Using the Community Informant Based (Made-in and Made-for) Methodology for Estimating Maternal Mortality Ratio (MMR) in Khyber Pakhtunkhwa

A Study Funded by

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"I have read the report titled "Using the Community Informant Based (MADE-IN and MADE-FOR) Methodology for Estimating the Maternal Mortality Ratio (MMR) in Khyber Pakhtunkhwa", and acknowledge and agree with the information, data and findings contained".

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Acknowledgment:

"Using the Community Informant Based (MADE-IN and MADE-FOR) Methodology for Estimating the Maternal Mortality Ratio (MMR) in Khyber Pakhtunkhwa" is a project funded by GIZ and UK Department for International Development (DFID), implemented by the Population Council, Pakistan.

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Acknowledgements

This study, “Using the Community Informant Based (MADE-IN/MADE-FOR) Methodology for Estimating MMR in KP,” was funded by the Department for International Development, UK (DFID) and Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). Its aim is to obtain a Maternal Mortality Ratio (MMR) estimate for Khyber Pakhtunkhwa province using a community-based approach. We are grateful for the continued support of GIZ colleagues Dr. Patrick Tabatabai, Jasmin Dirinpur, and Alexandra Plueschke throughout the implementation of this study.

Besides the contributions of the authors, several individuals have also played a major role in this study and the preparation of this report. We are very grateful for the programmatic suggestions of Dr. Gul Rashida Shaikh, Population Council consultant. Mr. Usman Ghani worked very hard, and often late hours, to complete the data entry and analysis on time. Mr. Maqsood Sadiq, Senior Program Officer, was actively involved in data analysis. Mr. Imran Ahmed, Director of Finance and Administration, and his team expertly handled all logistic and financial matters. Mr. Ali Ammad was responsible for final formatting of the report. We also acknowledge the excellent editorial support extended by Ms. Kiren Khan. We especially thank the interviewers and team supervisors for their hard work in collecting the data in a timely manner.

We would like to offer our appreciation and gratitude to the Director General for Health of Khyber Pakhtunkhwa, Dr. Parvez Kamal, Director of Reproductive Health Dr. Saeed Gul, and officials of the Health and Administration departments, particularly District Coordinators of the MNCH program, LHW Program Coordinators, and Program Directors of District Health Development Centres (DHDCs). We especially thank the District Health Officers (DHOs) of the study districts: Dr. Arshad Khan, DHO of Nowshera; Dr. Mushtaq Khan Tanoli, DHO of Haripur; Dr. Shahzad Ali Khan, DHO of Mansehra; Dr. Muhammad Umar Shah, DHO of DI Khan; Dr. Niaz Muhammad, DHO of Swabi; and Dr. Azam Wazir, DHO of Kohat. We deeply appreciate the efforts of focal persons nominated by the Khyber Pakhtunkhwa Department of Health to facilitate the study, including Dr. Muhammad Qasim Khan in Nowshera, Dr. Abdul Hameed Khan in Mansehra, Dr. Qamar Iqbal in DI Khan, Dr. Muhammad Tariq in Swabi, and Dr. Haroon Nasir in Kohat.

We also gratefully acknowledge the contribution of the Director General of Khyber Pakhtunkhwa’s Local Government Department, as well as Assistant Directors and Union Council field staff of the departments in all six study districts.

Finally, we owe a debt of gratitude to the community informant networks, the religious leaders, Lady Health Workers, male and female councilors, and *Nikah* registrars in all six study districts. Their active participation in the study was critical in establishing the feasibility of the MADE-IN/MADE-FOR methodology for estimating MMR in Khyber Pakhtunkhwa.

We also extend our profound thanks to the relatives of the deceased women, who willingly gave their time to participate and share their insights of the deaths of their near ones.

Abbreviations and Acronyms

ADC	Assistant District Coordinator
ANC	Antenatal Care
APH	Antepartum Hemorrhage
BEmOC	Basic Emergency Obstetric Care
BHU	Basic Health Unit
CEmOC	Comprehensive Emergency Obstetric Care
CSPro	Census and Survey Processing System
DCO	District Coordination Officer
DFID	UK Department for International Development
DHQ	District Headquarters Hospital
DHS	Demographic and Health Survey
DI Khan	Dera Ismail Khan
DOCO	District Officer Community Organization
DOH	District Officer for Health
EDO(H)	Executive District Officer of Health
KP	Khyber Pakhtunkhwa
LHV	Lady Health Visitor
LHW	Lady Health Worker
LHWP	Lady Health Workers Program
LHS	Lady Health Supervisor
MADE-FOR	Maternal Death Follow-On Review
MADE-IN	Maternal Deaths from Informants
MDGs	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MIMF	MADE-IN/MADE-FOR
MIMS	Maternal and Infant Mortality Survey
MMR	Maternal Mortality Ratio
MNCH	Maternal, Newborn and Child Health
NR	Nikah Registrar
PDHS	Pakistan Demographic and Health Survey
PMDF	Proportion of Maternal Deaths of Females of Reproductive Age
PPH	Postpartum Hemorrhage
PRD	Pregnancy-Related Death
PRMR	Pregnancy Related Mortality Ratio
PSLM	Pakistan Social and Living Standards Measurement Survey

RAF	Research and Advocacy Fund
RAMOS	Reproductive Age Mortality Studies
RH	Reproductive Health
RHC	Rural Health Centre
RL	Religious Leader
RMNCH	Reproductive Maternal and Neonatal Child Health
SBA	Skilled Birth Attendant
SDGs	Sustainable Development Goals
SRS	Sample Registration System
SVR	Sample Vital Registration
TBA	Traditional Birth Attendant
TFR	Total Fertility Rate
THQ	Tehsil Headquarters Hospital
UC	Union Council
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
VA	Verbal Autopsy
WHO	World Health Organization
WMO	Women Medical Officer
WRA	Women of Reproductive Age

Executive Summary

This report documents a study by the Population Council estimating the Maternal Mortality Ratio (MMR) of Khyber Pakhtunkhwa (KP) province using an innovative community informant-based method, known as the "MADE-IN/MADE-FOR" technique, to collect data on maternal deaths. The methodology was developed by the University of Aberdeen and was previously applied in Punjab, first as a pilot in Chakwal and later to estimate that province's MMR. The current study was requested by the Government of Khyber Pakhtunkhwa's Department of Health, with the support of the Department for International Development, UK (DFID) and the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH (GIZ). The study is an extension of a previous study in KP's Haripur and Nowshera districts estimating their maternal mortality. The same methodology was extended to four more districts, for a representative estimate of MMR for the entire Khyber Pakhtunkhwa province.

Pakistan is one of the six countries that account for more than 50 percent of the world's maternal deaths (Hogan et al. 2010). According to Population Council estimates, each year, nearly 8.6 million women become pregnant in the country. Of these, 15 percent, or 1.2 million women, are likely to face obstetric complications. The Pakistan Demographic and Health Survey (PDHS) of 2006-2007 estimated Pakistan's MMR to be 276 and KP's MMR to be 275 per 100,000 live births. According to Population Council estimates, each year 1,700 women die in KP due to causes related to pregnancy.

Post-devolution, there is a need for regular estimation of the MMR at the sub-national level to enable policymakers to monitor and evaluate the impact of health interventions. However, collection of maternal mortality data poses a challenge in Pakistan because the vital registration system is still evolving. Maternal mortality information is currently collected through the Lady Health Workers (LHWs), but it is incomplete due to limited coverage of the LHW Program. Alternative methods of MMR estimation are often too costly and complicated to implement frequently. The MADE-IN/MADE-FOR technique was tested and used in KP to circumvent these obstacles and provide an alternative method for regularly investigating the scale and causes of maternal mortality in the province.

The primary objectives of the study were:

- To apply the community informants networks technique (MADE-IN/MADE-FOR) to obtain a provincially representative current estimate of MMR for KP and to identify causes of deaths; and
- To build capacity within KP to obtain district and provincial maternal mortality estimates routinely, on a sustainable basis.

Secondary objectives of the study were:

- To identify the networks of informants available within rural and urban communities of KP that can collect information on maternal deaths;
- To determine differential characteristics of maternal deaths by economic and geographical distribution to gain a better understanding of the predisposing factors contributing to women's death during pregnancy, delivery, and the postpartum period; and
- To assess the mechanisms that can be employed at the community level to determine the cause of deaths.

Study Design

For calculating the MMR estimate for KP that was representative of the different sub-regions, the province was stratified into three geographical regions: North (comprising 9 adjacent districts), Center (comprising 9 districts), and South (comprising 7 geographically adjacent districts). A sample of one less urbanized and one more urbanized district was derived from each region using the *KP Development Statistics 2015* (Bureau of Statistics 2015). The selected districts included Swabi (more urbanized) and Mansehra (less urbanized) in the North; Nowshera (more urbanized) and Haripur (less urbanized) in the Center; and Kohat (more urbanized) and DI Khan (less urbanized) in the South. The total population of the six study districts is about eight million, or 29 percent of KP's total population (Bureau of Statistics 2015). There are 288 union councils (UCs) in the study area.

The MADE-IN/MADE-FOR technique involves two steps. In the first step (MADE-IN), village informants identify deaths of women of reproductive age (WRA) (ages 12 to 50) in their communities. The second step (MADE-FOR) comprises follow up interviews with family members of deceased women to confirm whether their deaths were maternal, and to explore their causes of death.

Data on WRA deaths was collected in all six districts with the aim of documenting all WRA deaths in the two-year period from January 2013 to December 2014. Based on discussion with district officials, the study team opted to use four community informant networks: Lady Health Workers (LHWs); religious leaders, including village mosque imams; male and female councilors; and *Nikah* registrars, functionaries who perform and solemnize marriages. District government and tehsil municipality officials helped identify informants.

Collectively, in the six sampled districts, 9,397 WRA deaths were identified from 2013 through 2014. Of these, 1,617 were identified as pregnancy-related deaths (PRDs) based on the listing data. Post-autopsy, some cases were excluded because they did not meet the study criteria; after which, 958 PRDs were included in final analysis. The capture-recapture (CRC) technique was applied to adjust the number of PRDs to reflect those that may have been missed by the networks.

The number of live births was calculated using an estimate of the KP female population ages 12 to 50 based on the *KP Development Statistics 2014*, the Pakistan Social and Living Standards Measurement Survey (PSLMS) 2012-2013, and regional age-specific fertility rates calculated using the Pakistan Demographic and Health Survey (PDHS) 2012-2013 micro data.

During this study district Health officials' capacities for using the MADE-IN/MADE-FOR technique were developed.

Key Findings

- The unadjusted composite MMR for the province of KP, before applying the CRC technique, is 198 per 100,000 live births (95%, CI 190-210).
- The adjusted composite MMR for KP province, after applying CRC, is 271 per 100,000 live births (95%, CI 260-290).
- The lowest district adjusted MMR is estimated for Mansehra at 217 (95%, CI 190-250), with the highest estimated for DI Khan at 397 (95%, CI 350-450).
- Direct causes account for 84 percent of PRDs and indirect causes account for 13 percent, while two percent of the deaths were associated with incidental causes.
- Among deaths by direct cause, about 45 percent were due to postpartum hemorrhage (PPH), two percent to antepartum hemorrhage, slightly less than one fifth due to eclampsia, and approximately one tenth were due to puerperal sepsis. The major indirect cause was anemia (27%).
- Almost two thirds of deceased women had at least one biomedical risk factor, with high parity the most important.
- About 60 percent of pregnancies ended with a live birth, while stillbirths occurred in nearly 22 percent of PRDs; nearly one percent of pregnancy outcomes was miscarriage, and one percent was induced abortion.
- Thirteen percent of all PRDs occurred before childbirth (antepartum period); and nearly 13 percent were during delivery (intrapartum); while nearly two fifths in the first 24 hours after delivery (immediately postpartum); the rest occurred between the second and forty-second days postpartum.
- Overall, one third of deaths were in a public health facility, 15 percent were at private facilities, 34 percent were at home, *one tenth* en route to health facility, and two percent were incidental deaths.
- Slightly more than one third of women (34%) died at home. Among these 322 women, 38 percent died without any medical attention, 25 percent were assisted by a traditional birth attendant (TBA), four percent were assisted by a Lady Health Visitor (LHV) or nurse, and 10 percent were assisted by a skilled birth attendant (SBA).

- The remaining 636 women (66%) died at a health facility or *en route* to one. Twenty-six percent of PRDs were at a private clinic, and 31 percent at public tertiary care hospitals. Among women who reached a health facility, one quarter of deaths were at the first facility of contact, 19 percent at a second facility, and 11 percent at the third facility to which the deceased were referred.
- A large proportion (69%) of the deceased women had realized the importance of antenatal care (ANC) and were getting ANC check ups more frequently. Husbands were also found to be more supportive of ANC.
- Access to quality services varies by socio-economic status and district, however. A lower proportion of poorer women sought ANC or hospital care. The highest proportion (two thirds) of women with three or more consultations was in Mansehra, while the highest proportion of women with no ANC was in DI Khan.
- In the majority of the cases (four out of five), it was the woman's husband who decided whether she should seek care at a health facility.
- Among those who received treatment, in the majority of cases (79%), the decision to seek care at a health facility was taken in less than an hour, which is quite swift.

Conclusions and Recommendations

- This study confirms that maternal mortality persists as a major public health issue in KP. The MMR estimate for KP of 271 (95%, CI 260-290) is based on 958 physically verified deaths, which could have been easily prevented.
- The ability of the MADE-IN/MADE-FOR method to identify cause of death through verbal autopsies is important from a policy and programmatic perspective. The two major causes of maternal deaths identified in this study were obstetric hemorrhage and eclampsia. These conditions should be kept in mind when designing any future interventions—there are now simple strategies available to prevent the occurrence of both. Nutrition and antenatal care (ANC) and counseling must be improved to tackle anemia, a leading indirect cause, along with expanding access to family planning (FP) services, especially for older and multiparous women who face significantly higher risks.
- The study raises important issues related to the quality of emergency obstetric care available at the facility level and the lack of a functional referral system in all districts. Improving the quality of care for providing at least comprehensive emergency obstetric care at the Rural Health Center (RHC) and Tehsil Headquarters Hospital (THQ) level would help poor families' access appropriate care closer to their homes.
- Our findings show that women's lives can be saved if all pregnant women have a birth preparedness plan that includes information about recognizing danger signs, and if the pregnant women and their families know beforehand when and where to access timely and appropriate care in case of an emergency.
- Reaching out to men with safe motherhood messages could be an important strategy for ensuring women are able to access appropriate care on time. Use of the MADE-IN/MADE-FOR method also affords a unique opportunity to involve community influentials—specifically the informants recruited to collect data about PRDs—to share study results, along with health education messages, with the communities to create awareness and influence health-seeking behaviors.
- A main strength of this study was the active participation of district administration, health, and local government officials in study districts, as well as influential members of the communities (as informants). These critical stakeholders are now much more deeply aware of and concerned about maternal health problems in their jurisdiction, and through Population Council's capacity building efforts are now fully familiar with the process of data collection, which they could continue to use in the future.
- The study has successfully demonstrated that networks of community-based informants can be used at the community level to capture data on deaths in Pakistan. In particular, the LHW network is a major source of mortality information. However, in this regard LHWs' ability could further be improved through proper training and by expanding the age band for capturing women's deaths from 15 to 45 years to 12 to 50

years. The information obtained by the LHWs can be further supplemented by other community networks, especially in areas that are not covered by LHWs. In the long run, these networks could be used to report additional events, e.g. case detection and the incidence of communicable diseases. They could also play a role in controlling epidemics (by helping to identify the source of outbreaks). Information collected at the union council level could be collated at the district level and communicated to all relevant departments as well as the provincial headquarters.

- Since it entails significantly lower costs than alternatives such as household surveys, the MADE-IN/MADE-FOR method can be used biannually and applied to measure maternal deaths prospectively.
- No single approach can adequately meet all the requirements for estimating maternal mortality efficiently and with reliable precision, and therefore complementary measurement options and opportunities, such as periodic demographic and health surveys, must also be considered in order to validate results.
- Further research is needed to understand the consequences of a maternal death on the deceased's family and her community in terms of the psychological costs to children, other family members, and the possible health and economic costs to the household and the community.
- Finally, we would like to stress that this study has very clearly highlighted the plight of women who overcame the obstacles of poverty and restrictive socio-cultural norms to reach a health facility but died because of a poorly functioning health system. If progress is to be made and health outcomes for women improved, efforts must be made to provide high quality emergency obstetrics care services at all levels, in combination with a highly efficient referral system.

