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Making motherhood safe in the West Bank, Occupied Palestinian Territory

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*To my late friend Dr. Amin Masa'd, who triggered this work,
To his wife Salwa, and to his two sons Fuad and Nadim.*

*To my mother Zahra,
To my wife Reem,
And to my daughters Yara and Lina, and my sons Bahjat and Hasan.*

ABSTRACT

Objective: To determine causes of death among women of reproductive age; to determine MMR; to review death notification and registration procedures, and to examine the fate and status of under-5 motherless orphans in the West Bank.

Methods: All reported deaths (n= 431) of women 15-49 years old during 2000-2001 in the West Bank area of OPT were investigated. Data were collected from official agencies and through interviewing the deceased women's relatives using the verbal autopsy approach in all 10 West Bank districts over a period between January 2000 until June 2002. Data on circumstantial events related to death and causes of death were analysed. An avoidability analysis of maternal deaths was performed, and deaths were classified as unavoidable, preventable and treatable. Motherless under-5 orphans were investigated after an average of three years following their mothers' deaths by interviewing custodians/ caretakers. Orphans' weight and height were measured; wasting and stunting rates were calculated and analyzed. The quality of death notification sheets and timeliness of death notification and registration was assessed and analysed.

Results: The overall reproductive-age mortality rate ranged between 45 and 48 per 100,000 women. Malignant and circulatory system diseases were the most common causes of women's reproductive age deaths while 8% were pregnancy related. MMR in the West Bank was calculated at around 29-36 deaths per 100,000 live births. Cardiovascular diseases and haemorrhage were the most common causes of maternal death and 69% of these were classified as avoidable. The reproductive death rate among single never-married women was 39 per 100,000 single women, and at time of death, 41% were under 25 years. Violent deaths and suicide among single women was almost twice as high as among married women. With the exception of three neonatal deaths, all motherless orphans traced were alive after about 3 years following their mothers' death. Anthropometric measurement of the orphans revealed that 8.8% and 17.6% of under-5 orphans were wasted and stunted, respectively, and all malnourished orphans were girls. Death notification sheets were incomplete in 78% of cases, and notification and registration of 36% of deaths were significantly delayed.

Conclusion: The majority of maternal deaths were avoidable. Substandard care and misclassification of maternal deaths remain significant problems with negative repercussions on efforts to reduce maternal mortality. More qualitative research into critical issues of single women's status in Palestinian society focussing on health care-seeking patterns and barriers to appropriate reproductive and other health care should be considered. The higher proportion of violent deaths and suicide among the deceased single women is a serious indication of their vulnerability. Close monitoring and support to the motherless orphans' health and nutritional status with a special emphasis on orphan girls should be ensured. Death notification and registration procedures need to be critically reviewed.

Key Words: West Bank, reproductive deaths, maternal mortality, avoidability, verbal autopsy, quality of care, women's status, violence against women, Orphans survival, gender, death notification and registration, Occupied Palestinian Territory.

LIST OF ORIGINAL PAPERS

- I.** Al-Adili N, Johansson A, Bergström S. Maternal mortality among Palestinian women in the West Bank. *International Journal of Gynaecology and Obstetrics*. 2006; 93 (2):164-170.

- II.** Nadim Al-Adili, Mohammad Shaheen, Staffan Bergström, Annika Johansson. Deaths among Young, Single Women in 2000-2001 in the West Bank, Palestinian Occupied Territories. *Reproductive Health Matters*, 2008; 16(31):1-11.

- III.** Nadim Al-Adili, Mohammad Shaheen, Staffan Bergström, and Annika Johansson. Survival, family conditions and nutritional status of motherless orphans in the West Bank, Palestine. *Scandinavian Journal of Public Health*, accepted for publication, 2008.

- IV.** Al-Adili N, Johansson A, and Bergström S. Causes and Notification of Reproductive Age Deaths among Palestinian Women in the West Bank. (Submitted)

The papers / publications will be referred to by their Roman numerals.

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LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
BITS	Beredningen för Internationellt och Tekniskt Samarbete
EMRO	Eastern Mediterranean Regional Office
FGM/C	Female Genital Mutilation/Cutting
HIV	Human Immunodeficiency Virus
ICPD	International Conference on Population and Development
NC	North Carolina
USA	United States of America
IHCAR	Division of International Health, Karolinska Institutet
MENA	Middle East and North Africa
MDGs	Millennium Development Goals
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
OCHA	United Nation Office for the Coordination of Humanitarian Affairs
OPT	Occupied Palestinian Territory
PCBS	Palestinian Central Bureau of Statistics
PHD	Public Health Department
PLO	Palestinian Liberation Organization
RAMOS	Reproductive Age Mortality Survey
TFR	Total Fertility Rate
US\$	United States Dollar
WHO	World Health Organization
UNICEF	United Nations Children's Fund
UNRWA	United Nations Relief and Works Agency for the Near East

PROLOGUE

Nothing could be as painful as learning/acquiring a new idea and or new skill. Yet, this pain seems to be counteracted by the rewarding feeling of success and contentment when both the body and the mind accommodate and absorb the newly added asset. This is a thrilling, triggering experience that enables one to cope with the challenges for continued advancement. This description might be reminiscent of the pain experienced by a woman in labour which is followed, if successfully managed, by the sound feeling of becoming a mother and having a new baby. I have learned much about the interaction between the inevitable challenges and advancement and have, therefore, adapted myself by gradually raising the threshold of pain to ensure a satisfactory and sustained learning process.

In 1971, I started my undergraduate studies at Al-Mansoura University in Egypt in the Science of Anatomy and Physiology. After five years, I joined the Faculty of Medicine at the same university, and graduated in 1979. Coming back to my country, Palestine, I worked for three years in a paediatrics residency programme in Caritas Baby Hospital (a Swiss and German Aid Hospital) in Bethlehem. In 1984, I studied for a Diploma in child health at the University College Dublin in Ireland and trained at the National Children's Hospital in Dublin. Between 1985-1988, I worked with a team of colleagues entrusted by UNICEF and the Civil Administration to establish 4 child development centres in the West Bank and Gaza. Between 1989- 1990, I studied for a Masters degree in Maternal and Child Health at London University Faculty of Medicine. Between 1991 and 1995, I worked in a leading position for the government health services in the West Bank.

During that period, I studied for a post-graduate certificate in Maternal and Child Health at the Faculty of Medicine in the Hebrew University in Jerusalem. In 1994, I met Professor Staffan Bergstrom for the first time when I participated in the BITS Course for the Diploma in International Maternal Health in Uppsala, Sweden. In 1995, I completed a short course and internship in Public and Health Administration at North Carolina University in Charlotte, NC in the USA.

Since 1996 and until the present, I have worked first as a consultant, and then as health specialist for UNICEF OPT Country Office in Jerusalem. I started my research on reproductive health jointly with IHCAR/Karolinska Institute in Stockholm in late 1999.

The conclusions and recommendations for this work have been put at the disposal of decision-makers and health planners in the OPT.

1. INTRODUCTION

1.1 Reproductive health: a human right yet to be realized

In 1994, at the International Conference on Population and Development (ICPD) in Cairo, representatives of 165 nations affirmed that reproductive and sexual health are part of what are accepted as universal human rights. The Cairo document bases reproductive and sexual health on the personal right to bodily integrity and security, as well as on the social right to the highest attainable standard of health care, information and means to access it (1).

This includes also the right to have a satisfying and safe sexual life, the capability to reproduce and the freedom to decide if, when and how often to do so (1). In the year 2000, the internationally agreed-upon Millennium Development Goals (MDGs) identified gender equality and empowerment of women as one of the eight goals in its own right and as a necessary prerequisite for a just and sustainable development (2). Yet, although these and other similar commitments have been ratified by most UN member states and despite the fact that they are included in several international human rights documents, national laws, policies and programmes have lagged behind, notably in the health sector (3). Young girls and women in resource-poor nations suffer the greatest ill-health consequences due to their low societal status, due to the denial of basic human rights, and due to poverty and inadequate reproductive health services (4,5).

1.2 Gender and reproductive health

Women and men are different biologically (sex differences), as well as in the socially constructed roles and responsibilities assigned to them (gender differences). Globally, men have the largest access to, and control of resources and the largest decision-making power at all levels of society. However, gender differences are historically and culturally specific and vary in time and with the cultural and socio-political context. Together gender and sex, in interaction with socio-economic circumstances, influence exposure to health risks, access to health services and health outcomes (6).

In societies that accord low status to women, women are often neglected in education and professional life, and are recognized primarily for their childbearing capacity (7).

In these societies, women are usually married off at a young age and are expected to start childbearing early. Maternal death is often high and accepted as part of the natural order of things. Studies of the cumulative impact of early marriage and birth giving on subsequent maternal health and pregnancy outcomes throughout the reproductive period have revealed that women married before the age of 16 and having a first child soon after, had about double the risk of suffering from chronic disease, miscarriage, stillbirth and infant death as compared to those who married later (8).

Unintended pregnancies, early or closely-spaced pregnancies, too many pregnancies, unsafe abortions, and sexually transmitted infections including HIV are major causes of

high rates of reproductive morbidity and mortality among women. In countries with high fertility, women spend more than half of their reproductive lives between 15 and 45 years either pregnant or breastfeeding (8). Frequent pregnancies interspaced with long lactation deplete maternal energy, iron and calcium stores. The 1993 World Development report, which had the theme "Investing in Health", found that in women of reproductive age in low-income countries, reproductive ill-health accounts for 36% of the total disease burden compared with 12% of the disease burden for men. Three groups of conditions predominate: pregnancy-related deaths and disabilities, sexually transmitted diseases (syphilis, chlamydia infection, gonorrhoea and pelvic inflammatory disease), and HIV/AIDS (9).

