers, children, and families. In: Wallace HM, ed. *Maternal and child health practices*, USA, John Wiley & Sons, 1982: 112-113
29. Harrison KA: Maternal mortality in developing countries. *Br J Obstet Gynecol* 1989; 96: 1-3

30. Rogo KO: Mortality in acute gynecology: a developing country's perspective. *Int J Gynecol Obstet* 1989; 30: 343-347
31. Balde MD, Bastert G: Decrease in uterine rupture in Conakry, Guinea by improvements in transfer management. *Int J Gynecol Obstet* 1990; 31: 21-24
32. Howard D: Aspects of maternal morbidity: the experience of less developed countries. In: Jelliffe DB and Jelliffe EFP, eds. *Advances in international maternal and child health*, Oxford, Clarendon Press, 1987; 2
33. WHO, FIGO. Maternal mortality: a silent tragedy. *Int J Gynecol Obstet* 1990; 31: 295
34. Konje JC, Odukoya OA, Ladipo OA: Ruptured uterus in Ibadan - A twelve year review. *Int J Gynecol Obstet* 1990; 32: 207-213
35. Greenwood Am et al: Evaluation of a primary health care programme in the Gambia. *Journal of Tropical Medicine and Hygiene* 1990; 93: 58-66
36. Dixon MR: Abortion policy and women's health in developing countries. *Int J Health Serv* 1990; 20(2): 297-314
37. Cook R: The role of confidential enquiries in the reduction of maternal mortality and alternatives to this approach. *Int J Gynecol Obstet* 1989; 30: 41-45
38. Atrash HK et al: Maternal mortality in the United States, 1979-1986. *Obstet Gynecol* 1990; 76(6): 1055-1060
39. *National Health System*, Department of Health of the Republic of Indonesia, 1982
40. Bichmann W, Rifkin SB, Shrestha M: Towards the measurement of community participation. *World Health Forum* 1989; 10: 467-472
41. Johnston M: Development of a community health programme. Appendix 1. *Scand J Prim Health Care* 1988; Suppl 1: 119-129
42. Haliman A: Banjarnegara community health development programme: Indonesia. In: Wolfson M, ed. *Community action for family planning*, Paris, Organization for Economic Co-operation and Development, 1987; 88
43. Reis T, et al: An examination of the performance and motivation of Indonesian village health volunteers. *Int'l Quarterly of Community Health Education* 1990; 11(1): 19-27
44. *Kesehatan dalam angka, tahun 1990*, Dinas Kesehatan DKI Jakarta, 1991
45. Direktorat Bina Peran Serta Masyarakat Depkes: KIA. *Warta Posyandu* 1989; September: 9

46. Chernichovsky D, Meesook OA: Utilization of health services in Indonesia. *Soc Sci Med* 1986; 23(6): 611-620
47. Thouw J: Delegation of obstetric care in Indonesia. *Int J Gynecol Obstet* 1992; 38(Suppl): S45-47
48. Graham W, Brass W, Snow R: Estimating maternal mortality in developing countries. *Letter in Lancet* February 1988; 1: 416





THE UNIVERSITY OF MANITOBA

HOUSING AND STUDENT LIFE

Room 416 — University Centre  
Winnipeg, Manitoba  
Canada R3T 2N2

(204) 474-9981

March 1, 1994

Dear Student:

Congratulations. The Student Records office advises me that you may graduate from The University of Manitoba in the spring. Completion of your undergraduate program marks an important milestone in your life and we hope your experience at the U of M has contributed positively to your personal and intellectual development.

As a potential graduating student, we invite your participation in a confidential survey of your experiences at The University of Manitoba. The purpose of the survey is to help the University evaluate the experience of undergraduate students like yourself. The survey will provide an important source of student feedback and the results will be used to help improve the University for future students.

Please participate in this important project by completing and returning the enclosed survey. Naturally, all of your survey responses will be held in strict confidence and will be used only to produce overall response profiles from students like yourself. (You'll notice that your return envelope has been numbered - this has been done only to allow us to send you a reminder letter, if necessary.)

Although the survey is voluntary, we hope you will participate to help create a representative sampling of opinion and reactions from graduating students. The survey should only take about 20 minutes, and you may find that it will give you an interesting chance to review your university experiences.

We hope you'll help with this important project by completing and returning your survey within the next few days. (Please use the enclosed postage-paid envelope to return your survey.)

Thank you in advance for providing this important feedback. Best wishes for completion of the work necessary for graduation.

Sincerely,

Garth S. Wannan,  
Director

GSW/jes  
Encls.