1. Introduction and Background

Pakistan is one of the six countries that account for more than 50 percent of the world's maternal deaths (Hogan et al. 2010). According to Population Council estimates, each year, nearly 8.6 million women become pregnant in the country. Of these, 15 percent, i.e. 1.2 million women, are likely to face obstetric complications (Population Council). Each year, there are nearly 14,000 pregnancy-related deaths (PRDs), which means on average one maternal death occurs every 40 minutes. The last MMR estimate for the country was 276 per 100,000 live births; in Khyber Pakhtunkhwa, the MMR was last estimated at 275 deaths per 100,000 live births. These estimates are based on the Pakistan Demographic and Health Survey (PDHS) 2006-2007 and have not since been updated. Other Available estimates of the current MMR are based on projections with very wide levels of uncertainty. For instance, the Global Burden of Diseases (GBD) estimates the 2014 MMR for Pakistan at 349 per 100,000 live births with uncertainty between 257 and 447 (Kassebaum et al. 2016).

Reduction of maternal and infant mortality is recognized as a priority in the Government of Pakistan's *Vision 2025* document (Government of Pakistan 2014). However, updated maternal mortality estimates are required to monitor and evaluate existing maternal, neonatal, and child health (MNCH) programs; to introduce greater accountability; and to plan new initiatives. After the 18th Constitutional Amendment and devolution, the provincial health departments are responsible for identifying priorities and developing provincial policies. Districts have also been empowered to develop their own health plans and seek the required allocation of resources from the district administration. Post-devolution, the provincial governments have initiated a number of major projects to improve maternal health outcomes in the country. Therefore, the need for more precise sub-national (province and district level) estimates has increased.

Apart from estimating the scale, it is also important from a programmatic perspective that the underlying causes of maternal mortality be well understood. This information will also help in advocacy efforts to increase awareness about maternal health issues among the public, and increase the focus of policymakers on this neglected area, thereby maintaining pressure towards achieving the Sustainable Development Goal (SDG) 3 by 2030.

While MMR is accepted as an important development indicator at the international and national levels, the range of simple, reliable and feasible methods for measuring maternal mortality remains limited, especially in developing countries. Planners in Pakistan require a method that can provide reliable sub-national estimates easily, cost-effectively, and with more regularity. To help fill the gap, in 2014 the Research and Advocacy Fund (RAF) offered support to the Government of Pakistan to assess the feasibility of testing an innovative community informant-based approach for estimating the MMR at the community level, known as the "MADE-IN MADE-FOR" method. This technique was developed by the Initiative for Maternal Mortality Program Assessment (Immpact) at the University of Aberdeen, UK. It had been previously applied in two provinces in Indonesia and the Somaliland. With the support of RAF, the Population Council pioneered the technique for the first time in Pakistan as a pilot in Punjab's Chakwal district, January through April 2014. It was subsequently conducted in six districts of Punjab province for provincial estimates in 2014 and 2015.[1]

GIZ, at the request of the Government of KP, in 2015 requested the Population Council to estimate maternal mortality in Nowshera and Haripur districts using the MADE-IN/MADE-FOR methodology. Later, at the request of the KP government's Department of Health, and with the support of GIZ and DFID, the present study was conducted by Population Council between October 2016 and January 2017 to develop a provincial estimate of MMR in KP.

The following subsections provide background information to describe the study's context—including a brief overview of the different methods of MMR estimation and their limitations; the methods that have been used in Pakistan to date; and the situation of maternal health in KP—and outline the objectives of the study.

[1] Such a study was recommended to RAF, in particular by the Chief Health, Planning Commission of Pakistan; DG Health, Ministry of National Health Services, Regulations and Coordination; Provincial Coordinator, MNCH Program KP; and President, National Committee on Maternal and Neonatal Health.

1.1 Approaches to Measuring Maternal Mortality

The MMR is difficult to estimate for a number of reasons. First, maternal death is a rare event and difficult to capture; large samples are needed for estimates to be reliable. For the same reason, it is also expensive to gauge. Thirdly, at present, there is no standard method that can be universally applied for measuring mortality. According to the World Health Organization (WHO), three elements need to be identified: 1) all deaths of women of reproductive age (WRA), 2) their pregnancy-related status, and 3) the cause of death. Without complete vital registration systems and certification of the cause of death, all three components are difficult to measure accurately (WHO 2004, Hill et al. 2006).

This section presents a brief overview of the different approaches used to measure MMR, including their strengths and disadvantages. Some of these approaches have been tried in Pakistan.

Vital Registration

A vital registration system can most accurately estimate maternal mortality if the system includes questions on pregnancy-related status and cause of death. In developed countries, information on maternal mortality derives from the vital registration of deaths by cause. However, even where coverage is complete and all deaths medically certified, maternal deaths are frequently missed or misclassified in the absence of active verification (Hill et al. 2001).

In middle- or low income countries, female deaths from all causes are frequently under-recorded (Hill et al. 2001). In many countries, periodic confidential enquiries or surveillance are used to assess the extent of misclassification and underreporting. Few developing countries have a vital registration system that ensures sufficient coverage and quality to enable it to serve as the basis for assessing levels and trends in cause-specific mortality, including maternal mortality (Abou Zahr and Wardlaw 2003).

Sample Vital Registration

Sample vital registration (SVR) is a variant of the complete vital registration system, and is defined as "longitudinal registration of demographic events, including cause of death by verbal autopsy, in a nationally representative sample of clusters" (Setel et al. 2007).

The system's objective is to provide reliable estimates of birth and death rates and other measures of fertility and mortality, including total fertility, infant mortality at the national and provincial levels, segregated by urban and rural place of residence. The SVR system being applied in India is one of the world's largest continuous demographic household sample enquiries. It is a dual record system that employs 1) a resident part time enumerator who continuously records births and deaths in each household within the sample unit every month, and 2) a full time supervisor who, thereafter, independently records vital events and other related details for each of the preceding two six-month periods during the calendar year. The two sets of figures are then matched. Partially matched and unmatched events are verified in the field to remove any duplication of events (Registrar General India 2006).

In 2005, the SVR covered 1.3 million households and 6.8 million people. However, some authors have questioned the reliability of its estimates, suggesting that it covers only half a million of an estimated annual 9.5 million deaths (Bhutta 2006). Other published sources question the representativeness of the SVR, claiming it overlooks urban and peri-urban slums, where healthcare and health outcome indicators are often worse than for rural populations (Sclar et al. 2005).

Census Studies

A national census that covers the entire population can produce PRD estimates with the addition of a limited number of questions. This approach eliminates sampling errors (because the entire population is covered), allowing a more detailed breakdown of results, including time trends, geographic subdivisions, and social strata. In addition, it enables the identification of household deaths over a relatively short reference period (1 to 2

years), thereby providing recent maternal mortality estimates (Hill et al. 2007).

The approach has two disadvantages, however. First, it is conducted at 10 year intervals, which limits monitoring of maternal mortality (Hill et al. 2001); the second is that the technique for demographic adjustment compares fertility and mortality data between the current and most recent censuses and, thus, brings a distortion into the final adjusted values because any adjustment relates to a period midway between the two censuses.

Reproductive Age Mortality Studies

Reproductive age mortality studies (RAMOS) involve systematic efforts to combine data on maternal deaths from multiple sources. The starting point is usually to list all WRA deaths, which are then investigated through verbal autopsies (VAs) and medical records (when available) to identify maternal deaths (WHO 1987). The sources of information on WRA deaths vary. Where feasible, the initial list is drawn from civil or sample registration records, but when the registration of deaths is incomplete, other methods have to be used. These include reviews of hospital and funeral records, discussions with traditional birth attendants (TBAs), interviews with religious and community leaders, and even visits to schools (Smith and Burnham 2005).

Such mortality studies are necessarily complex, and in developing countries, are mostly carried in small areas (often at district level). If properly conducted, RAMOS can generate reliable estimates of maternal mortality. However, they are complicated, time-consuming, and expensive, particularly when on a large scale (Atrash et al. 1995, Hill et al. 2006). Additionally, RAMOS estimates do not generate complete data on live births (AbouZahr 1998)—which is needed to calculate the MMR—especially in settings where most women deliver at home. This is a major weakness. Therefore, the proportion of maternal deaths of females of reproductive age (PMDF) from such studies is often applied to an independent external source of data on live births (e.g. by calculating expected births using birth data extrapolated from the most recent census).

Household Surveys

Population-based household surveys are widely used to generate data on maternal mortality in many developing countries. In addition to providing data on child and maternal mortality, these surveys produce information on fertility, contraception, maternal health, nutrition, service use, and maternity care knowledge and practice.

Maternal deaths are identified using either direct or indirect methods. The direct method involves asking respondents about recent deaths in the household and, when any WRA deaths are identified, asking additional questions about the timing of the death in relation to pregnancy. The indirect method asks about deaths of sisters in the family. Household surveys can generate estimates with a reference period of about two to three years before the survey, which is acceptable for monitoring purposes (Graham et al. 2008). However, large samples are needed to produce reliable estimates, which is costly, and the MMR estimates obtained have very wide confidence intervals, which makes it difficult to monitor changes over time (WHO 2004).

Key Informant Surveillance Systems

Barnett et al. (2008) have piloted a prospective key informant-based system for identifying births and deaths that was designed to be cheaper and simpler than conventional surveillance systems. The system aimed to measure crude birth rates and maternal mortality in a remote, predominantly indigenous population in eastern India. It also aimed to identify pregnancy-related and late maternal deaths to ascertain the breakdown of maternal deaths by cause, and determine the timing and place of death.

Most key informants were TBAs, each covering approximately 250 households, who were paid a specific amount as an incentive for every accurate birth or death identified. The interviewers would visit the relevant households to verify these births and deaths before paying the identifier. This low cost surveillance system produced high but plausible birth and death rates for the population concerned. However, the authors cautioned that the system could not capture a sufficient number of births to yield precise maternal mortality estimates.

Another study in a rural service unit in Vellore, India showed that regular death surveillance systems could be augmented by a community-based death surveillance system. The community system, relying on information from community leaders, identified twice as many maternal deaths as previously recorded, and could be applied

in other settings (Kim et al. 2004).

Tanzania's Ministry of Health established a national sentinel system based on demographic surveillance to monitor cause-specific mortality in several districts (Mswia et al. 2003). The mortality surveillance used an active reporting system based on a network of respected individuals within each community. The cause of death was determined through a verbal autopsy interview with family members of the deceased.

To investigate the level and causes of maternal deaths in Andhra Pradesh, India, maternal health enquiries were made at the grassroots level (Bhatia 1988). Informants included opinion leaders, schoolteachers, revenue officials, TBAs, and village children. The system also examined records of health facilities and compared the cases recorded by informants with those recorded in official documents. It was found that informants had been able to record a higher number of deaths than the hospital records.

In Honduras, a population-based health information system was designed and implemented by the Catholic Relief Service to estimate the magnitude of maternal and early neonatal health problems, documenting their distribution and spread at a population level, and evaluating the maternal and neonatal mortality impact of an intervention using TBAs. The starting point of the system was TBAs, who identified pregnant women and reported this information to a health educator every month. The information was subsequently communicated to a field supervisor. The study showed that maternal information used to prioritize, plan, implement, and sustain effective intervention strategies could be produced and sustained by community structures at a low cost. The information produced also complied with WHO standards (Rosales et al. 2004).

Health Facility Reporting

In most developing countries, only a limited proportion of births are in health care facilities. Unless nearly all women deliver in health care institutions, facility data (or data derived from systems managing routine health information) are rarely sufficient for population-based estimates of maternal mortality. Additional limitations include the poor quality and lack of medical records, and poor death certification by physicians and private facilities responsible for records. Facility data may also overlook maternal deaths occurring in non-obstetric wards. However, health service data may provide useful information on trends over time and, in particular, on geographic regions, the relative importance of various diseases, and causes of death (Graham et al. 2008).

Community-Based Informants to Capture Maternal Deaths

A number of studies have used community-based informants to capture maternal deaths. These informants either provided information on deaths or were responsible for the recording or reporting process. Most such studies have been conducted in Asia and Africa, with just two in Latin America. A study by Maskey et al. (2011) used a community-based method (referred to as the "motherhood method") to measure maternal and child mortality in a developing country setting. The method was field-tested at the district and sub-regional levels in Bara District, Nepal. Information on births, deaths, and risk factors was collected within a defined geographic area, but without visiting every household. The main informants were groups of women who shared social bonds formed by motherhood. The groups included all women who had given birth, including those whose babies had died during the survey period.

Sampling at Service Sites

This method is based on interviews with women at busy centers of activity, such as markets or health facilities. Respondents are asked about any maternal deaths among their sisters. Allowing the respondent to come to the interviewer rather than sending the interviewer to the respondent (as in traditional household surveys) reduces both the cost and time required to collect data. Maternal mortality estimates obtained using this approach in Ghana were consistent with those from the 1999-2000 Ghana World Health Survey (Immpact 2007), but the potential biases of this method have not been quantified for other contexts.

Community-Based Informants Network Technique (MADE-IN/MADE-FOR)

The maternal death from informants (MADE-IN/MADE-FOR) approach was developed by the University of

Aberdeen's Immpact program and enables measurement of maternal mortality to the community level, with an analysis of causes. It is less costly than household surveys, especially in lower fertility, lower mortality contexts. The approach goes beyond simply counting deaths; it also develops an understanding of why they happened and how they could have been averted. It can also be used for collecting data prospectively.

The MADE-IN/MADE-FOR technique has, so far, been successfully applied in two districts of Indonesia (Qomariyah et al. 2010), Somaliland, as a pilot in Chakwal district of Punjab, and subsequently in six Punjab districts to generate a provincial estimate. Unlike some alternative methods, such as surveys, the MADE-IN/MADE-FOR technique makes it possible to record all maternal deaths in a defined area, enabling more precise estimates of maternal mortality in relatively small populations. It also raises community awareness of maternal health issues and acts as an advocacy tool. Its limitations include possible underreporting of sensitive deaths, such as those related to abortion, and overlooking early pregnancy deaths. The approach relies on the availability of existing networks of persons who can report on PRDs within a community.

1.2 Efforts to Measure Maternal Mortality in Pakistan

In Pakistan, the vital registration system is still evolving and there is no provision for mandatory registration of deaths. Inclusion of mortality-related questions in the census questionnaire is an alternative method that has not yet been applied in the country. Many countries with poor vital registration systems, including Pakistan, use indirect techniques, such as household surveys, to generate mortality estimates. Although they are the next best option to vital registration, most household survey methods are only able to capture pregnancy-related mortality if they include detailed verbal autopsies that help to ascertain whether the deaths were maternal deaths. Moreover, as mentioned earlier, household surveys are costly, require large samples, and are time-consuming. Additionally, the estimates have very wide confidence intervals, making it difficult to monitor changes over time.

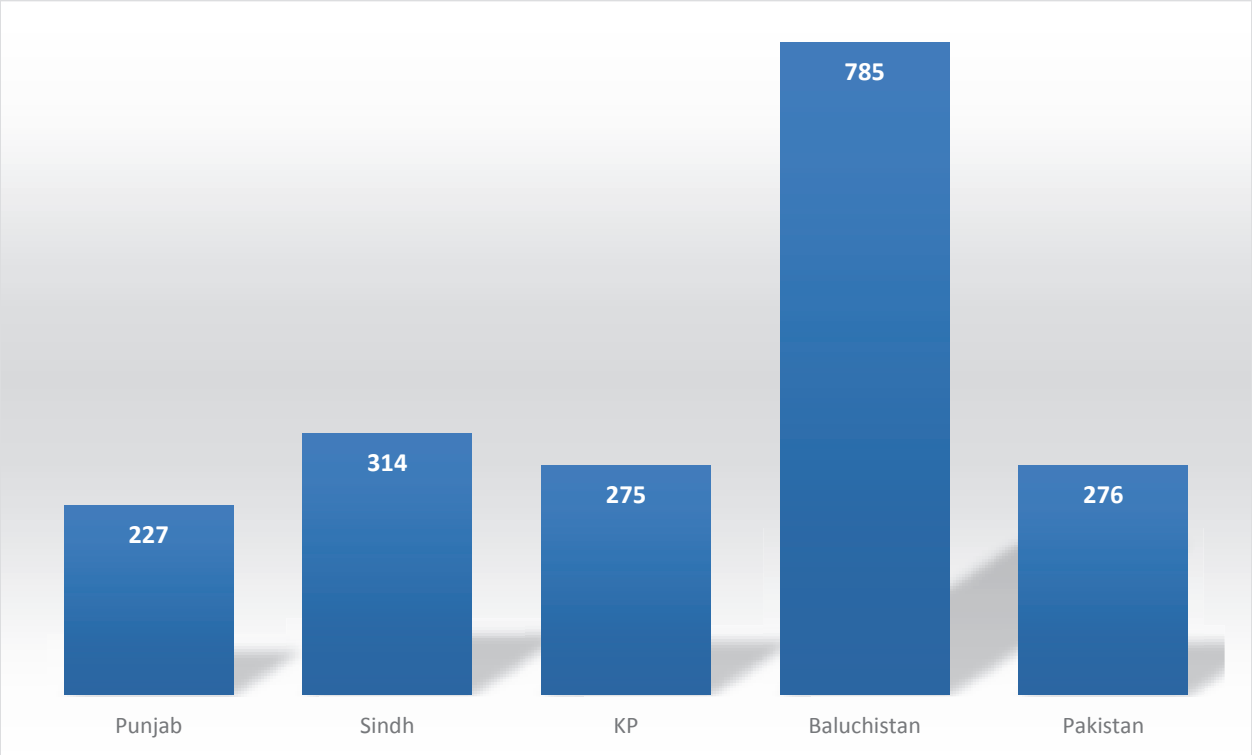
Several approaches have been applied in Pakistan to produce estimates of maternal mortality (Table 1.1).