Violence against women was, until recently, neglected in both research and policy (10). There is now clear evidence that it causes huge psychological and physical harm to women globally and is a major public health problem (11,12). Every year, an estimated three million girls in sub-Saharan Africa and the Middle East undergo female genital mutilation or cutting (FGM/C). More than 130 million women and girls have been subjected to this painful practice, the potential consequences of which may include prolonged bleeding, infection, infertility and even death (13,14).

In times of man-made or natural disasters such as famines, droughts, wars and other conflicts leading to immigration/internal displacement, women are particularly vulnerable both to violence and to all forms of reproductive ill health. While gender analysis has shown how women's vulnerability to reproductive ill health is rooted in gender inequality and in women's lack of autonomy and resources, the image of women as powerless and passive is being challenged. Women do make choices and show great strength in their fight for survival for themselves and their families despite sometimes extremely adverse conditions (15-18).

1.3 Safe motherhood?

Worldwide, emphasis has been placed on protecting women's fundamental right to life, and on reducing the unacceptably high rates of maternal deaths (19,20). However, after two decades of the Safe Motherhood Initiative, meaningful reductions in maternal mortality and disability during pregnancy and childbirth in low-income countries have not been realized (21). Still, nearly 600,000 women die every year as a result of complications arising from pregnancy, unsafe abortion and childbirth, and many more women suffer from serious pregnancy complications, many of which will result in permanent disability (22,23).

For every woman who dies from a pregnancy-related condition, about 30 more sustain a severe and permanent injury, which amounts to more than 15 million women per year (24). Complications of pregnancy and childbirth have been reported as the leading causes of morbidity and mortality among women of reproductive age in many low-income countries. Such complications caused 23% of the deaths in Menoufia, Egypt and in Bali,

Indonesia (25), and 28% of the deaths among women in low-income settlements in Karachi (26).

In the 22 countries within the Eastern Mediterranean Region (EMRO), approximately 53,000 women die every year as a result of complicated pregnancy and childbirth (27). In 2005, a World Health Organisation report estimated that the average MMR in 2002 in the region was estimated at 377 per 100,000 live births, varying between zero in Qatar and 1,600 in Afghanistan and Somalia. The 2002 estimated MMR for the Palestinian area (West Bank and Gaza) was reported at 24/100,000 live births, a reduction from the 1995 estimated MMR of 70-80 per 100,000 live births for the West Bank and Gaza (28).

It has been shown that the majority of maternal deaths both in high and low-income countries (24) can be avoided with available resources. Avoidability in maternal and reproductive age deaths is an important concept as an entry point to develop relevant interventions to save women's lives. In Cape Verde (29), 72% of maternal deaths with known causes were considered avoidable. In Zimbabwe, one or more avoidable factors existed in 90% of maternal deaths in a rural area and 85% of maternal deaths in an urban area (30), and in Mozambique, 75% of all maternal deaths were classified as avoidable (31).

Socio-cultural, economic and gender factors have been identified as contributors to maternal morbidity and mortality at family and health systems levels. Low awareness of danger signs by women and family members, women's lack of decision-making power to seek care, and transportation problems are common causes behind delays in seeking timely health care (32,33). Weak information systems, discontinuity in care, unsupported health workers, haphazard referral systems and distorted accountability mechanisms have been identified as critical service delivery problems. The role of administrators and politicians in ensuring functioning health services is obscured (34).

1.4 A sequel of maternal deaths – the motherless orphans

In many parts of the world, the increasing numbers of orphans is a growing concern. The HIV/AIDS epidemic and devastating wars and other conflicts leading to massive displacement of people have resulted in the loss of either one or both parents of millions of children, who are left with limited or no care (35). In sub-Saharan Africa, children below 15 years who have lost one or both parents due to HIV/AIDS reached 11 million in 2001, a figure which is projected to increase to over 20 million by the year 2010 (36). The war in Iraq has generated 4.5 million Iraqi orphans with half a million of them living in the streets without any home or family care (37). The 585,000 women in the world who die of pregnancy-related causes each year leave behind at least one million motherless children (38).

A study from 19th century in Sweden showed that the risk of death of a motherless infant exceeded every risk of death for that child. At that time, less than 2% of the motherless

orphans whose mothers had died at birth survived to the age of five, and only 13% of children who were above one year of age at the time of their mothers' death survived to the age of five (39). More recent studies in low-income countries have shown the increased mortality risks of motherless infants and small children (40-42). The negative impact on the survival and well-being of the deceased mothers' children has been shown to be the greatest on children below six years of age and, particularly, on infants who are often most dependent on their mothers to provide them with food, shelter and care (39-41).

Orphan survival and health has been compared for different forms of parental care substitutes. In the Swedish orphan study from the 19th century, the most decisive factor for child survival was that of having a stepparent (39). A study in Sierra Leone revealed that fostered orphans growth and development was compromised compared to that of other children and they were less likely to be taken to health care facilities when sick (43). Studies on the fate of HIV/AIDS orphans have shown that although the extended family network absorb most orphaned children, these were exposed to increased mortality due to economic and health stresses on their caretakers, many of whom were grandparents to the orphans (38).

Surprisingly, little has been documented or analysed regarding the gender dimensions of orphan-hood. One study showed that the death of a mother is almost twice as dangerous for her surviving children as the death of a father, and that her daughters are almost twice as likely to die as her sons (38). Access to health care has also proven to differ depending on the sex of the orphan; for example, in rural Sierra Leone foster girls were only about half as likely to be hospitalised as foster boys (43) In the same study, it was observed that most malnutrition cases, particularly Kwashiorkor, were among foster girls.

1.5 Notification and registration of reproductive age deaths

Under-reporting, death notification and registration, as well as significant weaknesses of vital registration systems in monitoring mortality levels are worldwide problems, particularly in low-income countries. Today, routinely collected data on vital events provides complete and representative information for only about 40% of the world's countries and a quarter of its population (44).

The importance of death certification and registration as a public health surveillance tool can not be overemphasized. For the purpose of identifying causes of death and for subsequently planning interventions, the completeness and accuracy of information included in death notification/registration forms is mandatory. Accurate death certificates have been helpful in identifying risk factors and high-risk population groups (45), and in improving disease prevention and medical care (46).

Death reporting is less accurate in cases of sudden death, in cases where death is stigmatizing, as well as in lower social classes; death reporting may also relate to age of the deceased (47).

Quality of death certificates, in terms of completeness, is another problem in mortality reporting. Studies of completeness of data in death certificates over 25 years in Beirut, Lebanon (48), showed that a higher rate of missing data was more likely to be found on certificates for the younger and older age groups than for those aged 15-44 years. Missing data was also more likely for females than for males, for persons who had lived remotely from the registration office, and for those for whom there had been more than six months' delay in registration (48). Underreporting of death is common, particularly for women, and there may be a delay of one year or more between the date of death and its registration (49).

Reliability and accuracy of reporting and classifying the causes of maternal death is an important dimension in measuring maternal mortality. All methods based on household surveys are subject to a certain extent of under-reporting and misclassification bias (28). In Taiwan, the under-reporting of maternal mortality was 58% and the correct/confirmed rate of classification was 53% (50). In Mozambique (51) health institutions failed to record 86% of maternal deaths. In the United States, 37% more maternal deaths were reported by the Maternal Mortality Collaborative than by the National Centre for Health Statistics in 19 reporting areas during the years 1980-1985 (52).

2. STUDY AIM

The study aimed to assess mortality among women of reproductive age, identifying the most common causes of such deaths, determining maternal mortality ratio, examining procedures related to notification and registration of such deaths and studying potential implications of mothers' deaths on the survival and wellbeing of under-5 motherless orphans in the West Bank of the OPT.

SPECIFIC OBJECTIVES

- To identify the most common causes of maternal and reproductive age death (15-49 years) among ever-married and single, never-married Palestinian women in the West Bank (Study I, II, and IV).
- To determine maternal mortality ratio of Palestinian women in the West Bank (Study I).
- To elucidate avoidability factors in maternal deaths (Study I).

- To examine potential differences in the causes of death between single and married women in light of the probable disadvantaged social status of single women in Palestinian society (Study II).
- To study potential consequences of a mother's death on the under-5 motherless orphan's survival and growth (Study III).
- To study notification and registration of women's deaths in terms of timeliness and completeness (Study IV).
- To examine the maternal mortality/women of reproductive age death surveillance system (Study IV).

3. STUDY SETTING

The West Bank is part of the Occupied Palestinian Territory (OPT) located at the eastern side of the Mediterranean Sea, with a surface area of about 5,600 square kilometres. It was administratively divided into 10 districts at the time of the study implementation (See map below). The total population in the OPT (i.e. West Bank and Gaza Strip) as per a census completed in late 2007, is near 3.8 million, of which two-thirds reside in the West Bank, and one-third in the Gaza Strip. Slightly more than half of the Palestinian population are below 18 years (53).