Table 1.1: Data sources and methods used to estimate MMR in Pakistan

Reference Period	Study/Source	Estimation Method	Geographic Coverage	MMR Estimate
1990–1991	National RH and FP Survey 2001 (National Institute of Population Studies 2002)	Indirect sisterhood method	Pakistan	533
1988–1993	Maternal and Infant Mortality Survey (Midhet et al. 1998)	Verbal autopsies	Selected rural districts of KP and Balochistan	392
2000–2001	Maternal and Infant Mortality Survey (MIMS) (Midhet 2001)	Statistical modeling using district characteristics as independent variables	Pakistan	279
2000	Estimates developed by WHO, UNICEF, and UNFPA (Abou Zahr and Wardlaw 2004)	Statistical modeling using country characteristics as independent variables	Pakistan	500
2005	Estimates developed by WHO, UNICEF, UNFPA, and World Bank (WHO 2005)	Statistical modeling using country characteristics as independent variables	Pakistan	320
2006-2007	Pakistan Demographic and Health Survey	Direct sibling method through household survey	Pakistan	276
2014	Feasibility of Using Community Informant Networks to Estimate Maternal Mortality Pilot Study in Chakwal	MADE-IN/MADE-FOR	District Chakwal	309 (95% CI 266-358)
2014	Global Burden of Diseases	Statistical Modeling	Pakistan	401 (233-560)
2015	Using the Community Informant Networks (MADE-IN MADE-FOR) Methodology to Estimate Maternal Mortality in Punjab	MADE-IN/MADE-FOR	Punjab	302 (258-346)

To motivate policymakers and program managers to prioritize maternal health and evaluate interventions, national and sub-national estimates of recent maternal death rates need to be obtained using a relatively cheap and reliable method. Presently maternal mortality data are collected mainly through the Lady Health Worker (LHW) network, which is unable to capture all deaths, as LHW coverage is not universal.

Figure 1.1: Provincial estimates of MMR 2006-07



Source: PDHS 2006-07

1.3 Maternal Health Situation and Efforts in Khyber Pakhtunkhwa

KP's population comprises nearly 14 percent of Pakistan's total population. Maternal mortality accounts for a significant proportion of deaths among WRA in the province: PDHS 2006-2007 found about 16 percent of deaths among WRA to be pregnancy-related. The MMR estimate for KP, in PDHS 2006-2007, was 275 per 100,000 live births. Approximately 1,700 women die each year in KP due to pregnancy-related factors. The risk of maternal death is higher in pregnancies that occur too early, too late, or too frequently (Population Council 2014).

The KP Health Sector Strategy 2010-2017 and the newly announced Population Policy 2016 both recognize improving survival of mothers, infants and children as key priority areas. A focus on increased equitable access to maternal and child health care and improvement in quality of care is one of the four key elements of the government's health care strategy identified in the KP Integrated Development Strategy 2014-2018.

A number of projects have been initiated in KP for improving maternal and child health and, since 1991, some maternal health indicators have improved. More than half of the pregnant women in KP received antenatal care (ANC) in 2012—a rise of 43 percent since 1991. Overall, the proportion of women assisted by a skilled birth attendant (SBA) during childbirth has also risen more than threefold, from 12 percent to 48 percent between 1991-2012, although wide disparities exist between urban areas (70%) and rural areas (44%) of the province (PDHS 2012-2013).

The Provincial Health and Nutrition Program (PHNP) was established in March 2013 to support delivery of an "Essential Health Services Package" (EHSP) by the KP government through earmarked non-budget support

financial aid (£130 million). The program aims to improve health outcomes in reproductive, maternal, newborn and child health (RMNCH) as well as nutrition. The KP government has also initiated a major mother and child health care project in 12 relatively underserved districts of the province. This project will integrate the Expanded Program on Immunization, Lady Health Workers Program (LHWP), Nutrition Program, and National MNCH Program, and use incentives to encourage facility-based deliveries.

A Social Health Protection Scheme entitled "*Sehat Sahulat*" was launched by the Government of Khyber Pakhtunkhwa in 2015. Financially supported by the German government (through KfW Development Bank), it is a five-year program that aims to improve the health of the target population by increasing its financial access to quality health services. A premium of Rs 1,700 per year will be paid for each family to an insurance corporation. Each registered individual will initially get coverage of up to Rs 25,000 per year, which will be increased to Rs 50,000 in 2016. The KP government contributed only 5 percent of the total premium in 2015.

Under the Reforms Initiatives in KP, a special program was launched in June 2014, the "Chief Minister's Special Initiative for Mother and Child Health," which is being implemented by the Reforms Implementation Cell. The aim of the program is to increase the proportion of deliveries with skilled birth attendance to improve mother and child health. Through this program, Rs. 2,700 is provided to every pregnant woman who seeks health care from government health facilities and community midwives, including free medicines. This incentive covers four ANC check ups, delivery, and a postnatal care (PNC) check up, and is paid to the beneficiaries in six installments corresponding to these stages (Reforms Implementation Cell 2014). The incentive has benefited around 103,323 mothers in 10 focus districts and is now to be scaled up in all districts of KP.

In Haripur and Nowshera districts, GIZ Pakistan is assisting the Government of Pakistan in strengthening the capacities of the health system to ensure currently effective, efficient, client-oriented, and affordable reproductive, maternal, newborn and adolescent health care provision. In these two districts, the WHO Safe Childbirth Checklist is being administered in health facilities to improve reproductive, maternal and newborn health (RMNH) outcomes.

1.4 Feasibility of MADE-IN/MADE-FOR MIMF Method in Pakistan

In Pakistan, the MIMF technique was first tested as a pilot in Chakwal district from January through April 2014, later scaled up in six districts of Punjab province for a provincial MMR estimate carried out in 2014 and 2015. All of these studies were implemented by Population Council. The Punjab study estimated the MMR for Punjab to be 302 per 100,000 live births (95%, CI 258-346). The majority of maternal deaths (84%) were due to "direct causes," with postpartum haemorrhage (PPH) the leading cause (43%). In October 2015 the approach was tested yet again in KP province, in two districts.

Our experience demonstrated that the method is also useful as an advocacy tool for increasing voice and accountability at the community level. In districts where the studies were conducted, the orientation for religious leaders helped them develop a better understanding of women's health issues, and they can now influence public opinion through their discussions with men. The entire district administration and health officials became more cognizant of the maternal health problems faced by rural women and are now considering measures by which such deaths can be averted. District Officers (Community Development), Additional District Officers (Coordination), and UC secretaries and their *Naib Qasids* became fully familiarized with the process of collecting data and could continue using it in the future.

The major advantages of the technique, some of which were identified during the course of the studies in Pakistan, are:

- For the first time, at least in our knowledge, it has become possible to develop a district level estimate of maternal mortality and to identify direct and indirect causes of maternal deaths.
- As the methodology is based on a census of maternal deaths, it is not susceptible to the need for calculating of confidence intervals and concerns about sampling errors are obviated. The technique can also be

applied to measure maternal deaths prospectively, providing an ongoing regular way of measuring maternal deaths over longer time periods.

- A major benefit of using this approach is that, in the long run, the community-based informant networks can be used to report additional events, e.g. infant deaths, case detection, and incidence of communicable diseases. They could also play a role in controlling epidemics, especially by identifying the source of outbreaks. Information collected at the union council (UC) level could be collated at the district level and communicated to all relevant departments as well as the provincial headquarters.
- In addition, health planners can utilize this information to monitor progress in the area of maternal health and utilize data from the verbal autopsies to improve maternal health outcomes by taking better targeted action to prevent further maternal deaths in their areas.

1.5 Study Objectives

Primary objectives of the study are:

- To apply the MADE-IN/MADE-FOR method for a provincially representative current estimate of MMR for KP and to identify the causes of deaths and circumstances.
- To build capacity in KP for routine district and provincial maternal mortality estimates, and sustainably.

Secondary objectives of the study include:

- To identify networks available in KP rural and urban communities that can act as key informants for routine information on maternal deaths;
- To determine differential characteristics of these deaths by economic and geographic distribution to better understand the predisposing factors of women's deaths during pregnancy, delivery, and postpartum; and
- To assess the mechanisms that can be employed within communities to determine the causes of deaths.

2. Study Design

The study entailed scaling up of the MADE-IN/MADE-FOR approach in KP. In the MADE-IN/MADE-FOR method, collection of data about maternal mortality essentially comprises two main steps:

- **Listing of deaths by informants (MADE-IN):** Village informant networks identify WRA deaths in their communities; specific listing forms developed for this purpose are used to collect data
- **Follow up with verbal autopsies (MADE-FOR):** Follow up interviews are then conducted with family members of the deceased to confirm whether their deaths were maternal or non-maternal, and to explore the causes and circumstances of their deaths.

Apart from estimating MMR in six districts and demonstrating the applicability of the MADE-IN/MADE-FOR approach, the study also aimed to explore avenues for continuing such estimation efforts on a sustainable basis. It established suitable modes of operation for 'enrolling' community-based informant networks, efficiently arranging meetings, and determining in detail, the steps required for such studies. We were then able to recommend the most suitable networks for each district separately.

The study was conducted in Haripur, Nowshera, Mansehra, Swabi, Kohat, and DI Khan districts, to present a full census of deaths among WRA for the two year period of January 2013 through December 2014.

This section describes how key stages of the study were conducted from sampling to data analysis.

2.1 Sampling

For calculating the MMR estimate for KP, the province was stratified into three geographical regions: North (consisting 9 adjacent districts), Central (comprising 9 districts), and the South (consisting 7 geographically adjacent districts). The derivation of these regions was based on the distribution of the seven administrative "divisions."[2] Precedents exist of such regional divisions of the province in other social sector related studies and research initiatives

A two-step approach was then adopted to derive a sample of districts for each region. In the first step, the regions were divided into "more urbanized" and "less urbanized" segments. For this, districts in each region were listed in descending order from most to least urbanized, based on urban-rural population proportions for 2015 reported in Development Statistics of Khyber Pakhtunkhwa 2015 (Bureau of Statistics Planning and Development Department, Government of KP 2015). Districts in the top 'half' of each list were labeled as the more urbanized districts, while those in the other half were labeled as less urbanized. The segmentation is shown in Table 2.1 (page 24). The balanced inclusion of more and less urbanized districts was intended to capture the intrinsic differences among districts in aspects such as literacy, access to health facilities, and economic parameters.

As the total universe of the population—in this case, the 25 districts in KP, was small, standard sample size calculation approaches (based on large sample statistical methodologies) could not be applied. Therefore, a proportional quota sampling approach was adopted to ensure "equal" representation from each segment and derive a representative sample of districts from each region. Accordingly, using simple random sampling, one district was selected from each of the two segments in each of the three regions, bringing the total sample size to six districts. The selected districts include Swabi (more urbanized) and Mansehra (less urbanized) in the North; Nowshera (more urbanized) and Haripur (less urbanized) in the Center; and Kohat (more urbanized) and DI Khan (less urbanized) in the South.

Notably, the central districts, Nowshera and Haripur, were selected purposively because these were the GIZ project implementation districts. As mentioned, the MADE-IN/MADE-FOR method was earlier piloted in these districts to calculate MMR before the decision to scale up the approach in KP. Both districts fulfill the current study's criteria—situated in the central part of the province, one is more urbanized and the other less urbanized,

[2] In Pakistan, a "division" refers to an administrative demarcation of a cluster of adjacent districts by provincial governments.

and both have a population of more than one million people (Population Council 2016).

Representation of more than 10 percent of the total population in the sample is usually considered adequate for ensuring the statistical robustness of estimates derived. This sample comprised approximately 24 percent of the total universe of districts in KP. The total population of the six study districts is about eight million, or 29 percent of KP's total population reported in 2015. The sample was therefore considered adequate for yielding statistically robust estimates of MMR in KP. In all, there were 288 UCs in the study area.[3]

Table 2.1: Distribution of districts in KP by geographical region, population, and level of urbanization

	Districts	Total Population	Urban Population	Rural Population	Urban, %	Rural, %
	Khyber Pakhtunkhwa	**29,607**	**5,113**	**24,494**	**17.3**	**82.7**
	Region 1 (North)	**10,076**	**926**	**9,150**	**9.2**	**90.8**
1	Swabi	1,702	313	1,389	18.4	81.6
2	Swat	2,234	348	1,886	15.6	84.4
3	Chitral	490	47	443	9.6	90.4
4	Lower Dir	1,285	79	1,206	6.1	93.9
5	Mansehra	1,739	102	1,637	5.9	94.1
6	Upper Dir	923	37	886	4.0	96.0
7	Kohistan	480	0	480	0.0	100.0
8	Battagram	464	0	464	0.0	100.0
9	Shangla	759	0	759	0.0	100.0
	Region 2 (Central)	**13,425**	**3,345**	**10,080**	**24.9**	**75.1**
1	Peshawar	3,702	1725	1,977	46.6	53.4
2	Nowshera	1,435	344	1,091	24.0	76.0
3	Mardan	2,442	530	1,912	21.7	78.3
4	Abbottabad	1,204	260	944	21.6	78.4
5	Charsadda	1,672	284	1,388	17.0	83.0
6	Haripur	1,007	125	882	12.4	87.6
7	Malakand	802	77	725	9.6	90.4
8	Tor Ghar	185	0	185	0.0	100.0
9	Buner	976	0	976	0.0	100.0
	Region 3 (South)	**6,106**	**842**	**5,264**	**13.8**	**86.2**
1	Kohat	980	266	714	27.1	72.9
2	Hangu	547	121	426	22.1	77.9
3	Lakki	840	119	721	14.2	85.8
4	Tank	406	51	355	12.6	87.4
5	DI Khan	1,488	174	1,314	11.7	88.3
6	Karak	752	58	694	7.7	92.3
7	Bannu	1,093	53	1,040	4.8	95.2

2.2 Site and Coverage

The study covered 1,577 villages and urban clusters in all 19 tehsils of these districts. In all, there were 288 UCs in the study area. We sought to capture all WRA deaths for January 2013 through December 2014.

[3] A Union Council (UC) is the smallest local governmental administrative unit in Pakistan.

Table 2.2: Key RH indicators for study districts and KP

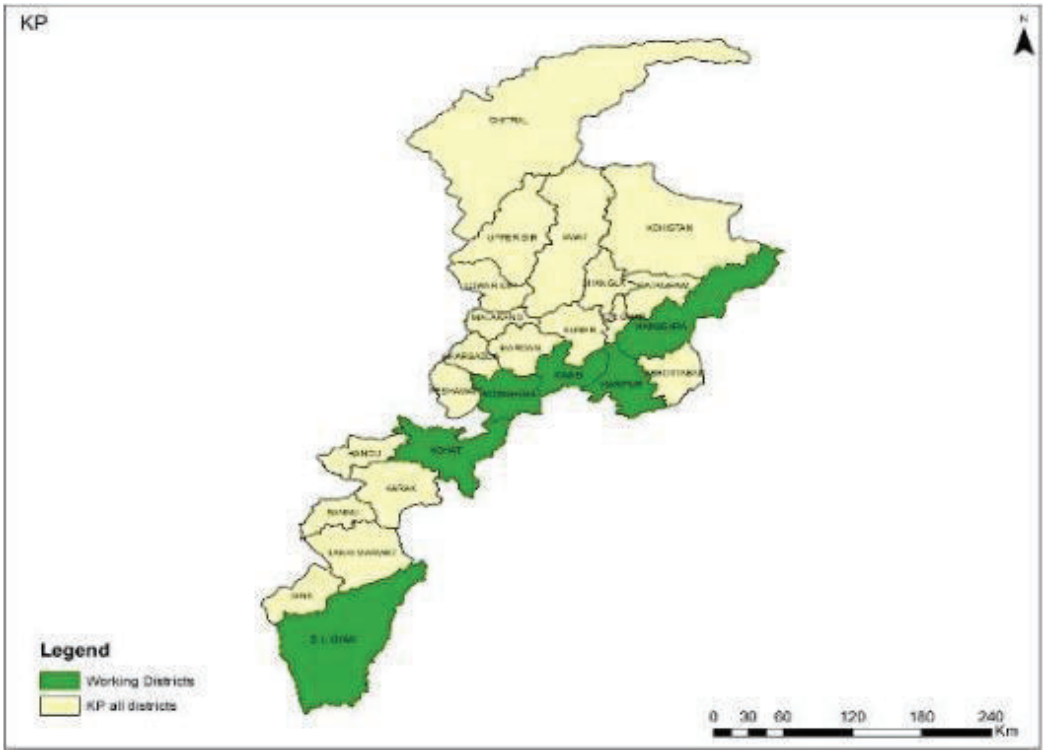
	Total fertility rate (TFR)	Contraceptive prevalence rate (CPR)	Unmet need for family planning	Percent distribution of delivery by an SBA	Infant mortality rate (IMR)	Male literacy rate (10 years and older) 2014-15
KP	3.9	28.1	25.5	48.3	58	71
Districts						
Swabi	—	40.4	30.9	37.9	—	65
Mansehra	—	36.9	30.0	36.4	—	78
Nowshera	—	46.8	18.9	55.5	—	71
Haripur	—	40.1	26.7	48.6	—	82
Kohat	—	32.6	30.3	48.8	—	74
DI Khan	—	31.5	30.3	21.6	—	60

Sources: Figures for KP are from PDHS 2012-13, while figures for individual districts are from the Multiple Indicator Cluster Survey (MICS), 2008 and Pakistan Social and Living Standards Measurements Survey 2014-15.

In order to calculate the MMR, we first estimated the denominator population, i.e. live births. The denominator population of total live births was based on the size of the estimated WRA population and the age-specific fertility rate. To calculate the number of live births, an estimate of the female population aged 12 to 50 and the age-specific fertility rate were required. These were obtained as follows:

- Social and demographic indicators for KP are published annually in the *Development Statistics of Khyber Pakhtunkhwa.* This publication also provides yearly population projections at district level. The population for the year 2015 for each sample district was obtained from this source.
- The proportion of the female population ages 12 to 50 in the total population was calculated using the district pattern presented in Pakistan Social and Living Standards Measurement Survey (PSLMS) 2012-2013. This survey is representative at district level and is conducted by the Pakistan Bureau of Statistics.
- To ascertain the number of live births, the Age-Specific Fertility Rates at the regional level were calculated using PDHS 2012-2013 micro data.

Figure 2.1: Map of KP showing location of study districts



2.3 Identification of Informant Networks

As a first step in selecting the key informants, briefings were given on the study to provincial and district health and administration officials. Two such meetings were held in each district in August and September 2016. Officials' assistance and cooperation was sought for conducting the study. The extensive discussions helped in identifying and finalizing the choice of informant networks to be enlisted.

The potential networks identified included community midwives, schoolteachers, TBAs, vaccinators, religious leaders, *Nikah* (marriage) registrars, male and female councilors, and LHWs. For its key informants, the study team opted to use the networks of LHWs; religious leaders, including village mosque imams; male and female lady councilors; and *Nikah* registrars—the functionaries who perform and solemnize marriages. All four networks were used in each of the districts.

LHWs provide primary health care services (including health promotion, disease prevention, curative and rehabilitative services, and FP) to the residents of rural areas and urban slums. The LHW network was selected in all districts since it covers the entire country (albeit with variation in specific local coverage). Each LHW provides services to a well-defined catchment population of 1,000. The quality of care provided by LHWs in communities is maintained by a well-established supportive supervisory network from the community to provincial levels. The monitoring and supervisory cadres include Lady Health Supervisors (each supervises 20 to 25 LHWs), Field Program Officers (FPOs), and well-integrated district and provincial management. LHW coverage in KP was increased recently from 52 to 60 percent by hiring new LHWs. Nearly 40 percent of the province is still not served LHWs.

The independent network of religious leaders was selected keeping in mind the universal availability of religious leaders and their standing in the community. Since they also lead funeral prayers, it was assumed they would be fairly knowledgeable about recent deaths in their area. Similarly, *Nikah* registrars and male and female councilors were included as they hold influential positions in their communities, are well respected and, being locals of the area, are knowledgeable of major events in the community.

TBAs were not included as informants since they tend to be mostly illiterate and would not be able to develop lists of deaths. Moreover, a conflict of interest could arise in cases where a TBA is responsible for the death of a woman and, therefore, reluctant to report it. Other networks such as vaccinators and schoolteachers were also not considered as they are often not local residents and therefore cannot provide reliable information.

Two informant networks were used in each tehsil of all six districts. In LHW-covered areas, the LHW network and one additional 'independent' network, i.e. religious leaders, *Nikah* registrars or male and female councilors, was used. In communities or areas not covered by LHWs, two of the other three networks, i.e. religious leaders, *Nikah* registrars, or male/female councilors, were used.

2.4 Participation and Capacity Building of Government Stakeholders

Briefing for District and Provincial Managers

At the provincial level, briefing sessions were held with the Director General for Health, the Director of Reproductive Health, and the Director General of Local Government and his deputy. Two separate sessions were held in Peshawar, the provincial headquarters. At the district level, meetings were held with the Executive District Health Officer, the Deputy District Health Officer, MNCH Program Coordinator, District Coordinator of the LHW program, district Coordination Officers (DCOs), the district officers of local government.

These briefings provided an overview of the study, allowed responses to any questions or concerns of the officials, and obtained their support and investment of their departments.

Capacity Building of District Government Staff

Training sessions built district health and local government staff's capacities to lead data collection activities. Separate sessions were conducted with the DHIS coordinator, statistical assistants and the district coordinators and assistant district of LHW and MNCH coordinators. Programs and their relevant staff to explain the application of the capture-recapture technique, organization of preparatory and listing meetings with community informant networks, and use of the interVA software. All software and study tools were shared with district health officials. Most importantly, trainings were conducted to develop the capacity of the Lady Health Supervisors (LHSs) in Kohat, DI Khan, Swabi, and Mansehra to use the WHO verbal autopsy form, modified by Population Council to obtain additional information on circumstances of maternal deaths. Punjab's Health Department is now using this modified form to conduct Verbal Autopsies. LHS trainings were held at district Health Development Centres. The District Health Officer, LHW District Coordinators, and MNCH programs actively participated in these sessions. In total 91 LHSs were trained. Community informants received briefings at the office of their UC secretary.

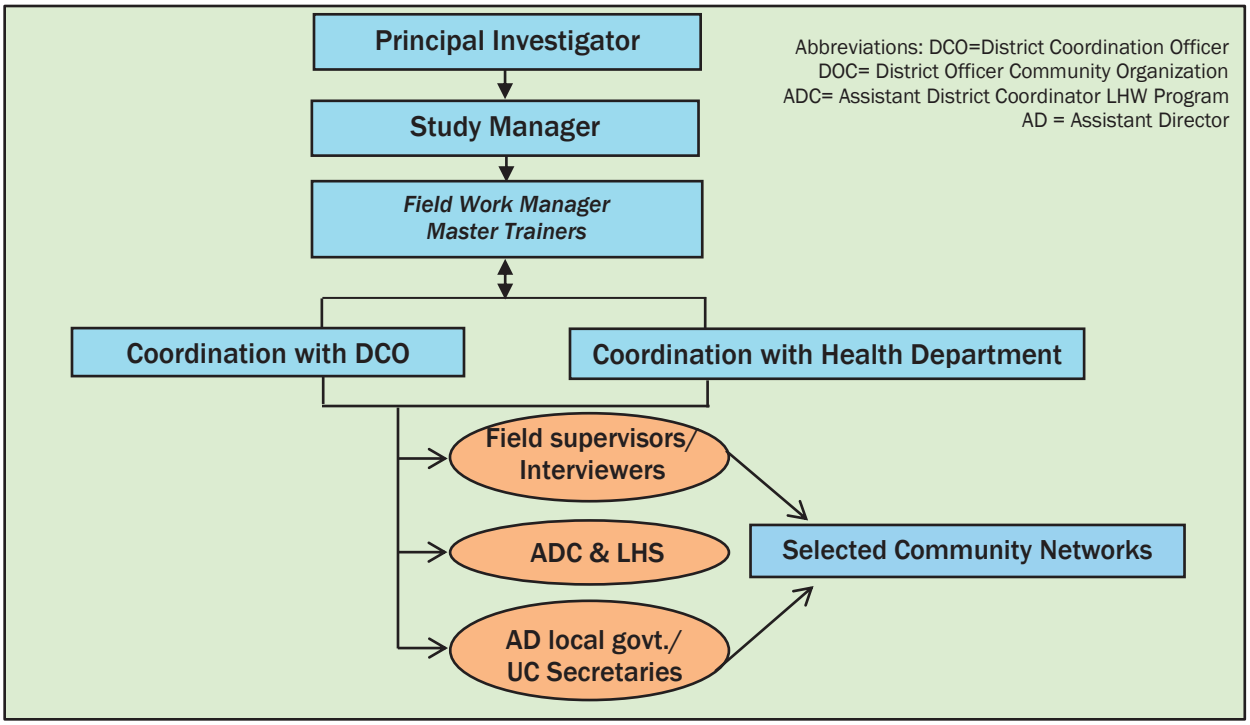
Thank you very much for sharing the MMR data. I am very much obliged. On behalf of DHO and the department of health thanks for doing this great job. It was very much needed and we are very much obliged it will really add an (additional information) to our DHIS data. ***District Coordinator, LHW Program, Nowshera***

Thanks a lot for sharing such useful (data collection) formats. These will help us a lot in gathering such data in (future) in our district. ***District Coordinator, LHW Program, DI Khan***

Study Team and Organization of Field Work

Five four-member teams were constituted in each district, with three teams for the MADE-IN part including assembling, briefing, and obtaining data from key informants. LHSs carried out the MADE-FOR part, visiting the homes of deceased women and conducting VAs to identify possible causes of death. Field activities were supervised by field coordinators, the study manager, and PI. Every day, after field work, each team conducted a debriefing session on that day's data collection and resolved any problems. District administration and health staff were fully involved in each stage, to facilitate the process's institutionalization and sustainability. The study manager was responsible for overseeing and monitoring all the field based activities while the field coordinator was responsible for hiring field staff, managing field logistics, and handling problems during field work.

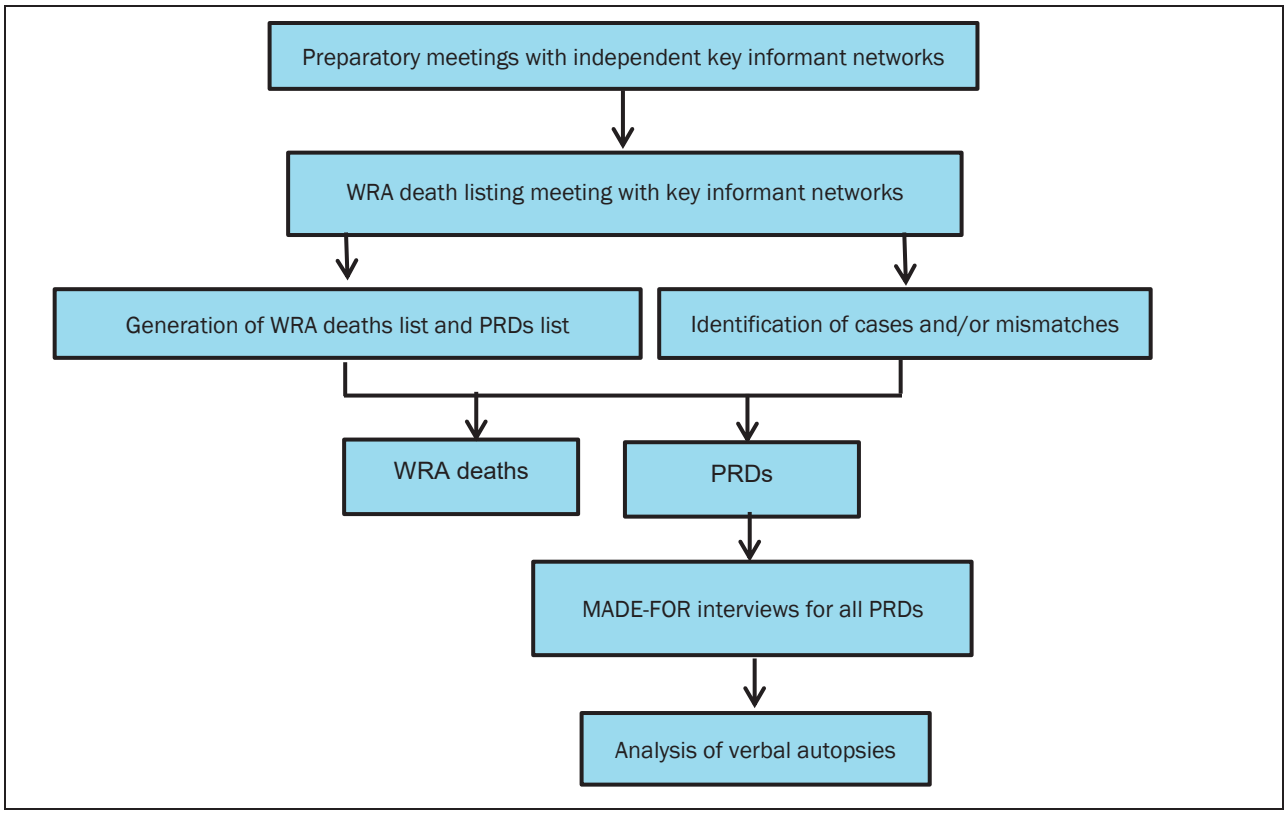
Figure 2.2: Field work organization



2.5 Data Collection

Figure 2.3 summarizes the activities for the study's data collection and its two main stages, MADE-IN and MADE-FOR components. MMR data for Nowshera and Haripur were collected during the earlier pilot study (September 2015 to March 2016); it was included in the analysis along with data from the four other districts (Population Council 2016).

Figure 2.3: Sequencing of data collection activities (Oct 2016–Jan 2017)



MADE-IN: Listing of Deaths by Community Informants

Data were gathered in meetings with informant networks in each UC. Local researchers trained the selected informants in collecting data and listing possible deaths of WRAs as well as PRDs. The MADE-IN component of the data collection process entails four main steps:

1. Preparatory Meeting with Identified Informants: A series of preparatory meetings were held with identified key informants for *tehsil*s and UCs at the offices of UC secretaries, while LHWs were assembled at Basic Health Units (BHUs), Rural Health Centers (RHCs), and other health facilities in the catchment areas. These meetings:

- Introduced the identified informant networks to the study's objectives and methodology;
- Sought their cooperation in all data collection activities, including the type of information to be gathered;
- Explained the ethical considerations that apply when collecting information, especially how to seek informed consent and provide assurance of confidentiality; and
- Decided upon a time and venue to reconvene for the WRA death listing meeting.

During the meetings, each informant was given a WRA Death Listing Form. They were asked to use the forms to document information on the deaths of women ages 12 to 50 who lived in their UC. Additional information collected included whether a woman had died during pregnancy, delivery, or within six weeks postpartum; date and place of death; age; name of husband; and residential address (Appendix 8.1). Informants were provided a comprehensive briefing on all aspects of the study, especially the importance of safe motherhood, the status of

women in religion and society, and the poor maternal health situation in Pakistan.

2. Data Collection by Informants: After the preparatory meetings, informants were asked to collect the data and return it with their completed listing forms within three days. Informants worked individually.

3. WRA Death Listing Meeting: The area's field coordinator arranged a separate listing meeting with each network at the union council office and health facilities. On average, 25 to 30 informants were invited to a WRA death listing meeting. These meetings were mostly conducted about two or three days after the first meeting.