In 1995, the estimated maternal mortality ratio was 70-80 per 100,000 live births (28). Infant and child mortality rates for the OPT were estimated at 23.3 and 27 per 1000 live births, respectively, in 2003 (54), while in 2006 these rates had increased slightly to 25.3 and 28.2 per 1000 live births, respectively (55). The low birth weight rate was 7.3%, the under-5 stunting rate was 10.2% and the wasting rate was 1.4%. Half of the married women used modern contraception (55).

In the Arab World, women's identity and social status are closely linked to marriage and to their ability to bear children. This is perceived as providing avenues to a woman's social, emotional and economic security (56), which explains why early marriages have traditionally prevailed in the Arab world. In recent decades with improved education and work opportunities for women (57), coupled with economic deterioration and the rising cost of housing (58), there is a trend towards increased age at marriage in many Arab countries, including Palestine. The median age of first marriage of ever married women (20-54 years) in 2006 was 18 years (55).

The proportion single women of all women of reproductive age in the 10 districts of the West Bank was 36% and 39% in the years 2000 and 2006, respectively (55). As in other Arab countries, single women in Palestine lack the recognition provided through marriage and childbearing; Married women usually fare better than unmarried women of all ages in terms of having independent economic resources and the ability to move

around (59). A single woman, especially in traditional rural communities, is much constrained in her daily activities and her social interactions and relationships.

Since the early years of the nineteenth century, the OPT has been afflicted by a series of foreign occupations which have not allowed the Palestinians to lead peaceful lives. They have suffered recurrent political disturbances, and have been living under the longest occupation in recent history. The West Bank and Gaza Strip were totally occupied by the Israeli Army in 1967. Since then, and until the signing of the Oslo Peace Accords between the Palestinian Liberation Organization (PLO) and Israel in 1993, the West Bank and Gaza were under full Israeli occupation and control. The Peace Accords aimed at creating the basis for ending years of conflict and military occupation. From 1994 onward, the Palestinian National Authority took over “partial” control on the West Bank and Gaza Strip.

Israeli occupation of the OPT has been associated with repeated conflicts of varied intensity, the most prominent of which were the two major long lasting “Intifadas” (peoples’ uprisings) that erupted in 1987 and 2000. Both have had a devastating effect on all aspects of life for Palestinians in the West Bank and Gaza. The ongoing conflict and prolonged economic consequences have critically mitigated the progress of human development in the West Bank and the Gaza Strip.

Palestinian per capita incomes fell by almost 40 percent during the first two years of the Intifada (2000 and 2001). In 2003, the per capita income in the OPT was estimated at US\$ 1,020 (60). This has resulted in increased levels of reliance on international assistance (60). Unfortunately, as of this writing, the hopes and aspirations of the Palestinians to live both peacefully and free from occupation have not yet materialized.

Map of Occupied Palestinian Territory



4. SUBJECTS AND METHODS

4.1 SUBJECTS

Studies I and IV

The subjects in these two studies were all women aged 15 to 49 years, who were reported dead to the public health departments or to the hospitals in one of the 10 districts of the West Bank of Palestine. The planned duration of the two studies was two years (January 2000-December 2001), however, due to political unrest and mobility restrictions, the duration of data collection was extended for an additional six months (until end of June 2002) in order not to miss the delayed death notifications of women who died during the study period.

Study II

The subjects included all single women of reproductive age (n=154) whose deaths were reported to the public health departments in the ten districts of the West Bank between January 2000 and December 2001. For the purposes of this study, “single” is defined as never married.

Study III

The subjects of this study were all orphans who were under-five years of age when their mothers died a reproductive age death during 2000 and 2001 in one of the 10 districts of the West Bank. A section of the structured questionnaire used to ask respondents for studies I and IV whether the deceased mother had left orphans under five years of age and gathered data on the orphans’ name, age, sex, and location. There were 167 children identified who were less than five years when their mothers died. As three infant orphans died at 10 hours, one day and five days after the mothers’ deaths, respectively, the study subjects included only the remaining 164 children.

This study on orphaned children was carried out in July and August 2004, i.e. between two and one-half to three and one-half years following the deaths of the orphaned children’s mothers. Of the original 164 orphans, six had left the country with their fathers and six could not be reached due to restricted mobility. Of the 152 orphans found, four took part in a pilot study and 148 were included in the main study; some of these were siblings.

4.2 METHODS

Studies I, II, and IV

Data on the subjects of the three studies I, II and IV was collected over 30 months. In each of the 10 districts, the person responsible for district statistics was assigned by the district public health department to receive all death notification sheets. The family member(s) who notified the department about the death were informed of the purpose of the study and asked whether they would agree to be interviewed in the deceased woman’s home.

During the course of the studies' implementation, severe political unrest prevailed in the West Bank and tight restrictions on mobility within and between the districts interfered with study implementation. For this reason, data collection was extended for six months until June 2002 in order to include the delayed notification of deaths that occurred during the two-year study period.

The interviewers were qualified public health nurses and doctors who were staff members at the public health department and well-acquainted with the study area and culture. They attended a four-day training course on communication skills and interviewing techniques that addressed the sensitivity of the topic and ethical aspects.

A structured questionnaire was developed consisting of four parts: (i) general questions that apply to all reproductive age deaths, i.e. education, occupation and marital status of the deceased woman; (ii) Pregnancy related questions to identify maternal deaths; (iii) under-five children of the deceased woman; and (iv) One open-ended narrative question for verbal autopsy, inquiring about circumstances related to the woman's death. The questionnaire was piloted on 15 women before it was finalized.

In all cases, written consent was either signed by the deceased women's families, or was given verbally by those who were interviewed by phone.

Interviews with the relatives of all deceased women (except 31 cases) were carried out in the home of the deceased woman. The interviews were initially planned to be conducted four to six weeks following death. However, due to the prevailing instability in the West Bank and delayed death notification, this was not possible in many cases, and the interviews were typically carried out about 4-16 weeks following the death.

Around the time of the studies' mid-point (March 2001), a validation of death notifications to the public health department was carried out. The goal was to compare mortality data obtained from three sources: the 68 MOH village health rooms in Hebron district (the largest district), UNRWA data, and death sheets from 7 governmental hospitals (Beit Jala, Alia, Jericho, Ramallah, Watani, Rafidia, and Tulkarm hospitals). As a result, this validation exercise revealed that 20 reproductive-aged deceased women including one maternal death, were reported dead as per the hospitals' records, but were not notified to the district public health departments.

In the three studies (I, II and IV), verbal autopsy and categorized information obtained from open-ended questions was analysed. The concept and use of verbal autopsy in the three studies was based on the World Health Organization's guidelines for verbal autopsies of maternal deaths (61).

In study I, the cause of maternal death was classified as "probable" when the signs and symptoms referred to were most likely consistent with a certain disorder, and as "unknown" when the description of events associated with the death were unclear. Applying the method described and utilized by Wessel et al, (29), the death was

classified as “preventable” when feasible actions, if taken, could have prevented it. When the cause of death was considered amenable to treatment within the scope of the available resources and services in the West Bank, it was considered “treatable”.

In study II, data was systematically analysed by reviewing the background information provided for each case with a focus on the sequence of events preceding and associated with the deaths, health status history, treatment-seeking pattern, quality of health care provided and the cause of death from the interviewee’s point of view. The final categorisation of the cause of death was based on the death notification report and double-checked against the cause of death obtained from the verbal autopsy report.

In study IV, a similar approach to data analysis on the cause of death was adopted. In order to assess the quality of death notification, copies of 351 available death-notification sheets were reviewed. As vital information items were incomplete or missing in many of the death notification sheets, a tool was developed by the authors in order to examine the completeness of the notification sheet in which two important items in the notification sheet were identified:

- 1) Whether the deceased woman was pregnant, had aborted or delivered before death.
- 2) Whether the deceased woman was examined by a doctor before death or not.

Completeness of the death notification sheets was assessed according to the following criteria:

- 1) Death notification sheets were considered complete for any case if both the above mentioned items 1 and 2 were filled-in or adequately commented upon.
- 2) Death notification sheets were considered incomplete if one or both items were not filled-in or adequately commented upon.
- 3) Death notification sheets were considered complete for single never married women, for widowed, and for divorced women if item number 2 was filled-in or commented upon even though item number 1 was not filled-in or commented upon. This is logical because, culturally, it is inappropriate and will not be accepted by deceased women’s families to inquire whether the deceased single, widowed or divorced woman was pregnant.

Study III

Initially, a case-control study was planned comparing orphans and non-orphan from the same age groups and localities. Due to security risks and severe mobility restrictions within the study area, the plan could not be implemented and collection of baseline data from the non-orphan control group had to be dropped.

Rather than discontinue the study, the research team considered that even a descriptive study of motherless orphans would result in new knowledge. Thus, the revised project aim was to investigate the conditions of motherless Palestinian orphans some years after

the death of their mothers, in order to provide information that would be of value for national child health programme planning.

A structured questionnaire was developed and covered the following areas: (a) identification of the orphan, the deceased mother and the father; (b) where the orphan had lived since the mother's death and current place of residence; (c) profile of the custodian and the main daily caretaker/s; (d) orphan's growth and development indicators.

A pilot study was carried out with four orphans, two boys and two girls, who were then excluded from the main study. For the main study, six experienced interviewers were recruited, two from the north, two from the centre and two from the south of the West Bank. This distribution was important to avoid inter-district mobility restrictions and security problems. The six interviewers took part in a three-day training course specifically organized on the subject of research.