During the meeting, participants discussed all the deaths they had listed, collectively agreed on a 'consolidated' list of WRA deaths, and identified likely PRDs. The address of each deceased woman's household was also verified to ensure there was no missing information. To ensure the coverage of deaths, the MADE-IN process also included a visit to village informants who had not attended the meeting.

4. Following the WRA death listing meetings, field supervisors compiled and completed summary forms, which registered:

- Deaths reported by one informant but not by others
- Cases of disagreement on whether the death was pregnancy-related.

Table 2.3: Participation of key informants in listing meetings–MADE-IN

District	Variable	LHW	Religious Leader	Male/Female Councilor	*Nikah* Registrar	Total
Nowshera	No. of Informants	751	676	860	80	2,367
	No. of Listing Meetings	14	37	31	28	129
	Response Rate (%)	100	100	100	100	100
	Refusal Rate (%)	0	0	0	0	0
Haripur	No. of Informants	616	614	341	143	1,918
	No. of Listing Meetings	32	30	20	5	87
	Response Rate (%)	100	94	100	100	98
	Refusal Rate (%)	0	6	0	0	2
Mansehra	No. of Informants	824	229	1,164	478	2,695
	No. of Listing Meetings	43	11	56	37	147
	Response Rate (%)	100	84	93	92	92
	Refusal Rate (%)	0	16	7	8	8
DI Khan	No. of Informants	873	373	1,389	142	2,777
	No. of Listing Meetings	26	28	84	21	159
	Response Rate (%)	99	100	96	96	98
	Refusal Rate (%)	1	-	4	4	2
Swabi	No. of Informants	761	787	1,276	222	3,046
	No. of Listing Meetings	8	49	55	52	164
	Attendance Rate (%)	100	85	92	95	93
	Refusal Rate (%)	0	15	8	5	7
Kohat	No. of Informants	288	584	854	292	2,018
	No. of Listing Meetings	8	30	30	30	98
	Response Rate (%)	100	89	87	89	91
	Refusal Rate (%)	0	11	13	11	9

MADE-FOR: Follow up with Verbal Autopsies

The aim of the MADE-FOR component of the study was to gather information on the circumstances and causes of women's deaths. Through the listing meetings, lists of WRA deaths for each village were developed with information on the time of death in relation to pregnancy status. The lists included information on women usually resident in the village as well as those resident elsewhere but living in the village at the time of death. On the basis of information verbal autopsies were conducted for all pregnancy related deaths.

To build the capacity of the health department and ensure future sustainability, we used Lady Health Supervisors to conduct the verbal autopsies using the modified WHO questionnaire for adult deaths.

During the home visits, detailed information was obtained on each death, using the revised WHO VA 2012 questionnaire (Appendix 8.2), with additional questions on the family's socio-economic characteristics, health-seeking behavior, and quality of care. The verbal autopsies were conducted with the deceased's next of kin.

Together, these two steps—MADE-IN and MADE-FOR—provided village estimates of the number of WRA deaths, and in particular the number of PRDs and maternal deaths January 2013 through December 2014.

2.6 Data Management and Analysis

All VA questionnaires and listing forms were cross checked by the data collectors themselves before being double-checked by the field supervisor. The next steps involved a recheck by the team leader and a final check by the study manager. A data entry template using an Excel program was developed for entering the listing data; CsPro (version 6.1) was used to enter the VA data.

Estimates of cause of death were obtained using a computerized algorithm compatible with the WHO questionnaire, InterVA (Fottrell et al. 2007). The InterVA data was independently verified by a health supervisor in each district. Final verification was by a consultant at the Department of Gynaecology and Obstetrics, Pakistan Institute of Medical Sciences, Islamabad.

2.7 Quality Assurance

A number of measures were instituted to ensure that the study maintained the highest quality standards, both in data collection and analysis. These measures are discussed below.

Formation of technical advisory group: A technical advisory group was formed and notified by the Director General Health Services, KP. The group provided technical support and guidance during the conceptualization and implementation of the pilot study. Meetings with members of the group were conducted before and after the data collection.

Quality assurance: Quality assurance was ensured through the following measures:

- **Standard operating procedures:** Population Council developed a field manual and standard operating procedures for all activities.
- **Determination of roles and responsibilities:** Team members and field coordinators' roles and responsibilities were clearly identified and each team member was provided written instructions s/he was required to follow.
- **Training:** The training component included training of field staff in conducting preparatory and listing meetings and obtaining data from the network participants, pretesting the data collection, and reviewing the pretesting and adapting the methods and tools accordingly. Field interviewers received eight days' training in the use of listing forms and VAs. This included sessions on research protocol, ethics, obtaining informed consent, maintaining privacy during the interview process, and interviewing techniques. The training focused on how to adhere to the standard operating procedures and study objectives.

Monitoring: The field manager remained in the field throughout the duration of the study. Each field team had a team supervisor to ensure that data quality standards were met. The PI, project manager, and field coordinators visited randomly selected villages in each *tehsil* regularly to ensure all protocols were followed. They randomly selected and scrutinized the completed questionnaires during monitoring visits to check for completeness, data accuracy, and to determine any re-interviewing requirements.

2.8 Ethical Considerations

Ethical approval was obtained from the National Bioethics Committee of Pakistan (Appendix 8.3). Permission was also obtained from the Director General for Health, directors general of local governments, district Health officers, and assistant directors of local governments (Appendix 8.4).

Informed consent was obtained from all study participants after describing in detail the issues related to the study. Interviewers described the scope and purpose of the questionnaire and its approximate duration, and stressed that participation was entirely voluntary. The interviews were conducted in private and out of the hearing of others. When these conditions could not be met, interviewers offered participants an alternative venue or time to complete the questionnaire. All individual data were treated in strict confidentiality.

3. Study Results: Maternal Mortality in KP: Socio-Demographic Features, and Causes of Maternal Deaths

This section presents the findings of the study, including the number of pregnancy-related deaths identified, socio-demographic characteristics of the deceased women, and the estimated maternal mortality ratio for KP. The causes of and circumstances surrounding the PRDs are also analyzed. The discussion is preceded by definitions of key terms to facilitate a clear understanding of the findings.

3.1 Basic Definitions

A **pregnancy-related death** (PRD) is defined as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death" (WHO ICD-10, 2012). This definition is sometimes referred to as the time-of-death definition of maternal death and does not need to differentiate accidental/incidental causes from obstetric causes.

In its International Statistical Classification of Diseases and Related Health Problems (1992, ICD-10), WHO defines a **maternal death** (MD) as "the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes." The definition implies the inclusion of maternal deaths from direct and indirect obstetric causes of death (WHO, 2012).

The **maternal mortality ratio** (MMR) is the number of female deaths per 100,000 live births from any cause related to or aggravated by pregnancy or its management in specific period of time.

A **late maternal death** is defined as "the death of a woman from direct or indirect obstetric causes more than 42 days but less than one year after termination of pregnancy" (WHO ICD-10, 2012).

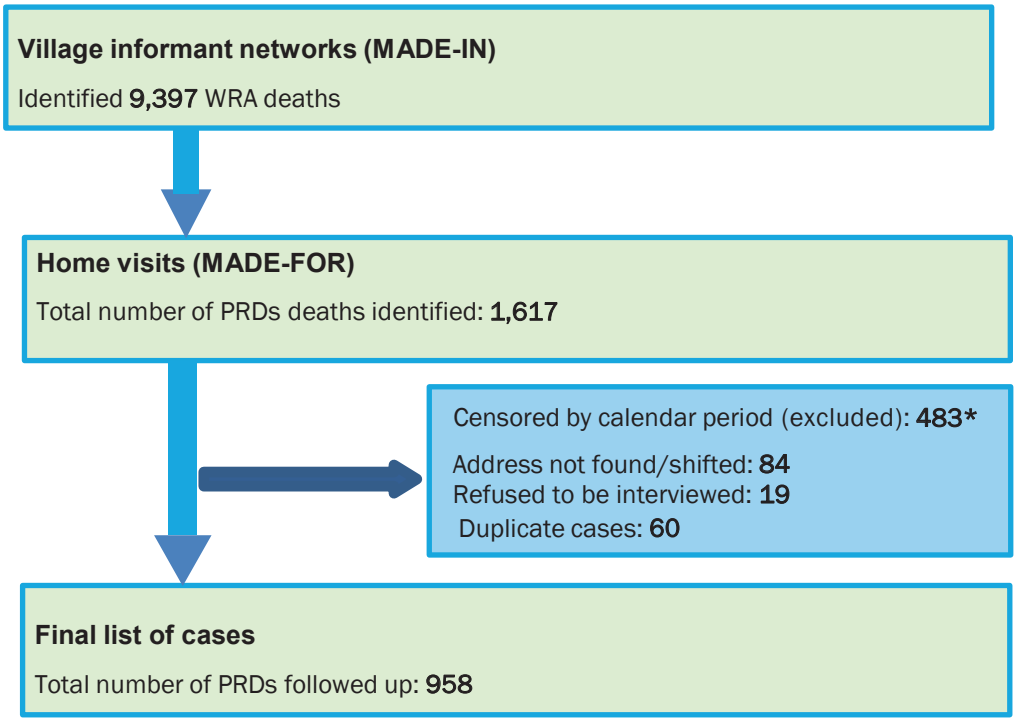
The **maternal mortality rate** is the number of maternal deaths in a population divided by the number of WRA. It captures the likelihood of both becoming pregnant and dying during pregnancy (including deaths up to six weeks after delivery).

3.2 Identification of Pregnancy-Related Deaths

Collectively, in the six sampled districts, 9,397 WRA deaths were identified for the period 2013 to 2014. Of these, 1,617 were identified as PRDs based on the listing data (Figure 3.1). The next step was to follow up the PRDs through verbal autopsy interviews with the deceased women's relatives—in most cases, their siblings, in-laws, parents, other relatives, or spouses to ascertain the cause of death.

Post-autopsy, it was found that, in 483 cases, the deaths had not taken place in the last two years and these were therefore excluded. In addition, 19 respondents refused to participate; in 122 cases, the address was not found; and in 60 cases the same individual had been reported twice due to incorrect capture of the name of the deceased. After the exclusion of these cases, 958 PRDs remained for the final analysis.

Figure 3.1: **Number of deaths identified among women of reproductive age at various stages of study**



* These cases were excluded as they did not meeting the inclusion criteria that required the deaths to have taken place in the period 2013-2014.

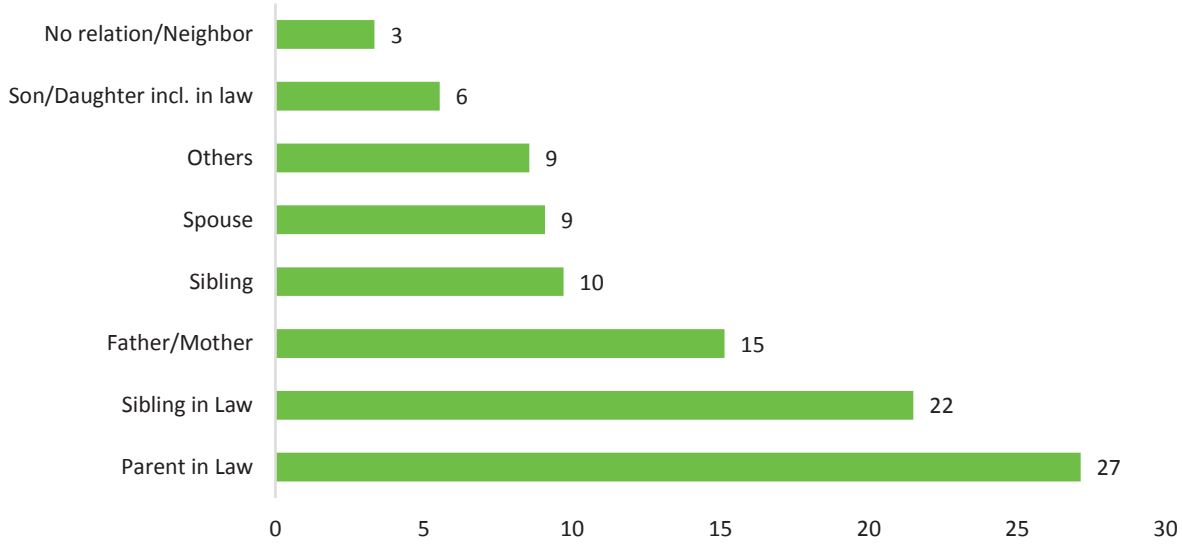
The majority of deaths were identified by LHWs (Table 3.1). LHWs are tasked with identifying maternal deaths as part of their routine work, which are then reported to their supervisors and the district coordinator LHW program prepares a list of collected data. The reported number of deaths were obtained from the district coordinator of the LHW program. For the study, the LHWs were provided a refresher training in identifying approximately 50 percent more maternal deaths. As the table shows, the LHWs improved their performance by identifying more PRDs than they had previously. There was a further improvement in the identification and reporting of deaths after the inclusion of additional informant networks.

Table 3.1: **Number of deaths reported by informant networks and improvement in LHWs' reporting of deaths**

District	Deaths reported by LHWs before study	Deaths reported by LHWs during study	Improvement in reporting	Additional cases identified by LHWs (Difference in deaths identified before and after study)	Deaths reported by other networks during study	Total deaths reported
	N	N	%	N	N	N
Swabi	51	84	39.2	33	94	178
Mansehra	53	88	66.0	35	62	185
Nowshera	41	97	57.7	56	58	155
Haripur	27	62	56.4	35	64	126
Kohat	11	27	59.2	16	65	92
DI Khan	48	117	58.9	69	105	222
Total	231	475	51.4	244	448	958

Figure 3.2 shows the distribution of the verbal autopsies conducted by type of respondents. The majority (nearly half) of VA respondents were in-laws of the deceased, followed by parents, siblings and spouses. In selecting VA respondents, the emphasis was on seeking respondents who had been present at the time of the last illness of the deceased women.

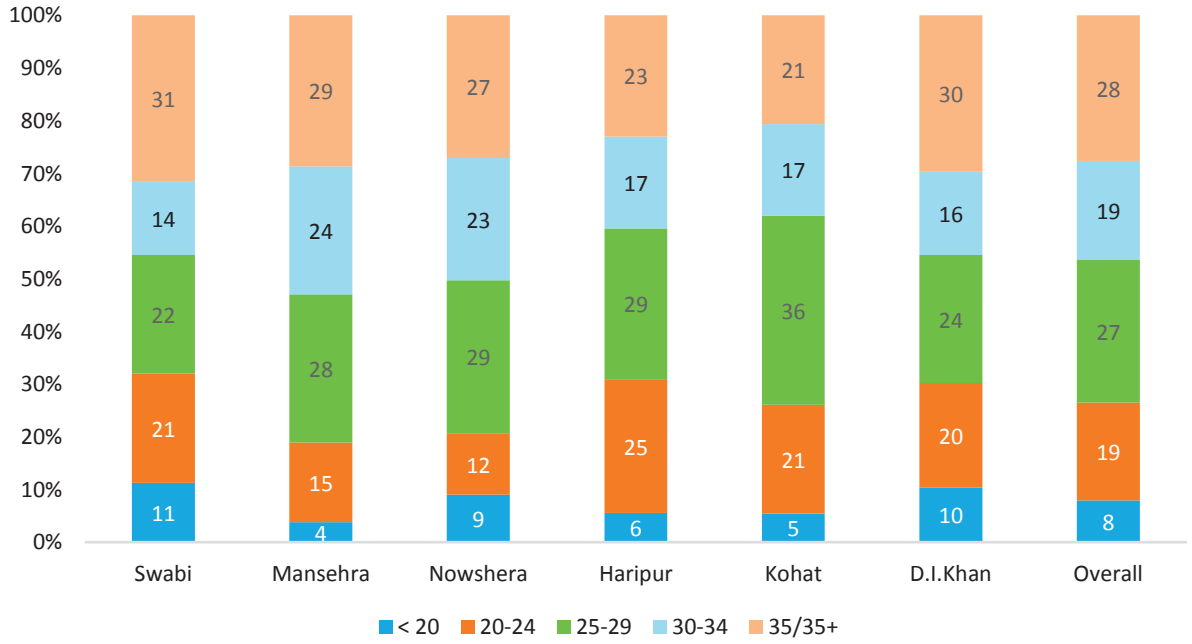
Figure 3.2: Distribution of verbal autopsy respondents, by type



3.3 Socio-Demographic Characteristics of Deceased Women

The age distribution of the 958 women whose PRDs were covered by the study is presented in Figure 3.3.

Figure 3.3: Distribution of deceased women by age, by district



Overall, the mean and median age of the deceased women was 29 years. The largest group (27.5%) of women was in the 35 years or more age bracket and the smallest group (8%) in the less than 20 years age bracket.

Education level influences care-seeking behavior, RH intentions, contraceptive use, and hygiene practices within the home (Cleland 2001 and Bongaarts 1999). As Figure 3.4 indicates, nearly two thirds of deceased women had no education; one fifth had completed primary schooling, and only 13 percent in the six districts had completed secondary and higher schooling. Illiteracy was highest in DI Khan, where more than four fifths of women were not educated, while in Nowshera and Swabi more than three fifths were uneducated. More than half of deceased women were not educated in Kohat, and slightly less than half in Mansehra. The literacy level was better in Haripur than other districts. According to the 2014-2015 PSLM, female literacy for KP is 35 percent, while this study determined a literacy rate of 39 percent.

Figure 3.4: Proportion of deceased women who were literate, by district

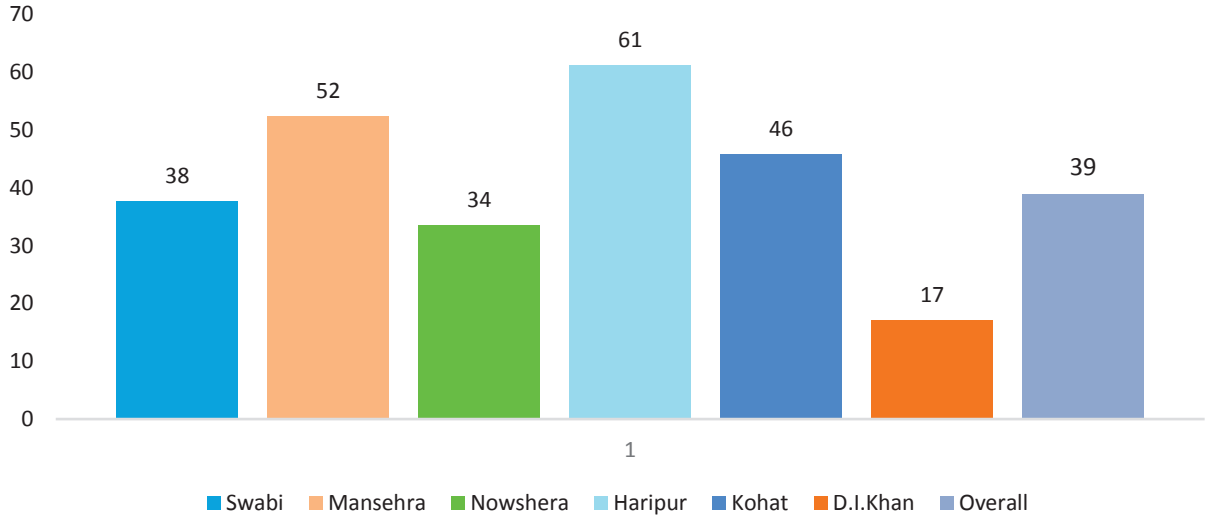
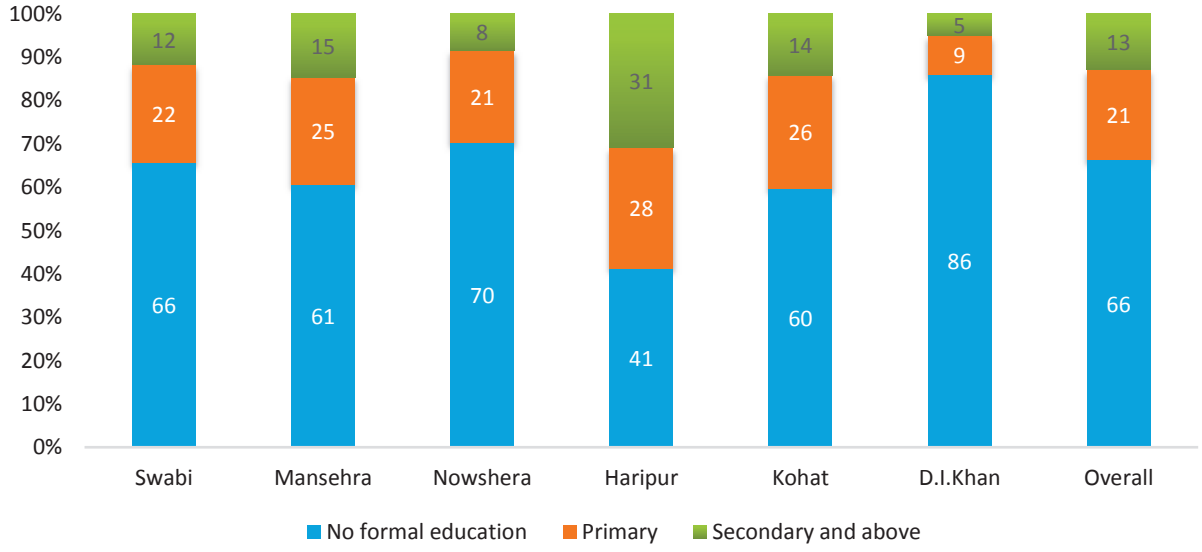


Figure 3.5: Distribution of deceased women by level of schooling, by district



According to Table 3.2 the literacy levels of the study population are in close proximity to the literacy levels of the KP province obtained by PDHS 2012-2013.

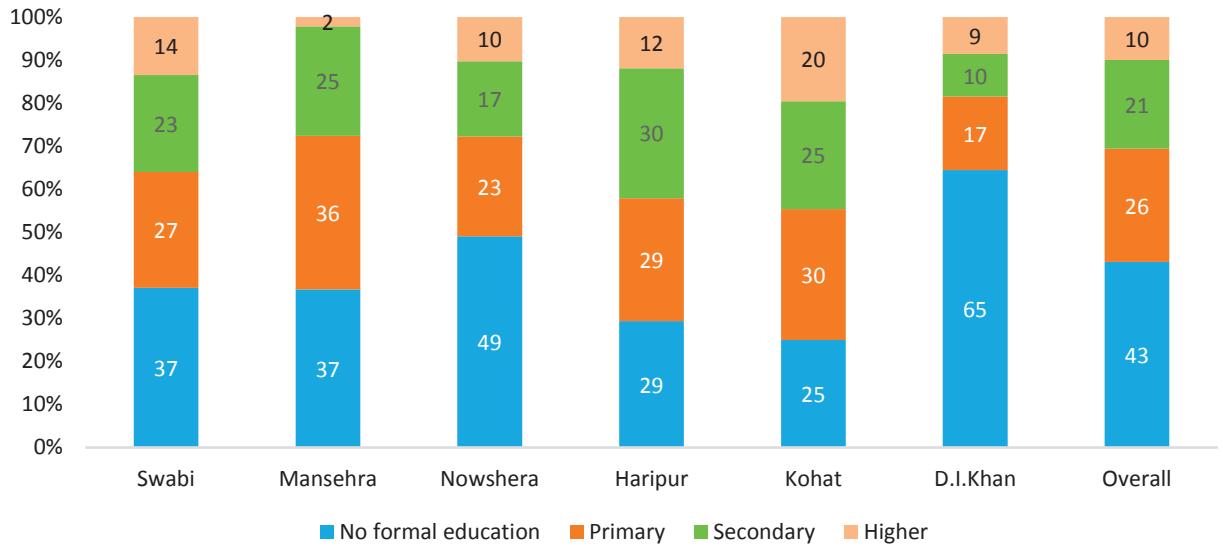
Table 3.2: Level of education of deceased women and currently married women in KP by age

	No formal education		Primary		Middle		Secondary		Higher	
	Study	KP*	Study	KP*	Study	KP*	Study	KP*	Study	KP*
< 20	65.8	64.9	9.2	11.7	7.9	9.0	10.5	9.0	6.6	5.4
20-24	57.3	58.0	17.4	15.3	11.2	6.7	10.7	11.5	3.4	8.6
25-29	58.8	65.6	20.4	13.2	4.2	7.1	9.6	8.2	6.9	5.9
30-34	66.5	68.1	16.8	12.9	2.2	4.4	8.4	6.0	6.1	8.5
35/35+	80.0	82.3	8.7	8.0	4.9	2.7	4.2	3.2	2.3	3.8
Total	66.4	71.6	15.0	11.3	5.6	4.9	8.1	6.3	4.8	5.9

* Source: Pakistan Demographic and Health Survey (PDHS) 2012-13

Two fifths of the husbands of the deceased women had no formal education (Figure 3.6). By district, the highest proportion of educated husbands was in Kohat district, where three quarters had received education. The lowest level of schooling among husbands was in DI Khan, where less than two fifths were educated.

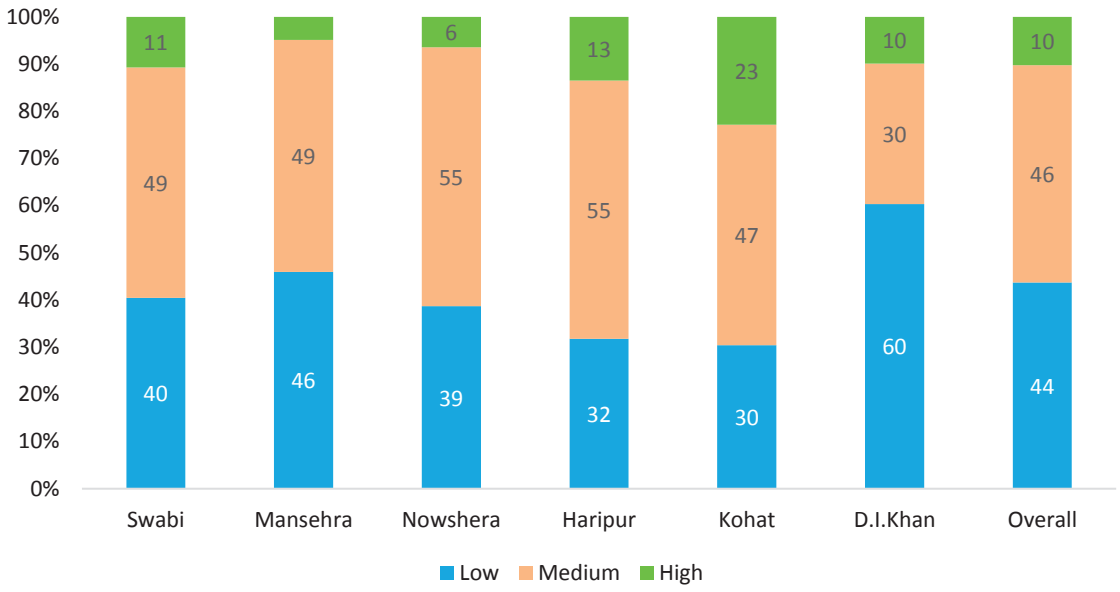
Figure 3.6: Distribution of husbands of deceased women by level of schooling, by district



The socio-economic status of the deceased women was also assessed based on their wealth index ranking. The wealth index is a composite measure of a household's posessions. It is calculated based on the household's ownership of selected assets, such as television, radio, and refrigerator, and availability of electricity and means of transport. Terciles were generated using the 'Rank Cases' dialogue box in SPSS and labelled as *Low*, *Medium*, and *High*.

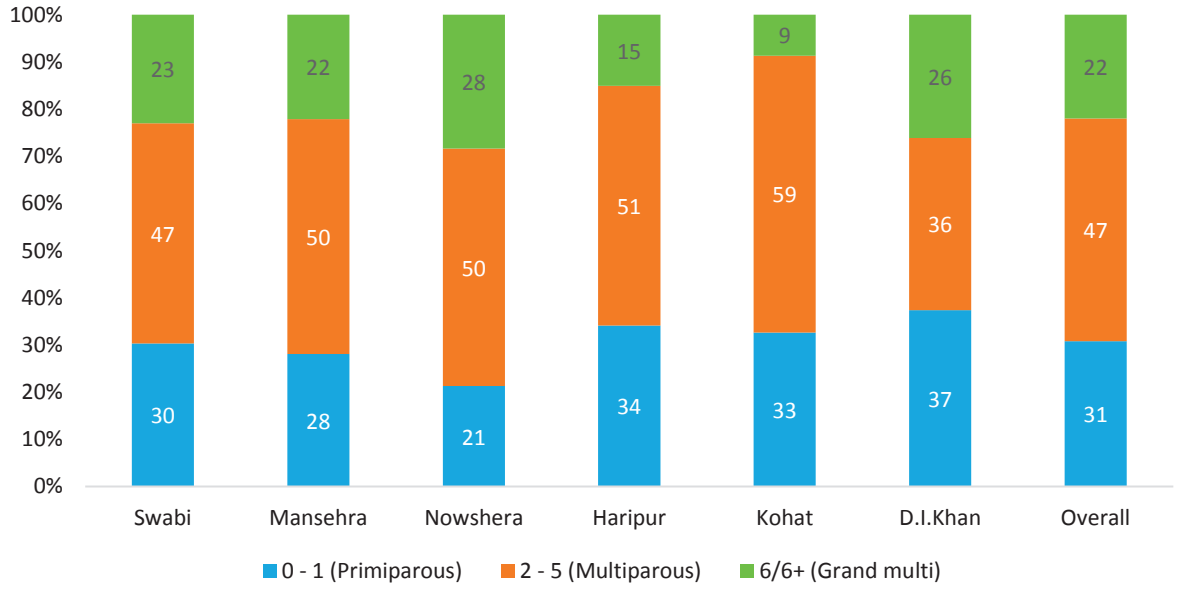
Based on the above analysis, the socio-economic status of deceased women is shown, by district, in Figure 3.7. Overall, almost two-fifths of the PRDs took place among women of low socio-economic status, and nearly half occurred among women of medium socio-economic status while only a tenth took place in women of higher socio-economic status (Figure 3.7), implying that the majority of the deaths had occurred in women of low or medium socio-economic status. This clearly shows that inequality continues to be a major obstacle for women in accessing appropriate and timely care and contributes to maternal deaths. By districts, fewer deaths were reported in lower socio-economic groups in Nowshera, Haripur, and Swabi, while a higher proportion was reported in this category in DI Khan and Mansehra.

Figure 3.7: Distribution of deceased women by socio-economic status, by district



As shown in Figure 3.8, nearly half of the PRDs occurred among women who were multiparous, i.e. had borne two to five children. One fifth of deaths were among women who had had more than five pregnancies, i.e., were grand multiparous, while approximately a third of deaths occurred among primiparous women, i.e. those with one child or none. The majority of deaths were reported among the multiparous women.

Figure 3.8: Distribution of children borne by deceased women



3.4 Incidence of Maternal Mortality

This study identified 9,397 deaths of WRA in a total population of 2.4 million WRA, yielding a total death rate of 460 per 100,000 WRA. As Table 3.3 shows, the death rate among WRA varied by district, with the lowest recorded in Kohat (350) and Haripur (388) and the highest in DI Khan (583) and Nowshera (516). The non-pregnancy related death rate was 381 per 100,000 WRA.

The proportion of PRDs among deaths of WRA was 17 percent. According to the "Trends in Maternal Mortality Estimates" report of WHO, UNICEF, the United Nations Population Fund (UNFPA), and the World Bank, which estimates the proportion of PRDs in WRA deaths at 11.4 percent for Pakistan (WHO 2012).

Table 3.3: Death rates of women of 12-50 years per 100,000

Districts name	Population of WRA	Live births of study period	Number of WRA deaths	Number of non-PRDs	Number of PRDs	Death rate of WRA per 100,000	Non-PRD rate of WRA per 100,000
Swabi	418,973	99604	1,959	1,672	287	468	399
Mansehra	454,793	106302	1,943	1,564	379	427	344
Nowshera	337,273	79300	1,741	1,491	250	516	442
Haripur	271,008	63746	1,051	883	168	388	326
Kohat	239,986	53214	840	683	157	350	285
DI Khan	319,605	72804	1,863	1,487	376	583	465
Total	2,041,638	474970	9,397	7,780	1,617	460	381

Estimating the Probability of Capturing PRDs: Capture-Recapture Technique

The MADE-IN/MADE-FOR technique acknowledges that the networks tasked with identifying WRA deaths will miss some. To identify these missing deaths, the capture-recapture (CRC) technique was used. This technique provides the number of deaths that have to be adjusted to compensate for the deaths that may have been missed.