The interviewers used scales for weight measurements and meters for height. The interviews were carried out between July and August 2004 in the orphans' homes with the main caretaker, usually the stepmother or the father. Data and anthropometric measurements were analysed for calculations of wasting and stunting based on WHO standard indicators which identify moderately and severely malnourished children as those who are below -2 standard deviations (-2SD) from a cut-off point (62).

5. RESULTS

5.1 Maternal deaths (Study I)

There were 36 women who died a maternal death. The overall maternal mortality ratio was 29.2 and 36.5 per 100,000 live births for the years 2000 and 2001, respectively. Thirty-nine percent of maternal deaths took place during pregnancy (29% within the first 6 months, and 10% between 6 months and before delivery), 6% died during labour, and 55% (n=20) during the postpartum period. Sixteen maternal deaths were due to direct causes, 16 were due to indirect causes and four cases were categorised as "cause unknown". The direct causes included postpartum haemorrhage, preeclampsia/eclampsia, postoperative haemorrhagic complication and post-caesarean sepsis (one case). The indirect causes were frequently uncertain, particularly regarding sudden unexplainable deaths such as presumed thromboembolism, cardiac failure and severe anaemia.

Avoidability analysis showed that 69% (n=25) of maternal deaths could be classified as avoidable with 14/25 cases classified as preventable and 20/25 as treatable.

Table 1 - Direct and Indirect Obstetric Causes of Maternal Death of Deceased Women (Numbered 1-36)

Unavoidable					CAUSE OF DEATH Direct Causes of Maternal Death	Avoidable				
Total	Treatable		Preventable			Preventable	Treatable		Total	
	No	Yes	No	yes	No	Yes	No	Yes		
0	-	-	-	-	Post Partum Haemorrhage	-	5, 8	-	5, 8, 33	3
0	-	-	-	-	Ruptured Ectopic pregnancy	-	-	-	9, 24	2
0	-	-	-	-	Placenta Praevia	-	-	-	11, 16	2
0	-	-	-	-	Pre-eclampsia/ Eclampsia	-	13, 34	-	13,31,34	3
0	-	-	-	-	Post-operative Haemorrhage complication	-	19, 36	-	19, 36	2
0	-	-	-	-	Post-Caesarean Sepsis	-	22	-	22	1
0	-	-	-	-	Uterine Rupture	-	25	-	25, 28	2
1	29		29		Abruptio Placenta	-	-	-	-	0
1					Sub-total					15
Unavoidable					Indirect Causes of Maternal Death	Avoidable				
Total	Treatable		Preventable			Treatable	Preventable		Treatable	
	No	Yes	No	yes	No	Yes	No	Yes		
3	2, 23, 26	-	2, 23, 26	-	Thromboembolism	-	4, 27	-	4, 20(?)	3
1	-	-	-	3	Cardiac Failure	-	18, 21, 30	-	-	3
0	-	-	-	-	Anaemia	-	6	-	6, 32	2
1	10	-	10	-	Colon Cancer	-	-	-	-	0
		-	-	-	Thyrotoxicosis	-	-	-	12	1
1	15	-	15	-	Cerebral Cancer	-	-	-	-	0
0	-	-	-	-	Pneumonia	-	-	-	35	1
4	-	-	-	-	Unknown, 1, 7, 14, 17	-	-	-	-	-
10					Sub-total					10
11					Grand Total					25

Only 83% of maternal deaths were notified to public health departments at the district level so data present there does not necessarily reflect the real status of maternal death reporting. Under-reporting could be even higher, e.g. due to women who had died in early unidentified pregnancy or from unrecognized cases as autopsy is infrequently performed in the country. Of the notified deaths, notification sheets were found complete in 36% of cases, while the rest were missing important vital information. In 62% of maternal deaths, the cause of death in the death notification sheet matched with the probable cause, and in the remaining ones, a misclassified cause of death was found.

5.2 Reproductive age deaths (including maternal deaths) (Study II and IV)

Over a period of 24 months, 431 reproductive aged women (between 15-49 years) were registered dead in the West Bank area of the OPT. Among the deceased women, 37% (n=154/411) were single never-married women, and 63% (257/411) were ever married women. The civil status of twenty of the deceased women was missing in the death summary sheets in the hospitals record. They were included in the reproductive age death calculation, but were excluded from the analysis related to the civil status of the deceased women.

Sixty-nine percent of the deceased women were living in villages, about 20% in cities, and 10% were living in the Palestinian refugee camps located in the West Bank. About 7% of women who died a reproductive age death were below 18 years old, 30% died between 19 and 30 years and 29% died between 31 and 39 years. One-third, 33%, died between 40 and 49. Single women were younger at death than married women: 18 % of the deceased single women were 18 years or younger while only one of the married women had died that young. Twenty-six percent of the single women died by age 21 and 41% by age 25, compared to 3% and 8%, respectively, of the married women.

The mortality rate for all women who died a reproductive age death was calculated at 45.1 and 48.6 per 100,000 women 15 to 49 for the years 2000 and 2001, respectively. Among the single women, the death rate in the year 2000 was 39 per 100,000 single women 15 to 49 years. There was an increase in deaths among single women by 48% between 2000 and 2001.

The most common causes of death of all women who died a reproductive age death were malignant diseases in 29% of cases, cardiovascular diseases in 28% of cases, injuries and accidents in 10% of cases, and renal system diseases in 8% of cases (Table 2). Of the married women, 8% of cases died from pregnancy-related causes. The two most commonly reported causes of death among the single women were malignancies (20%) and cardiovascular disease (20%). The rate of injuries and accidents was almost twice as high among single (15% as among married women (8%).The majority of deceased single women (65%) who died due injury/accident were below 25 years.

Despite the difficulties encountered in trying to probe deeper into the underlying conditions associated accidental single women deaths, still the gathered qualitative

information is of important value to describing the overall nature of potential precipitating factors that eventually lead to death. Below, is the summary on the series of events preceding the death of a young single woman who committed suicide:

A CASE STUDY OF A DEATH OF A SINGLE WOMAN

In March 2000, SS was 23 years old, had completed secondary school education, was unemployed and lived with her family in a village in the West Bank. After completing secondary school, her family planned for her to marry a young man from her own village. This marriage, unfortunately, failed as the couple failed to get along with each other. SS became very isolated and stuck to herself at home. She then traveled to a neighboring country to visit her relatives when she met a cousin whom she decided to marry.

Her family did not agree to her decision, and she then traveled to another country to stay with her father, who lived abroad. There, she attempted suicide by cutting her hand, after which she was returned back to her village, where she had repeated failed suicide attempts. She then developed hostile behavior, and attempted to murder her mother and injure her grandfather. At that stage, a psychiatrist's advice was sought who treated her with medications. On her last day, she claimed that she wanted to visit a friend living in a nearby city. Apparently, SS bought poisonous material (anti-rat poison) in the town and ingested it.

At home, she started to vomit excessively and was taken to the hospital. Her stomach was lavaged and she was referred to a more specialized hospital, but died on the same day. No autopsy was performed.

Family pre-arranged marriage is frequent in the rural localities, and still practiced in urban areas as well. In the villages/closed communities, decision-making about marriage is largely still the family's responsibility and this is stricter in the case of the daughter than the son. In such cases, the two families (mainly mothers) discuss and agree about their daughter/son getting married. This arrangement may not be agreeable to the concerned couple, and not infrequently, it results in problems, divorce or separation, as was the case of SS. When SS wanted to make her own choice of marrying her cousin, her right was denied.

Table 2

Causes of death of deceased single and married women, West Bank, OPT, 2000 and 2001

	Single (n=154)		Married (n=257)	
	No.	%	No.	%
Illness and disease	131	85	236	92
Cardiovascular disease	31	20	85 ^a	33
Malignancy	31	20	84 ^b	33
Respiratory disease	16	10	12 ^c	5
Urinary tract infection, mainly with renal failure	17	11	12	5
Central nervous system disorders ^e	12	8	7	3
Mental ill-health and behavioural disorders	3	2	2	0.8
Others ^f	21	14	34 ^d	13
Injury and accident	23	15	21	8
Falling from top of house	1	1	0	0
Drowning	2	1.3	2	1
Burns	2	1.3	3	1.2
Poisoning (pesticide, snake bite)	1	1	2	1
Alleged suicide	7	4.5	1	0.4
Alleged Israeli army gunfire	3	1.9	4	1.6
Suspected homicide	7	4.5	5	1.9
Electric shock	0	0	4	1.6

a These include 23 maternal deaths from post-partum haemorrhage (3), ruptured ectopic pregnancy (2), pre-eclampsia/eclampsia (3), uterine rupture (2), abruptio placentae (1), thromboembolism (6) and cardiac failure (1).

b These include two maternal deaths from colon cancer and brain tumour.

c These include one maternal death from pneumonia.

d These include ten maternal deaths from post-operative complications (2), post-caesarean sepsis (1), anaemia (2), thyrotoxicosis (1) and unknown aetiology (4).

e These include meningitis, epilepsy, cerebral palsy.

Delayed notification of reproductive age deaths was encountered when 351 death notification sheets were examined. Only 25% of reproductive age deaths were notified to the PHD within the first and second day following death, while 39% of deaths were notified between day 3 and 7, and 23% of deaths were notified during the second, third and fourth week. In 11% of deaths, delayed notification ranged from 4 up to 124 weeks following the death. Delayed notification was found in all groups of deceased women, and no significant difference was found between deceased women of different civil status or reported causes of death, e.g. maternal or accidental deaths.