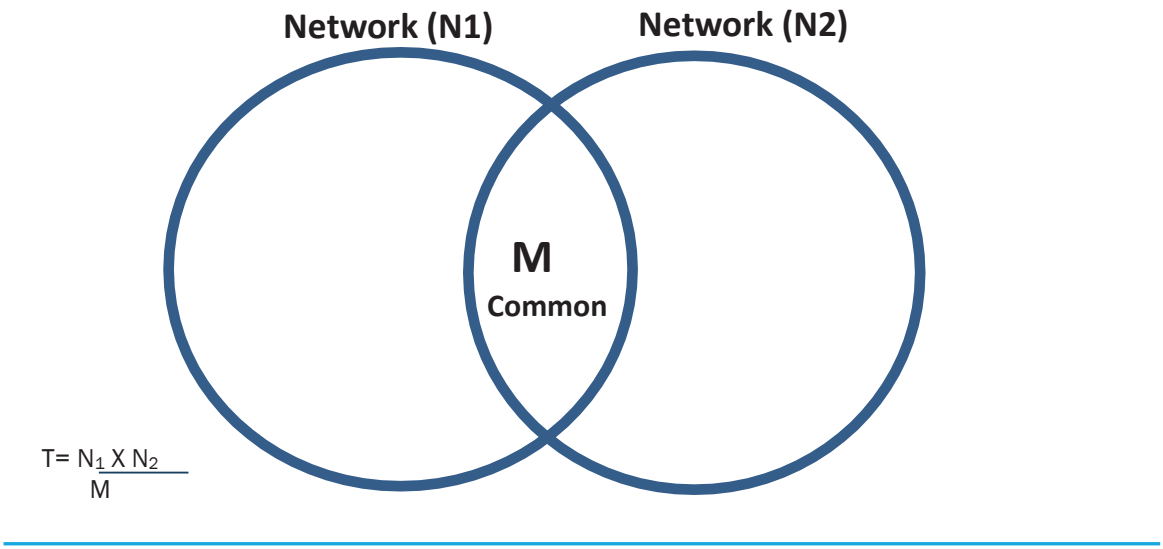
The term 'capture-recapture' derives from wildlife applications where a sample of animals from a target population is captured, marked, and released. A second sample is captured at a later time. The number of animals captured each time and both times is noted. In public health applications, individuals are 'captured' on different databases and a key stage is matching, i.e. identifying, individuals who appear on more than one database (Laska and Eugene 2002) which helps in estimating the "true" number of cases.

We made four critical assumptions in the simple capture-recapture analysis:

- The set of 'individuals' or 'events' to be estimated is fixed, i.e. the number of events cannot increase or decrease.
- Individuals captured by both databases (i.e. more than one informant network) can be matched through follow up visits and duplicate cases can be resolved.
- Capture in the second sample is independent of capture in the first. (Holding separate meetings for the networks and allowing limited time for data collection helped avoid the possibility of contamination and information copying between networks.)
- Within each database, the probability of capture does not differ between individuals. This is a limitation of the methodology: some sensitive deaths, such as abortion-related deaths or early pregnancy deaths, may have been missed.

Using the CRC technique, the study team was able to estimate both the total PRDs in the six study districts and the coverage of each network (i.e. the proportion of the total number of PRDs identified by each network). The simple formula used to estimate the total number of cases was $T=N_1XN_2/M$, where *N* is the number of cases captured by one network and *M* is the number of cases captured by both networks (Figure 3.9).

Figure 3.9: Visualization of the formula used to estimate total numbers of PRD cases through capture and recapture technique



Based on the results of the capture-recapture analysis, estimates of PRDs and MMR were revised. The results are presented in tables 3.4 and 3.5.

MMR Estimates

In areas where most deaths occur at home or vital registration systems cannot attribute an appropriate cause of death, determining the cause of obstetric deaths is not always possible. Differentiating the extent to which PRDs are due to indirect or direct obstetric causes or to accidental or incidental events is often problematic. For such circumstances, WHO (in the International Classification of Deaths) permits use of data on pregnancy-related deaths, rather than maternal deaths, to estimate MMR.

In almost all settings, the proportion of all maternal deaths that are incidental or accidental is very small (Geubbels 2006), so the distinction between PRD and maternal death does not make a significant difference in terms of measuring progress or for program planning. In this study, both terms have been used. We include incidental and accidental causes when referring to PRDs, but exclude them when we refer to maternal deaths.

Table 3.4: Adjusted and unadjusted estimation of PRDs after capture-recapture analysis, by district

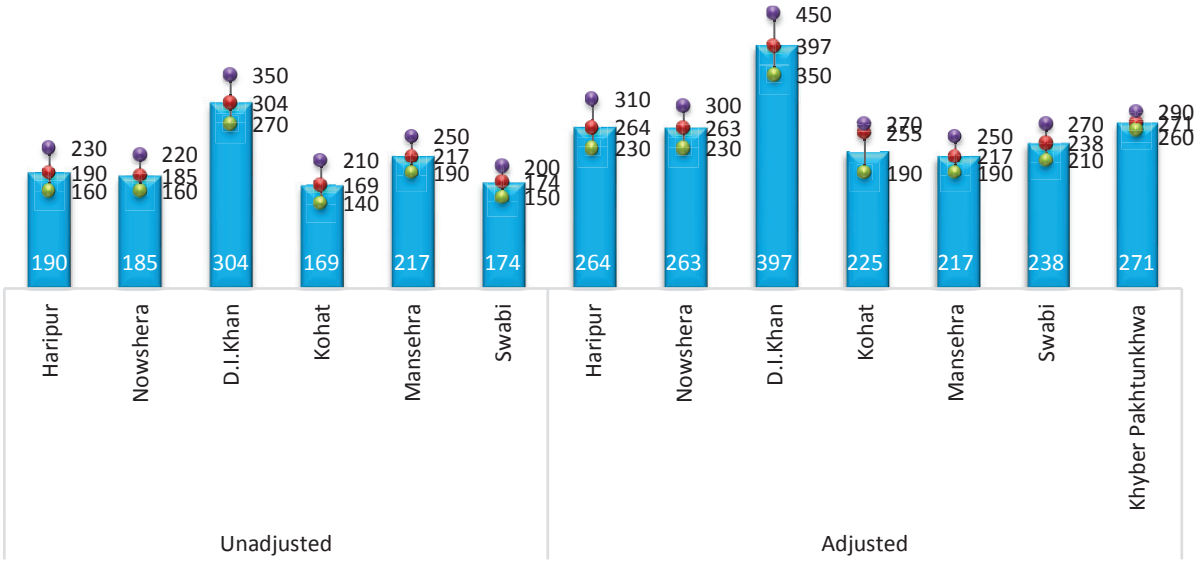
District	Recorded PRDs	Unadjusted PRMR*	95% CI	Adjusted PRDs	Adjusted PRMR	95% CI
Haripur	126	198	170-240	173	271	230-310
Nowshera	155	195	170-230	221	279	240-320
DI Khan	222	305	270-350	291	399	360-450
Kohat	92	173	140-210	121	226	190-270
Mansehra	185	174	150-200	230	217	190-250
Swabi	178	179	150-210	257	258	210-280
Total	**958**	-	-	**1,293**	-	-

* The Pregnancy Related Mortality Ratio (PRMR) is the number of resident deaths of individuals within 42 days of pregnancy termination **due to any cause** in a specified geographic area (country, state, county, etc.) divided by total resident live births for the same geographic area for a specified time period, usually a calendar year, and multiplied by 100,000.

Table 3.5: MMR Estimation, by district

District	Recorded MDs	Unadjusted MMR	95% CI	Adjusted MDs	MMR	95%% CI
Haripur	121	168	160-230	168	264	230-310
Nowshera	147	185	160-220	209	263	230-300
DI Khan	221	304	270-350	289	397	350-450
Kohat	90	169	140-210	120	225	190-270
Mansehra	185	174	150-200	230	217	190-250
Swabi	173	174	150-200	252	253	210-270
Total	**937**			**1,268**		

Figure 3.10: Estimated MMR with 95% CI



The MMR estimate for KP has been obtained by applying the population proportions of the six study districts to the KP population. As shown in Table 3.6, the unadjusted composite MMR for KP, i.e. before applying the CRC technique, is 198 per 100,000 live births. However, after applying the capture-recapture technique, the adjusted composite MMR for the province comes to 271 per 100,000 live births (95% CI 250-280).

Table 3.6: Estimation of MMR for KP

	Population	Proportion to province	Proportion to district	Unadjusted composite MMR	Adjusted composite MMR	95% CI
Haripur	986,000	0.07239885	0.12139517	20.4	32.0	
Nowshera	1,394,139	0.10236724	0.17164481	31.8	45.1	
DI Khan	1,439,000	0.10566121	0.17716800	53.9	70.3	
Kohat	949,095	0.06968903	0.11685146	19.7	26.3	
Mansehra	1,700,000	0.12482561	0.20930201	36.4	45.4	
Swabi	1,654,000	0.12144798	0.20363855	35.4	51.5	
All six districts	8,122,234	0.59638992	1.00000000	197.6	270.8	260-290
KP	13,619,000					

Age-specific MMRs, shown in Table 3.7, reflect the expected pattern of being highest among the older age group (35 years or more), except in Mansehra. The age group with the second highest MMR varies across the districts, comprising women under 20 years of age in DI Khan and Swabi; women aged 25 to 29 years in Haripur and Kohat; women aged 30 to 34 in Nowshera; and those aged 35 or above in Mansehra (where the highest MMR is among women ages 30 to 34).

Table 3.7: Age-specific unadjusted MMR, by district

	Haripur	Nowshera	DI Khan	Kohat	Mansehra	Swabi	Total
Less than 20	115	168	329	103	80	253	177
20-24	159	66	220	142	83	133	122
25-29	194	211	248	210	189	188	200
30-34	166	231	279	155	271	117	194
35/35+	527	622	575	212	253	263	343
Total	198	195	305	173	172	179	197

Women under the age of 20 and above 35 years are at a significantly higher risk of complication in pregnancy. In the younger age group, the risk is related to the under development of the osseous tissues, especially the pelvic bones. On the other hand, women above 35 are more likely to have conditions such as high blood pressure, diabetes, or cardiovascular disease that could complicate pregnancy outcomes (Stickler 2012).

3.5 Women's Reproductive Health Care

Reproductive health (RH) care includes provision of ANC, delivery, and PNC, including family planning (FP) services. The aim of RH care provision is to reduce maternal morbidity and mortality. The adequacy of maternity care received by women was an important area covered during the study's verbal autopsies of maternal deaths.

Antenatal Care

Prenatal care or ANC refers to pregnancy-related healthcare check ups at a health facility or at home by a health care provider prior to delivery. According to WHO, a pregnant woman should have at least four ANC visits to monitor for early detection and management of pregnancy-related complications. ANC quality is assessed by: type of provider conducting check ups, number of visits, investigations carried out, and management prescribed.

Table 3.8 shows that nearly two fifths of deceased women had more than three ANC check ups, while one quarter did not have a single ANC consultation. Among women who had more than three ANC consultations, the highest proportion (two-thirds) was reported in Mansehra, followed by Nowshera. By district, the highest proportion of women who had no ANC was reported in DI Khan, followed by Kohat. In total, nearly 69 percent of women had ANC, ranging from one to three visits or more, with 45 percent having more than three consultations. Our findings are close to those reported by PDHS 2012-2013, according to which 63 percent of women received ANC in KP.

Table 3.8: Percentage of deceased women who had ANC visits, by district

ANC Meetings	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
None	31.5	13.5	18.1	15.9	32.6	43.7	26.7
One	3.4	2.2	9.0	6.3	5.4	4.5	4.9
Two	5.6	7.6	5.8	11.1	5.4	12.2	8.2
Three	10.1	4.9	10.3	15.1	13.0	12.6	10.6
More than three	43.3	62.2	53.5	50.8	37.0	24.3	44.6
Don't know	6.2	9.7	3.2	0.8	6.5	2.7	4.9
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	178	185	155	126	92	222	958

Table 3.9 indicates the positive finding that nearly two thirds of the women received care from a doctor. Only a minority, three percent, had ANC from a TBA. The smallest proportion of women who had received care from a TBA was in Nowshera and Kohat. In general, 30 percent of cases ANC was obtained from a nurse or Lady Health Visitor. ANC from an LHW was reported by slightly more than eight percent of cases.

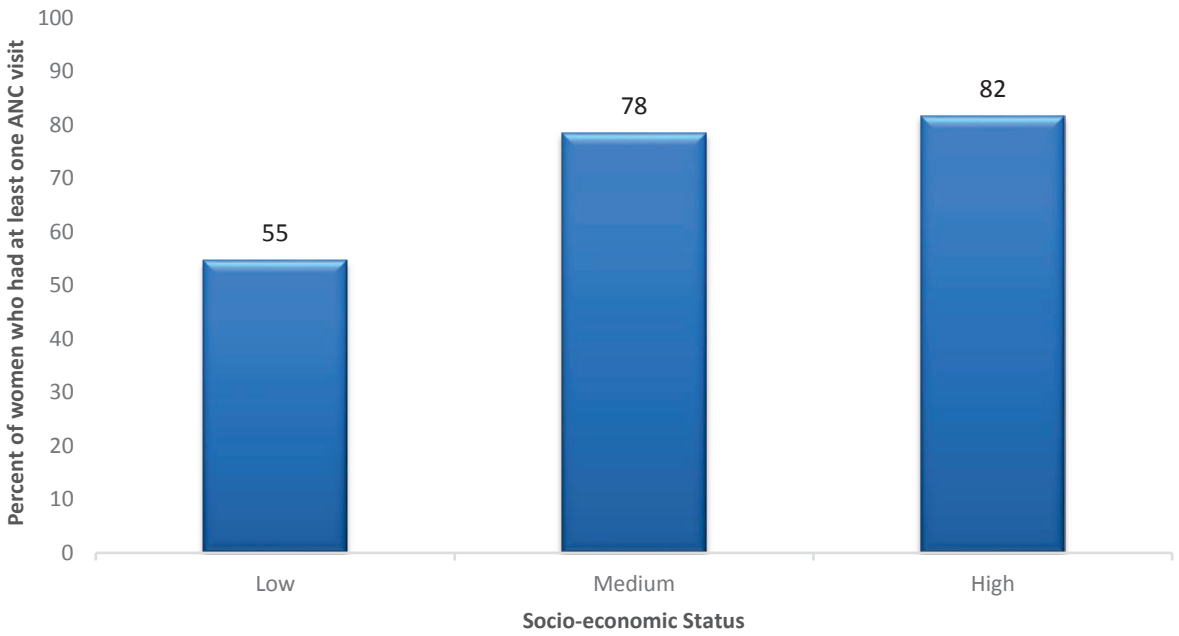
Table 3.9: Proportion of deceased women who had availed ANC services, by provider type

Type of service provider	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Doctor/Obstetrician/Gynecologist	62.2	59.9	78.7	89.5	83.9	50.4	68.9
Nurse/LHV	39.6	48.6	20.5	8.6	8.9	39.5	30.4
LHW	8.1	12.0	4.1	2.9	7.1	13.4	8.2
TBA	2.7	2.8	1.6	5.7	1.8	5.0	3.4
Others	0.9	1.4	0.8	0.0	0.0	0.8	0.8
Don't know	0.9	2.8	0.8	2.9	3.6	4.2	2.4
N	111	142	122	105	56	119	655

Note: This is a multiple response variable.

Seeking of ANC was influenced by socio-economic levels. Women of middle or upper socio-economic status were more likely to have at least one ANC visit than women of lower socio-economic status. Figure 3.11 shows that nearly three quarters of women of middle socio-economic status and four fifths of those of higher socio-economic status had at least one ANC visit, while slightly more than half of the women of low socio-economic status had one consultation.

Figure 3.11: Percentage of deceased women with at least one ANC visit, by socio-economic status (all districts)



Private facilities were preferred for ANC services, with slightly more than half of deceased women having visited a private clinic or hospital for their ANC check ups (Table 3.10). Overall, only two out of five women had services from a public facility, but there were large differences among districts: in Kohat and Nowshera, fewer women (21% and 24%, respectively) had ANC services from a public hospital, compared to slightly more than half the women in Mansehra and Haripur. In Haripur no deceased woman had ANC from an LHW, and only one percent in Nowshera.

Table 3.10: Distribution of deceased women who had availed ANC services, by type of health facility

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Private Clinic/ Hospital	47.7	64.1	68.9	53.3	62.5	44.5	56.8
Government Hospital	39.6	52.1	23.8	53.3	21.4	39.5	40.0
LHW House	5.4	4.9	1.6	0.0	8.9	10.1	4.9
Community health center	7.2	2.1	3.3	3.8	3.6	1.7	3.5
TBA	2.7	0.7	0.8	3.8	3.6	8.4	3.2
Others	0.9	2.8	9.0	1.0	1.8	4.2	3.5
Don't know	0.9	0.7	0.8	1.9	5.4	1.7	1.5
N	111	142	122	105	56	119	655

Note: This is a multiple response variable.