The 351 available death notification sheets were also examined for completeness. The majority of death notification sheets (78%) were incomplete (Table 3).

Table 3

Completeness of death notification sheets of all reproductive age women (Excluding 20 cases not notified to the PHD)

District	Incomplete		Complete		Missing	Total
	Number	%	Number	%	Number	Number
Bethlehem	27	90	3	10	10	40
Ramallah	28	73	10	27	7	45
Nablus	42	68	20	32	8	70
Jenin	41	76	13	24	2	56
Tulkarm	33	85	6	15	3	42
Salfeet	0	0	2	100	15	17
Qalquilia	12	67	6	34	1	19
Jericho	2	67	1	33	6	9
Jerusalem	7	78	2	18	5	14
Hebron	81	84	15	16	3	99
Total	273	77.7%	78	22.2%	60	411

The overall quality of the death notification sheets in terms of completeness was found to be substantially compromised. Many notification sheets were found missing the information on the above-mentioned conditions number 1 and 2 identified to assess notification sheet completeness. Other relevant information was also missing, for example the address of the deceased woman, whether a burial permit was issued or not, the place of burial, date of issue of the burial permit, the name, address and signature of the notifying person, and the duration of illness that led to the death.

5.3 The motherless orphans (Study III)

A total of 167 orphans who were under-5 when their mothers died were identified and of these 148 were included in the study. The mean age at the time of their mothers' death was 34 months. Ten-percent of these were one month or less, and 7% were between 2 and 12 months.

Except three neonatal deaths, all orphans were alive at the time of the interview, i.e. two and one-half to three and one-half years after the death of their mother. The fate of six children who could not be reached due to mobility restriction is not known.

At the time of the interview 95% of the orphans' fathers were alive. Most of the fathers, 91%, had remarried, mostly around one month after the death of their wives. Following

the mothers' death, 58% of the orphans had stayed with the father, while 42% had moved to another place. Of these, two-thirds had returned back home, while one-third still lived with grandparents or another relative. There was no difference between boys and girls in this respect. At the time of the interview, 91% of the orphans lived together with their fathers. The fathers were mostly the custodians of the orphans while the stepmothers were the main caretaker.

Only three orphans (a girl and her two brothers) were placed in orphanages. Twenty-four percent of the eligible orphans attended a kindergarten. Of school-aged orphans (six years and above), 95% attended school regularly. Among the orphans who were under five years of age at the time of the interview (n=34), 8.8% were wasted, and 17.6% were stunted. All wasted and stunted orphans were girls.

According to the custodians/care takers, 80% of the orphans had no developmental delay or other health problem, whether physical, mental, hearing or speech. Ten-percent (n=15) of the orphans had been hospitalised for some reason during the past 12 months, mostly for short durations. The chances of a male orphan being hospitalised was four times that of a female orphan.

With regard to behavioural symptoms, the caretakers reported that 30% of the orphans exhibited extremely fearful/timid behaviour, slightly more among the boys (26/75) than among the girls (19/73). Of children above three and one-half years, 20% were reported wetting their bed 1-2 times per week, and 16% three or more times per week during the last three months.

As mentioned earlier, when planning the orphan study we intended to perform a case-control study with non-orphaned children in the control group. We further planned to conduct a number of qualitative interviews and observations in orphan families, following the cases successively from the time of their mothers' death, to give more depth to the picture of orphan development and social context. However, these interviews with the families proved very difficult to perform, both due to problems of access and because of the volatile situation sometimes made families hesitant to receive us. Thus, the qualitative part of the orphan study had to be abandoned. Included here is one of the case studies that was conducted in an abbreviated version to somehow enrich the picture of the motherless orphans' health and development and their family situation:

A CASE STUDY OF AN ORPHAN OF A DECEASED MOTHER

IS, a girl of nine, lives in Bethlehem district. She was four and a half years old at her mother's death in June 2000. Her father is 34, an unemployed laborer with four years of education. IS lives with her father, her two brothers 13 and 14 years old and the stepmother and her two young children. The stepmother is a cousin of the father, 24 years old and with seven years of schooling. She married IS's father two months after his wife's death.

The orphans' study team composed of the principal investigator (PI), Dr. Shaheen and Ms. Jubran, a public health nurse, visited the house of IS father, located at the furthest eastern border of Bethlehem in a remote desert like mountainous area close to the Dead Sea. Respectful of the Palestinian culture we took care to have a woman in the team as we would be interviewing women in the family. Ms. Jubran already knew the family as she had conducted the initial household visits after the death of IS's mother. Her presence created confidence on the side of the family, as home visits by strangers is not always welcomed by the Palestinians in the current situation of unrest.

We were received by IS's grandmother and the wife of IS's cousin, Ms. NA, a 34 year old mother of seven who lives in an adjacent house. The stepmother, Ms. IN, also joined us. Ms. NA explained that IS's mother had died from kidney failure after only two months of illness. IS, who was four at her mother's death, had seen her dead, and had been much upset and wept a lot. After her mother's death IS has become increasingly attached to her father, going with him everywhere, even sleeping in the same room. IS has eight maternal aunts and when she meets them with their children, she starts crying remembering her mother. In response to a question on what changes in IS's behavior or eating habits were noticed following her mother's death, Ms. NA and the grandmother responded that the only change they noticed was her increased attachment to her father. In the first grade, IS did not want to go to school but wanted to stay with her father. The women described IS's relation with her father as warm. He takes her with him to different places, e.g. to buy the school clothes, and she is always with him while at home. They think that it is wrong that the girl is sitting with her father when he meets with other men.

When NA commented that IN, the stepmother, does not like IS, IN commented that it was not that she does not like her but frequently disagrees with her on many issues, for example, her provocative dancing, singing and trouble-making. What the stepmother liked most in IS was that she helps her with housework. The women saw IS as a lively child who could be aggressive towards other children but she was also sweet. According to them she is healthy. Yet she was bedwetting almost daily. No actions were taken in this regard, she was not punished and they had not consulted a physician.

When finally IS came back from school she refused to enter the room at first. She then agreed and came to greet us and told us about her activities in school and at home. She said that she likes school and all her teachers. IS remembers her deceased mother as "she used to play with me". She said that she didn't remember anything else. When asked who is the one doing what her mother used to do for her, she replied the stepmother. IS mentioned that she likes her uncle's house and family more, and she spends much time with her girl cousins. She added that her uncle's wife likes her and she likes to go to her house.

In a visit to IS's school the following day we heard from her teachers that she was doing 'average' in most subjects but far below her capacity. The English teacher noted that in the second grade IS did not buy the English book because the cost was 15 Shekel (3.5 US). All teachers confirmed that IS was often restless, lacked concentration and easily diverted to other issues. The teachers had the impression that she did not get much help from home in her school work, and she came to school with uncombed hair and not good clothes. She was not hostile to other children and seemed to get along well with her peers.

The Headmistress mentioned that she instructed IS's teachers to pay special attention and care to IS. She also decided to include IS in the "Educational Support" special UNICEF-assisted programme to boost IS's educational capabilities.

Examining IS's student health card revealed that according to the school health team Islam's health was normal. Her anthropometric measurements at the beginning of the scholastic year were about the 75th percentile i.e. above average.

6. ETHICAL CONSIDERATIONS

Ethical approval for the four studies, which were implemented in the West Bank in 2000, 2001 and 2004, was granted by the Gaza-based “Helsinki Committee”. Helsinki Committee has been entrusted to review, scrutinize and approve all research work in the Occupied Palestinian Territory. The Palestinian Ministry of Health had also endorsed, facilitated and collaborated in the implementation of these four studies. Well-trained and experienced MOH staff (doctors and qualified nurses) took part in a three-day training programme specifically designed for study implementation. The training focused on the background and aim of the study, ethical principles related to the sensitivity of the topic, and careful planning and arrangement for the interviews and home visits, including interviewing without disturbing the mourning rituals and cultural norms. These aspects were all well-managed by the data collectors during data collection.

An informed consent form written in the local Arabic language was formulated. The interviews with the relatives of the deceased women were not initiated unless the consent was read, explained and accepted by the interviewees. All interviewees were asked to reconfirm their willingness to participate in the study and to provide relevant information at their ease, by both verbal statements as well as by signing the consent form before the commencement of the interview.

Great care was taken to ensure the protection of the integrity of the interviewees with special consideration to motherless orphans as well as the family of the deceased women. The issue of the mother’s death was approached in a culturally sensitive way, considering the feelings of sadness that could be provoked.

7. DISCUSSION

7.1 Reproductive rights in an occupied territory

This study was the first-ever community-based study of maternal mortality and women’s reproductive deaths in the West Bank. Available data on maternal/reproductive age deaths is mainly based on estimation, and the figures presented in official reports do not reflect the real situation of maternal mortality in the West Bank setting (63). In study I, underreporting of 17% was encountered.

Failure to recognize early pregnancy among women who die in reproductive age, in addition to very rarely performed autopsies in the West Bank, could potentially obscure the factual reproductive death figures and circumstances. This is a serious policy issue which, coupled with compromised law and order and mobility restrictions, adds to the problem of the under-reporting deaths. A health policy on autopsy performance exists, but is rarely implemented. This may explain the lower underreporting rate in the West Bank compared to the estimated 26% and 56% maternal mortality underreporting in the Netherlands (64), and France (65), respectively. Underreporting shown in this study in the

West Bank is significantly lower than the figures in other low income countries where about half of maternal deaths go unreported (66).

Palestinian Women's human rights, including reproductive rights, are inadequately attended to. Women are still discriminated against in laws governing marriage, divorce, custody of children and inheritance. Domestic violence against women is frequent. Palestinian men and women do not have equal access to justice, and women are particularly discriminated against in the penal code, which is derived from Jordanian and Egyptian law still in effect in the Palestinian Territory (67). Female-headed households are among the poorest in Palestine. Research shows that such households represent 9.5% of all households and that 73% of them live in extreme poverty, struggling to meet the basic needs of nutrition, housing, and clothing.

Reproductive rights of women and the cultural views regarding marriage and childbearing in Palestinian society are areas which require special attention as far as decision-making is concerned. In a PCBS survey from 1999, a woman's parents made the decision for her to marry in almost 40% of cases, and three-percent of women surveyed said that a brother or a sister made the decision for them (67).

Early marriage is still practiced in the Palestinian territory. The mean age of marriage in 2006 was 18 years, which means that approximately 50% of Palestinian women get married before they turn 18, which eventually contributes to the high fertility rates. Economic recession prevailing in the OPT does contribute to girls' early marriage when the family capacity to provide for education and other costs becomes seriously compromised.

Childbearing among Palestinian women underwent significant changes during the past decade. Total fertility rate (TFR) dropped from 6.1 in 1994 to 4.1 in 2006 (55). The still relatively high fertility rate is related to number of things including demographic, social, economic, cultural and political factors. These may be associated with women's personal desires for childbearing, or the pressure put on women to bear more children to balance the losses of lives as a result of the long-lasting conflict in the OPT.

Early, frequent and late pregnancies are common in Palestinian society. In our study, eleven women (31%) who died a maternal death were above 35 years old. These women together had a total of 89 pregnancies with a range of 6-14 pregnancies. Many of them were advised by their doctors not to get pregnant. Apparently, the advice should have targeted their husbands and the influential mothers-in-law for any change to be expected.

Palestinian women do not appear to have much control over decisions concerning pregnancy timing and numbers. A survey conducted in 2000 by PCBS shows that only seven-percent of women reported being the one to decide how many children to have. However, in 2006, 46% of married women between 15-49 were using family planning methods (55). Thirty-one percent of husbands preferred to have more children than their wives. Abortion is not allowed in the Palestinian Territory and is considered a crime unless the physical health of the mother is threatened.

Women's access to health care services is challenged by the travel restrictions related to the armed conflict and Israeli checkpoints. Movement within, and in and out of, the West Bank is controlled by numerous checkpoints, road blocks, earth mounds, trenches and gates. These physical obstacles, some staffed by soldiers and others unstaffed, combined with the Barrier (the built physical wall that encircles many parts of the West Bank), flying checkpoints and a complex system of permits, form an integrated and coherent system that restricts the movement of around 2.4 million Palestinians and limits access to basic services, places of worship and even to their families in other sections of the West Bank. In October 2007, OCHA reported a total of 561 closures, a slight decrease compared to the September figure of 563. The number of flying checkpoints has fallen from an average of 141 per week to 69 in the month of October (a decrease of about half) (68).

The consequences of these restrictions for women are that they often have to wait for long periods of time on their way to hospitals, PHC centers and other medical services. Delays at checkpoints have resulted in numerous unattended births and unnecessary deaths. The Palestinian Independent Commission for Citizens Rights (PICCR) reported that dozens of pregnant women were barred from crossing the checkpoints while in labour. The report stated that between September 2000 and July 2006, 68 pregnant women had to give birth at checkpoints, and that 34 infants and 4 pregnant women died at these checkpoints (69).

Accessibility and availability of quality health services and a high standard medical and obstetric care are crucial to avoid maternal deaths. Quality reproductive health services are not only dependant on the knowledge and skills of the staff providing antenatal, intranatal and postnatal care, but also on ensuring availability and functionality of health policies and guidelines. This is crucial in the licensing and staffing of MCH centres, maternities and hospitals. Availability of emergency obstetric care and immediately accessible blood bank services must be necessary conditions in the licensing of maternities and hospitals.

In this study, 56% of maternal deaths in the West Bank occurred during the postnatal period. Available data for OPT showed that only 30% of women received postnatal care compared to 98.8% who received antenatal care, with a mean number of 7.8 visits (55). This again brings the issue of quality antenatal care, availability and utilization of postnatal care.

The outcome of this study will not only enable health authorities and planners to better understand the magnitude of women's reproductive age deaths and the causes behind them, but also highlight the need for more work to mitigate gender inequities in favour of women and to advocate for women's reproductive rights in the West Bank. This will need to be carefully considered especially for vulnerable groups within Palestinian communities.

7.2 Beyond the numbers of reproductive age deaths

In the West Bank, women of reproductive age constitute almost half of the female population, which means that there is one reproductive aged woman among every four Palestinians in the West Bank of OPT (55).

WHO guidelines on the approaches towards making pregnancy safer through reviewing maternal deaths and complications of pregnancies in the context of “Beyond the Numbers” and the approach “Why Women Die: A New Approach” were developed in 2004 (70). WHO guidelines focus on finding out exactly why mothers die. Is it because they lack awareness of the need for care, or of the warning signs of problems in pregnancy? Or is it because of the lack of access to health facilities due to distance, cost and/or sociocultural barriers? Are women dying because the care they receive is inadequate or actually harmful? Answering such questions and taking appropriate and timely actions on the results is often more important than knowing the precise level of maternal mortality.

This is even more true when the maternal mortality figures (as in the case of Palestine), are difficult to measure or measured with potential inaccuracy due to underreporting, misclassification or missed maternal deaths. The measured MMR for the West Bank in 2000 and 2001 (29.5 and 36.4/100,000 live births, respectively) in study I is less than one-tenth of the MMR for the MENA region of 370/100,000 live births (71). Our figures are comparable to the 2002 MMR for Jordan and Oman of 41 and 38 per 100,000 live births, respectively, about half of the 2002 MMRs for Egypt, Syria and Tunisia of 69, 65 and 69, respectively, and double the 2002 figure for Saudi Arabia (72). Our MMR for the West Bank is relatively higher than the MMR of Palestinian refugee women in the five fields of UNRWA (namely Jordan, Lebanon, Syria, Gaza and West Bank), where recent studies have shown that the MMR was 22.4 per 100,000 live births (73). In all these studies there were no analyses of underreporting, misclassification or deficient death notification. Presumably these phenomena are prevalent also in the countries mentioned. In our study I, a maternal mortality underreporting rate of 17% and a misclassification rate of 38% were encountered.

In study II, one in every three women who died a reproductive age death was a single never-married woman, and they were much younger on average than the married women when they died. The single women’s mortality rate in the year 2000 in the West Bank was 39 per 100,000 single women. There was a 48% increase in single women’s deaths between 2000 and 2001. As a figure, it tells nothing beyond certain assumptions, and therefore, the “Beyond the Numbers” concept is quite relevant in any forthcoming in-depth analysis of how to interpret why such a substantial increase in death rate within a one year period has taken place.

An analysis of the overall situation may help to clarify and understand what had happened and the possible reasons behind it and, subsequently, what actions would be needed to prevent a further deterioration of this situation. It has been demonstrated that the cycle of

violence in the OPT that erupted in September 2000 and onwards, led to increased levels of stress, restrictions on mobility and socio-economic hardship in the area, which is obviously associated with the continuing political violence. The critical level of socioeconomic constraints has reached unprecedented levels in the West Bank. A World Bank report from March 2003 showed that 60% of the population of the West Bank and Gaza lived under the poverty line of US\$2 per day. (74). Thus, the deterioration of the general situation in the West Bank between 2000 and 2001 could, in part, explain the increased death rate among the single women. Subsequently, physical and financial access to health care has been even more compromised, and the quality of services provided is an ever-growing challenge for Palestinian women because of the volatile political situation and significant economic recession. Increasing poverty and massive unemployment have made health care far less affordable.

Data on single never-married women globally and in the MENA region are generally lacking. Therefore, comparison with findings on similar groups of women elsewhere could not be made (75). Still, comparisons, within the OPT, of data on single women with that of married women was made in an attempt to find out whether there was a difference between the two groups. More frequent deaths among young single women (below 25 years age) than married women in the same age group were identified. This was a surprising finding and led us to probe further into the circumstantial evidence surrounding each woman's death. Whether the causes of death among young single women could be related to factors that rendered them "unmarriageable" in the first place requires further examination: again a "Beyond the Numbers" approach in regard to the early deaths of single women could have been the appropriate one. This was attempted in the interviews with the deceased women's families, but due to the tense political situation combined with the sensitivity of the cases, the information obtained was limited. Comparing the causes of death between married and single women gives an interesting perspective on the interaction between biological and social circumstances, including that of health outcomes.

The two most commonly reported causes of death – cardiovascular diseases and malignancies- were the same for single and ever-married women, although higher for married women who were, on average, older (II). Eight-percent of the deaths among the married women were pregnancy related, but no such deaths were reported among the single women. Even if there had been any, this cause would most probably not have been reported or recorded, due to the strong social taboo of pre-marital sexual relations. This is another source of potential inaccuracy in our study. Universal post-mortem autopsy should be adopted at least for all accidental and injury-related deaths.

Deaths due to urinary tract infection, mental health problems, central nervous system disorders and respiratory diseases were about twice as common among the single women as among the married women. Whether restricted mobility, accessibility and affordability of health care services, which affected the entire population due to the political crisis, were behind the higher rates among the single women will need more in-depth analysis. It has been pointed out in another study carried out in the old city of

Nablu in the West Bank, that single women were unable to seek medical attention to gynaecological, urinary tract infections and menstrual irregularities (76).

The third most common cause of death among single women was injuries and accidents. We found the rate among the single women (15%) almost twice as high as among married women (8%). Also, more deaths due to accident and injury were recorded among the young single women than among the young married women, implying that, in some cases, these deaths were related to being single.

The higher rate of alleged suicide and homicide among single women compared to married ones raises the issue of the vulnerability of single women. For example, seven single women (4.5%) had, allegedly, committed suicide compared to only one married woman (0.4%). In a situation with very limited functional law and order, people can easily commit crimes and get away with it. “Honour killing” related to respectability of a family’s women (77), “honour suicide” which might be an honour killing disguised as suicide (78), frank homicide and suicide (79,80) are all conditions that require in-depth analysis. However, due to the prevailing instability, it was neither safe nor wise to try to probe into situations that the families wanted to keep away from public awareness.

The interviews with the relatives of the deceased women who died of accident/injury were conducted under a highly sensitive family situation. This did not allow for in-depth inquiries with the interviewee nor with relevant officials/bodies; the interviewers solely recorded what information was provided by the relatives. Timing of conducting the interviews with the deceased women’s relatives was carefully planned and deliberately delayed so as to make the home visit when the family status was settled.

Gender-based violence is promoted by the absence of peaceful resolution of conflict and increasing relative deprivation and frustration, which is an apt description of the current situation in the Occupied Territories (81). According to a study in 2002 by the Refugee Women’s Resource Project, 90% of respondents perceived that violence against women had increased as a result of the deteriorating political, social and economic situation in the Occupied Territories (82). Human Rights Watch (80), points out that the legal and social obstacles for Palestinian women reporting violence are huge even under normal conditions, and are even greater with the current political unrest and the weakening of the legislative system.

7.3 Identifying maternal and non-maternal deaths

In our study, a total of 431 women of reproductive age (15-49 years) reported dead to PHDs and to the hospitals in the West Bank area of the OPT in the years 2000 and 2001, including 36 maternal deaths, were identified, and the causes and circumstances of death were analysed.

Identifying the magnitude of maternal mortality necessitates identifying deaths among reproductive aged women, as well as identifying the cause(s) of each death in the

community studied. The Reproductive Age Mortality Survey (RAMOS) was conducted in many countries (Cape Verde, Egypt, Indonesia, Pakistan and others), to assess maternal mortality, pregnancy outcomes, avoidable factors, and the impact of death on the family (29, 83-86).

RAMOS results in these surveys were most useful for evaluating the magnitude of maternal mortality and other causes of death among women of reproductive age, for assessing the burden of maternal deaths in relation to other causes of death and for conducting needs assessments of health care services to prevent maternal deaths. RAMOS can also provide an evaluation of routine death registration in the community. RAMOS results are not used to solely identify the causes of death, but they can be useful in identifying appropriate interventions to prevent such deaths.

It is important to highlight that all methods based on household surveys are subject to a certain extent of under-reporting and misclassification bias (87).

The same three most common causes of death that we found were also reported from Recife, Brazil (88). In comparison to data from Egypt and Indonesia, (25), the first cause of death in Egypt was circulatory disease (28%), followed by complications of pregnancy and childbirth (23%) and trauma (14%, primarily burns), while in Indonesia, complications of pregnancy and child birth was the most common cause of death followed by infectious diseases and circulatory diseases in 13% of the cases. In Iraq, burns, malignant neoplasms and renal failure were among the top-five causes of death among women of reproductive age (89).

An avoidability analysis was performed using the results of the verbal autopsy on maternal deaths given the resources available in the study setting. Two-thirds of maternal deaths in the West Bank were categorized as avoidable. Of these, 14/25 were classified as preventable and 20/25 were classified as treatable given resources available in the area. In comparison to Cape Verde, Zimbabwe and Mozambique, avoidability rates of 72%, 85% and 75% were reported, respectively (29-31).

In the West Bank, eight maternal deaths took place at varying durations following caesarean sections. It is presumable that with appropriate management, some of these caesarean sections might not have been needed in the first place. These cases bring important lessons for the quality of care in the settings studied. The unique situation of the OPT being under Israeli occupation for decades, and the prevailing instability and severe mobility restrictions have direct negative repercussions on access to emergency obstetric care. A number of deaths were observed with delays caused at military checkpoints or by military refusal to let severely ill Palestinian women pass such checkpoints (69).

Death notification and registration continue to be problems worldwide, particularly in low-income countries. In Mozambique, for example, maternal death registration is undertaken after 12 months, and health institutions failed to record up to 86% of maternal deaths (51).

Significant weaknesses of vital registration systems in monitoring mortality levels have been reported. Today, routinely collected data on vital events provides complete and representative information for only about 40% of the world's countries and one-quarter of its population (44).

Significant delays in death notification by the relatives of the deceased woman to the PHD were encountered. Only one-fourth of deaths had a timely notification of death (first or second day following the death); while 39% of the deaths were notified between day 3 and 7; 23% were notified during the second, third and fourth week; while in the remaining 11% of deaths, notification was delayed for varied durations that ranged from 4 up to 124 weeks following the death. These delays result in many deceased women being buried before their deaths have been notified and, often, before burial permits have been issued from the public health department.

Authorities attempted to correct this problem by imposing a fine. It did not, however, solve the problem. For a more successful approach, it is important to analyse the reasons behind the death notification delay. In the process of death notification, the doctor who last examined the deceased woman fills in the notification sheet, and then four copies of this are given to the family of the deceased woman, so as to complete the process and notify the PHD. This seems the most important factor in delaying death notification to the PHDs since, frequently, the family do not complete the process of PHD notification in a timely manner. In the local context, cultural and religious norms call for not delaying the burial of the deceased. There is inadequate public awareness of the official requirements for getting a burial permit before burying the body. In addition, there was the accessibility/security problem that prevailed in the study area for many years, which has affected all aspects of civil life including the notification and registration of death. Also, culturally, the family of the deceased woman gets engaged in preparing for the funeral and in receiving condolences over many days. Thus, little attention is paid to the need for notifying authorities about the death. With time, notification of the death is frequently forgotten or ignored, and is remembered and considered by the family only when a civil procedure linked to the deceased woman is required, such as inheritance-related issues or when the husband is considering re-marriage. Potentially, in such conditions, intentionally delayed notification of a woman's death for criminal acts may not be detected. Retrieval of the body after burial for autopsy or investigation is extremely difficult and rarely done.

To overcome the problem of delayed death notification, the process should be reviewed and a new procedure should be developed for death notifications. Also, Health Authority should facilitate the process of death notification and burial permit issuance should be ensured. The cemetery control authorities (Islamic Awqaf and the Churches) should strictly forbid burial without a burial permit from the public health department.

In the West Bank, the quality of death notification sheets, in terms of completeness, was found to be inadequate. Three out of every four death notification sheets were categorized as incomplete. In Lebanon, it was found that the information on the occupation and month

of birth were missing in approximately 95% and 78% of the certificates, respectively. Around half of the certificates did not carry a certifier's signature (48).

Efficient and effective control and monitoring of death notification sheets should be ensured through policy and processes review. Training of physicians on disease classification for accurate categorization of the cause of death is mandatory to improve the quality of reproductive death reporting and death registration. To achieve this, an efficient infrastructure with a functional system is needed, coupled with political will and a compulsory reporting to death registers in a timely manner (91). Valid reporting and coding of causes of death requires a concerted effort that fosters links between all individuals and institutions involved in the process.

7.4 The paediatric aspect of women's mortality

In this study all motherless children (n=167), who were under five years when they lost their mothers in the West Bank in 2000 and 2001, were followed up an average of three years after the death of the mother. Field work for this study was conducted under war-like conditions with heavy restrictions on mobility, making the initially planned case-control design virtually impossible and limiting the possibility of probing deeper into the conditions of the motherless orphans.

The survival rate of the 148 orphans, included in the study, was 100% after two and one-half to three and one-half years following their mothers' deaths. These include 26 orphans who were under one year of age at their mother's death. This striking finding was substantially different from the findings of studies from other parts of the world. Exceedingly high mortality rates among motherless children have been demonstrated in studies from India (42), North Yemen (91), and Guinea Bissau (40). All show a significantly higher mortality rate in the first year of life among motherless infants than among non-orphans. The impact of orphanhood on the health and nutrition of children was likely to be greatest on young children as shown in a Kenyan orphan study (41).

In our study in the West Bank, the majority of orphans were living with their fathers who were also the custodians and they were taken care of by a female family member. In the majority of cases the orphans' fathers had remarried after less than one month after the death of their wives and a step-mother had joined the family. Apparently this had created a favorable nurturing environment for the young children and contributed to the high rate of survival. Similar findings were reported in a study conducted on orphan survival in Sweden in the 19th century (39). Although conducted more than one hundred years later and in a different culture, comparing our results to the Swedish case has interestingly shown that family reconstruction, whether achieved by kinship or remarriage, was the best life insurance for the young orphans (39).

A study of orphan care from the United States suggested that an advantage of kinship care is that it preserves the family culture and identity, in addition to protecting the children from the stigma associated with being in foster care (92). However, it was noted in the

same study that a potential disadvantage of kinship care could be the lack of monitoring of the quality of care and concerns about the safety of the child with regard to potential child abuse, neglect, and substance use. It has been shown that compared to children with mothers' care, fewer children in kinship and foster care were immunized and more failed visual and hearing tests and fewer were taken to health care facilities (92). In rural Sierra Leone, a study was conducted on the effect of child fostering on feeding practices and access to health care services (43). It was shown that fostered children were less likely to be taken to a health care facility when sick as compared to other children, and foster girls were only about half as likely to be hospitalised as foster boys. It was observed that most malnutrition cases, particularly Kwashiorkor, were among foster girls.

In our study, only three siblings (two sisters and their brother) out of the 148 motherless children were in orphanages and none were in foster care during the time of the study. This can be compared to findings from a study of orphanages in the West Bank and Gaza in 1998, where 18% of the orphans were there because the loss of the mother (93). The very low rate of institutional care could be attributed to several factors. For most Palestinians, institutional care may be considered when a child has lost her/his father while the institutionalisation of motherless orphans in the presence of the father is rare. Religious and cultural norms dictate that it is the responsibility of the father and his extended family to take care of the motherless child; the opposite would be seen as a failure of the father and of his entire family. In a study of the "Sijillat" (Muslim Court Records) in Jerusalem, Nablus and Hifa during the Ottoman period (94), it was mentioned that under-aged children who lost their mothers are not defined as orphans, reflecting the different socio-economic roles of the fathers and the mothers. Gila'di noted: "There were no orphanages in Islam, because in most cases, orphaned children were generally absorbed immediately into the extended families to which they belonged" (i.e. on the paternal side) (95). (Thus, naming motherless children 'orphans', as is done in this thesis, is not in accordance with the definitions of Islam).

Other than cultural and religious reasons, a possible reason for low rates of orphans placed in institutions is the prevailing violence and lack of security in the study area, making families reluctant to send their children to orphanages. The orphanage administration may also hesitate to keep children under their responsibility, as their security cannot be guaranteed. Finally, severe economic difficulties affect all institutional care, including orphanage care.

Nutritional status of children can be assessed by measuring the rate of wasting (Acute Malnutrition), and stunting (Chronic Malnutrition) among children in a given locality. Wasting is defined as a condition that results from the loss of both body tissue and fat that usually reflects severely inadequate food intake happening at present (62) Stunting (chronic malnutrition) is a slowing down of skeletal growth that results in reduced stature or length. This is a condition that usually results from extended periods of inadequate food intake, especially during the years of greatest growth for children (62) .

Wasting and stunting rates among the 34 under-five orphans in our study were 8.8% and 17.6 % respectively which is considerably higher than the national rates of 3.1% and 9.2% for all children (96). In comparison, the study on under-6 orphans in Kenya found no difference by orphan status in the mean stunting scores. It was only in the wasting scores that the Kenyan orphans appeared to be at a disadvantage compared with the non orphans (41). The relatively high rates of both stunting and wasting in our study are warning signals of the possible disadvantages of orphans as compared to other children. Above all, the fact that all wasted and stunted orphans were girls is a worrisome indicator of possible neglect of the orphan girls' needs.

Other than these indicators of possible nutritional deficiencies among some of the orphan girls, the important message from the study is the extraordinarily high survival of the orphans, a sign of the resilience of the families under the adverse conditions prevailing in the Occupied Palestinian Territory at present. The study, despite its methodological limitations, raises important questions for further research on orphanhood and the coping mechanisms of individuals and communities under situations of extreme social, economic and political stress and hardship.

The fearful and aggressive behaviour that almost one-third of the orphans' caretakers reported should be seen in the light of the violent scenes children are exposed to daily, either live or on television. Even higher rates of fear and aggressiveness among non-orphaned children are reported from other studies carried out during the current crises of violence in Palestine. In a psychosocial assessment of Palestinian children, 93% of sampled 5-17 year old children reported feeling unsafe and exposed to attack and nine out of ten parents reported symptomatic traumatic behaviour amongst their children. These ranged from nightmares and bed-wetting, to increased aggressiveness and hyperactivity, as well as a decrease in attention span and concentration capacity (97). A comparative study of orphans versus none orphans would be needed to identify potential differences and associated factors in psychosocial development between the two groups.

8. LIMITATIONS OF THE STUDIES

The four studies were implemented under war-like conditions. For 21 of the 30 months of data collection, the whole country was under fierce reciprocal violence with actions and counteractions between the Palestinians and the Israeli army.

The subsequent mobility restrictions and security problems seriously interfered with the implementation of the studies as per the initial plans. Delayed notification of deaths to the Public Health Department was a problem. This was realized during the course of the study when in many cases, the death was notified 4-124 weeks following the actual occurrence of the death. Therefore, the authors decided to extend the initially planned two-year data collection period for an additional six months.

Frequently, the data collectors faced security threats in attempting to gain access to different localities of the deceased mothers, and to the orphans' homes, and had to repeat their attempts more than one time which slowed down the pace of data collection.

The compromised law and order in the area did not allow the study team to collect qualitative data on accidental and injury-related deaths for the deceased reproductive aged women's group in general, and for the single women's deaths, in particular. It was neither safe nor wise to request and implement in-depth interviews with the families of the deceased women on sensitive issues. The families did not welcome probing into these matters and did not want to disclose any information to the public. This was particularly a limiting factor towards achieving better understanding as to why many young single women died of alleged suicide, of murder and of other accidents.

The case control study initially planned to examine the motherless orphans' conditions in comparison with the non-orphan children of similar ages from the same localities had to be postponed and finally it had to be dropped. Instead, a modified follow-up descriptive study was implemented after an average of three years following a mother's death. In study III, the authors managed to identify important aspects of the high survival rate of motherless orphans and of the pattern of orphan care. However, we could not relate these findings to non-orphan children, thus we did not know whether orphanhood and orphans' emotional status had influenced orphans' behavior and development in this regard.

9. MAIN CONCLUSIONS

- More than two-thirds of the maternal deaths identified were considered avoidable, i.e., preventable or treatable provided timely, adequate, and appropriate treatment utilizing available resources. This indicates substandard health care provision.
- Notification of death was delayed, the quality of death sheets was poor, and the vast majority of death notification sheets were incomplete. Relying on the family of the deceased woman to submit death notification is an important factor in delayed notification. Accessibility and security problems prevailing in OPT could be an additional factor that interfered with timely death notification.
- Monitoring and auditing of maternal deaths was inadequate. Autopsies were rarely performed and could have lead to identifying the most likely cause of death and whether a death was pregnancy-related or due to other causes.
- The observed differences in causes of death between the deceased single and married women highlight critical issues which require in-depth study of the conditions of women, in general, and of single women, in particular, in Palestinian society.

- Single never-married women were found to be disadvantaged by potentially restricted access to health services. The health care-seeking patterns of single women should be further explored and attention should be paid to barriers to appropriate reproductive and other health care services.
- The serious vulnerability of single women could be explained by finding a higher proportion of violent deaths and suicide among the deceased single women, particularly under the societal stress prevailing in the Palestinian Territory over many years.
- Despite the well-known vulnerability of motherless orphans, a high survival rate of motherless orphans was encountered in the West Bank. Early reconstruction of the family, and support to ensure sustained coping mechanisms within the family of a deceased woman could be important factors in sustaining a conducive environment in which the orphan can survive.
- The prevalence of malnourishment (stunting and wasting) among under-5 female motherless orphans is strongly suggestive of a gender bias against female orphans. Special attention should be paid to caring for orphan girls as far as nutrition and health care are concerned.
- Deaths among women of reproductive age from malignant diseases, cardiovascular diseases and from injuries/accidents are more common than maternal deaths in the West Bank in the OPT.

10. RECOMMENDATIONS

The main recommendations that emanate from these studies are the following:

- To extend and deepen research in the OPT with a focus on reproductive rights and health among women, their social status and gender inequities, with special emphasis on the health and social conditions of single women;
- To develop and strengthen the national policies on reproductive health and to ensure universal implementation of appropriate protocols and guidelines on management of emergency obstetric care while reviewing licensing requirements of hospitals and maternity homes with access to blood bank services;
- To evaluate and strengthen postpartum care and develop an efficient referral and counter-referral system between the PHC and hospitals/maternity homes;
- To establish and strengthen maternal and neonatal death audits at the primary and secondary health care levels and to strengthen the mortality surveillance system;
- To develop and implement on-the-job training on reproductive health: family planning, counseling, management of obstetric emergencies, and the international classification of disease;

- To review, upgrade and enforce death notification and registration procedures;
- To increase the use of post-mortem autopsy;
- To implement appropriate awareness-raising campaigns related to improving women's status, the protection of women's rights and the protection against all forms of violence against women, and to advocate for these using mass media, religious groups/leaders and through the production of appropriate and relevant information, education and communication materials;
- To support Palestinian women's groups in their activities to develop projects for income generation or other entry points for women's empowerment, especially in light of the current difficult socio-economic situation;
- To conduct qualitative, gender-sensitive research on the health and well-being of orphans in the OPT, and to raise awareness among social and health workers of the potential vulnerability of orphan girls.

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