Forty-five percent of women were provided iron folate tablets during their ANC, slightly more than half had received tetanus toxoid (TT) vaccination, and more than two fifths had had a urine test, while just under two fifths had had a haemoglobin test. Overall, no single district fared better than another in ANC service provision. Use of iron folate acid, urine, and haemoglobin testing was highest in Nowshera and lowest in DI Khan, where only a fifth of women had used iron and folate tablets. In total, almost 62 percent of women who received ANC had used iron folate tablets. According to PDHS 2012-2013, 50 percent took iron tablets or syrup during their last pregnancy; slightly more than half had TT injections, with a substantial proportion, therefore, vulnerable to tetanus infection.

Biomedical risk factors are conditions or behaviours present during pregnancy that might increase the risk of an adverse pregnancy outcome. In its analysis of presence of such factors among the deceased women, the study considered age below 18 or greater than 34, parity above four, and the presence of diseases including circulatory system, metabolic diseases (diabetes), and hypertension. It was found that, in total, nearly two thirds of the women had at least one identified biomedical risk factor (as shown in Table 3.11).

Table 3.11: Proportion of deceased women with biomedical risk factors, by district

Risk factors	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
At least one risk factor	73.0	58.9	71.0	69.0	42.4	61.7	63.9
Less than 18 years	3.4	0.5	3.9	0.8	2.2	2.7	2.3
More than 35 years	23.6	18.4	16.8	17.5	12.0	21.2	19.0
Parity above 4	32.0	30.8	39.4	26.2	18.5	35.1	31.6
35+ years old & parity above 4	14.0	14.6	12.9	11.9	8.7	15.8	13.6
High blood pressure	35.4	22.7	38.1	38.9	9.8	26.6	29.3
Heart Disease	12.9	6.5	7.1	14.3	6.5	6.8	8.9
Diabetes	3.4	3.8	1.3	3.2	3.3	1.8	2.7
Previous C-section	9.0	11.9	10.3	13.5	7.6	5.9	9.5
N	178	185	155	126	92	222	958

Very importantly, proper ANC screening can identify the various biomedical risk factors that can complicate pregnancy outcomes. Identification of such risk factors and their proper management can significantly lower adverse outcomes. Two of the highly prevalent risk factors present in the mothers who died included presence of previously diagnosed hypertension and having four or more children.

During their ANC visits, approximately half of the women had been identified as being at high risk by their provider on the basis of an examination or test results, and one third were advised to deliver in a health facility (Table 3.12). A high-risk pregnancy is determined by certain markers including woman's height, pallor, protein in urine, low hemoglobin, among others. In some women, symptoms can include convulsions and pedal oedema, among others. One third of deceased women were identified as high risk based on these markers. One fifth were identified as high risk based upon complications during their previous pregnancy, and 15 percent were identified as high risk based upon the illness identified during their final pregnancy. Complications in previous deliveries include prolonged labor, pregnancy-induced diabetes, eclampsia, and others.

Table 3.12: Proportion of women advised to deliver at a hospital during ANC, by reason for referral and district

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Complication in previous delivery	19.2	31.2	11.8	20.8	14.3	11.3	20.3
Symptoms during current pregnancy	11.0	9.2	7.8	17.0	25.7	30.2	15.0
High risk pregnancy	32.9	45.9	52.9	58.5	31.4	34.0	43.0
Others	16.4	8.3	27.5	9.4	20.0	9.4	13.9
Don't know	24.7	16.5	3.9	3.8	20.0	34.0	17.4
N	73	109	51	53	35	53	374

Note: This is a multiple response variable.

Delivery Care

One key intervention to reduce maternal and neonatal mortality is to encourage women to deliver in an environment that is clean, has technically competent and skilled staff, and is equipped with life-saving supplies. Whether deliveries are at home or are facility-based, the presence of a skilled birth attendant (SBA) linked to an easily approachable and fully functional referral system can avert many deaths. According to PDHS 2012-2013, 48 percent of births in Pakistan and 41 percent in KP are in a health facility; this study found that 49 percent of deliveries were at a health facility, with nearly one third at home. Nearly one quarter of facility-based deliveries were in a private facility (Table 3.13 and Figure 3.12). Based on verbatim accounts of deceased women's relatives, preference for private facilities is because of easy access.

Case Study—Early diagnosis and prompt treatment could have saved her

The deceased lived in tehsil and district Kohat. She was an uneducated home-maker aged 37. Her husband had completed primary schooling and was self-employed. She had married at the age of 23 and became pregnant twice in her life.

During her last pregnancy, she went for antenatal care to a private clinic near her home. Even though she was suffering from headaches and blurred vision, no laboratory test was performed during her ANC visits. Every time she complained about her ailment to her mother-in-law, the latter would tell her that such minor complaints were a normal part of pregnancy. With the passage of time, her eyes turned yellow, but no one thought this was a cause for concern.

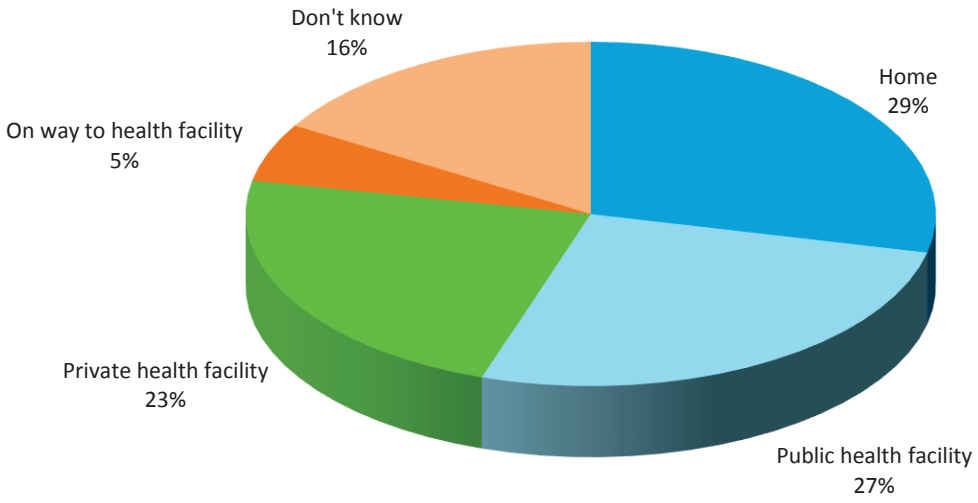
When she started labor pains she was taken to a private doctor. She gave birth to a live baby. After the delivery, her condition deteriorated and she was taken to a hospital in Peshawar but she died 6 hours after reaching there.

As narrated by deceased woman's mother-in-law

Table 3.13: Proportion of deaths of women by place of delivery, by district

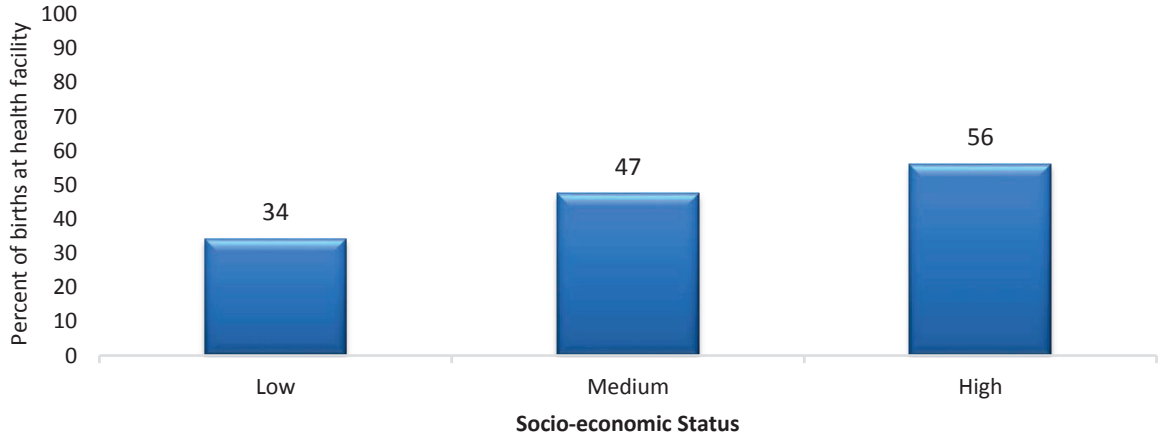
Place of delivery	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Home	27.3	31.3	18.9	27.6	22.5	36.8	28.6
DHQ/Teaching hospital	19.5	26.4	30.7	27.6	15.0	15.5	22.3
THQ/RHC/BHU	3.2	1.8	3.1	1.0	0.0	0.0	1.6
Others government	2.6	1.8	1.6	1.9	6.3	3.1	2.7
Private clinic	20.1	22.1	31.5	26.7	23.8	18.1	23.0
On way to health facility	5.8	4.3	1.6	2.9	12.5	7.3	5.5
Don't know	21.4	12.3	12.6	12.4	20.0	19.2	16.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	154	163	127	105	80	193	822

Figure 3.12: Distribution of deceased women by place of delivery (all districts)



As shown in Figure 3.13, most home births (66%) occurred among women of lower socio-economic status, while more than half of deliveries among women of higher socio-economic status took place at health facilities.

Figure 3.13: Proportion of deceased women who gave birth at health facilities, by socio-economic status (all districts)



Caesarean Sections for Maternal Complications

Cesarean sections (C-sections) are performed when there is a risk to the life of the mother or the foetus and when vaginal delivery is either not possible or not recommended. WHO recommends that the C-section rate not be higher than 10 to 15 percent (WHO, Lancet 1985). This study found that 14 percent of the women had undergone a C-section prior to death. The highest proportion of women who underwent a C-section was in Mansehra, 21 percent, followed by Haripur, 18 percent, and Swabi, 14 percent. According to the Punjab study, 22 percent women had undergone a C-section.

Case Study—Timely appropriate care could have saved her

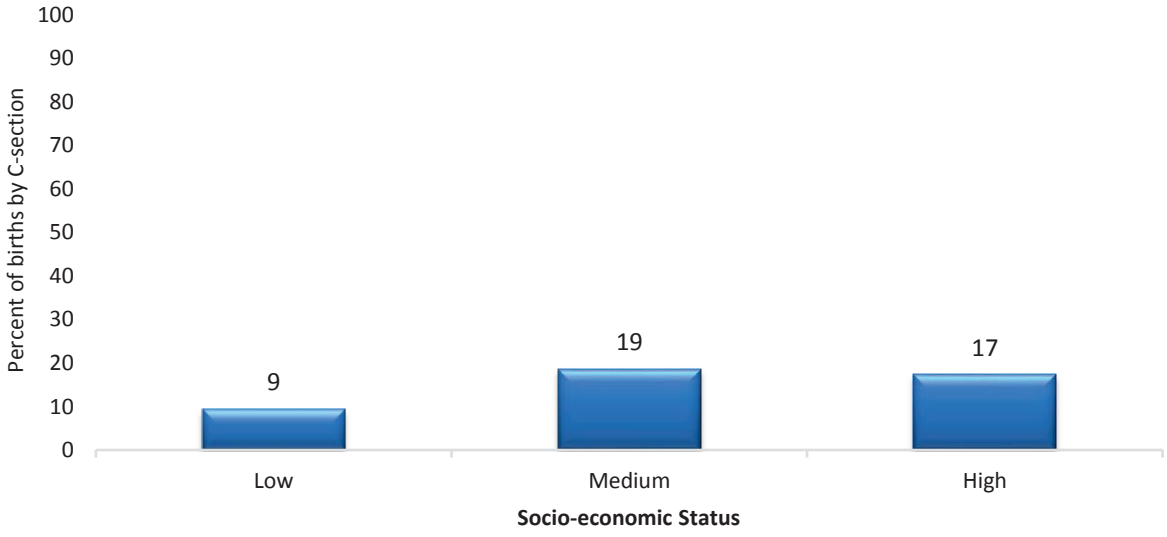
The deceased was a resident of district and tehsil Kohat. She was a matriculate and a home-maker. Her husband was an educated skilled worker. She was married at the age of 21 and became pregnant only once.

Two months into her first pregnancy, she started to turn pale. She was not eating adequately and often fainted. She was taken to an LHV near her home. Initially her family members though that her complaints were usual problems of pregnancy. When her condition got worse, however, they took her to a private doctor in Kohat city who informed the family that she had jaundice. Her family did not take the necessary care and she was taken home. After a few days she got very ill and was shifted to Liaqat Memorial Hospital a major private hospital in Kohat city but by then her condition was very serious. Doctors informed the family that her disease was at an advanced stage and chances of survival were low. They tried their best to treat her but she did not survive.

As narrated by the deceased's mother

Slightly more than half of women who had a Caesarean section did so due to obstetric hemorrhage (data not shown). Other reasons include eclampsia (19%) and obstructed labor (3%). Additionally, in 10 percent of these cases, there was a previous history of C-section, which itself is an indication for the procedure. A higher proportion of C-sections took place among women of higher and middle socio-economic groups. Figure 3.14 shows that the proportion of women who had C-sections was twice as high among women of high socio-economic status compared to women of low socio-economic status.

Figure 3.14: Proportion of deceased women who delivered by C-section, by socio-economic status



Pregnancy Outcomes

The study found that 60 percent of pregnancies resulted in a live birth (Table 3.14), while stillbirths occurred in nearly 22 percent of cases. Nearly one percent of the pregnancy outcomes were miscarriages and induced abortions (each). Nearly half of the infants born alive had survived until the time of the interview. The highest proportion of surviving infants was in Haripur—75 percent—followed by Nowshera, 64 percent (data not shown).

Table 3.14: Delivery outcomes of PRDs

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Live birth	55.5	69.9	58.0	66.0	54.9	57.0	60.4
Stillbirth	20.6	20.9	26.7	20.8	23.2	20.7	21.9
Miscarriage	0.6	0.6	0.8	0.0	1.2	3.1	1.2
Induced abortion	0.6	0.6	3.1	1.9	1.2	1.6	1.4
Undelivered	8.4	7.4	10.7	10.4	11.0	6.2	8.6
Multiple births	0.6	0.6	0.0	0.0	0.0	0.5	0.4
Don't know	13.5	0.0	0.8	0.9	8.5	10.9	6.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	155	163	131	106	82	193	830

Postnatal Care

The postpartum period comprising of 42 days after delivery is important for a variety of reasons. Even after a safe delivery, women can develop severe complications during this period unless issues are diagnosed and managed at an early stage. Globally, the majority of maternal deaths occur in the postpartum period (Abou Zahr 1998). Therefore, PNC is particularly important in identifying and treating maternal and neonatal complications. At least one PNC visit is recommended within 24 hours after delivery, and at least three additional visits are recommended within 42 days.

This study found that more than half of the deceased women experienced postnatal complications. The most common problem in the postnatal period was severe bleeding, in 44 percent of cases, followed by high blood pressure (21%), and puerperal fever (16%, Table 3.15).

Table 3.15: Proportion of deceased women who faced postnatal complications, by problem

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Severe bleeding	41.0	48.4	51.4	43.0	30.9	40.6	43.7
Fever	19.0	12.1	20.7	18.6	5.5	18.0	16.4
Foul smelling discharge	2.0	1.6	1.8	2.3	0.0	0.8	1.5
Unconsciousness	4.0	10.5	9.9	41.9	1.8	3.8	11.5
Visual disturbance	8.0	0.0	7.2	4.7	1.8	.8	3.6
Fits	4.0	4.0	9.0	4.7	1.8	3.8	4.8
High BP	24.0	16.9	26.1	24.4	9.1	18.8	20.5
Bleeding from multiple sites	8.0	4.0	3.6	0.0	1.8	5.3	4.1
Abnormal behavior	1.0	0.8	0.9	3.5	1.8	0.8	1.3
Abdominal pain	9.0	0.0	25.2	8.1	3.6	4.5	8.5
Vomiting	5.0	5.6	9.9	9.3	1.8	6.0	6.6
Severe anemia	6.0	8.1	12.6	20.9	1.8	15.0	11.3
Non-healing of perineal and abdominal stiches	1.0	0.0	1.8	1.2	3.6	0.0	1.0
Others	0.0	0.8	0.0	2.3	1.8	0.0	0.7
Don't know	23.0	15.3	12.6	12.8	45.5	27.1	21.0
N	100	124	111	86	55	133	609

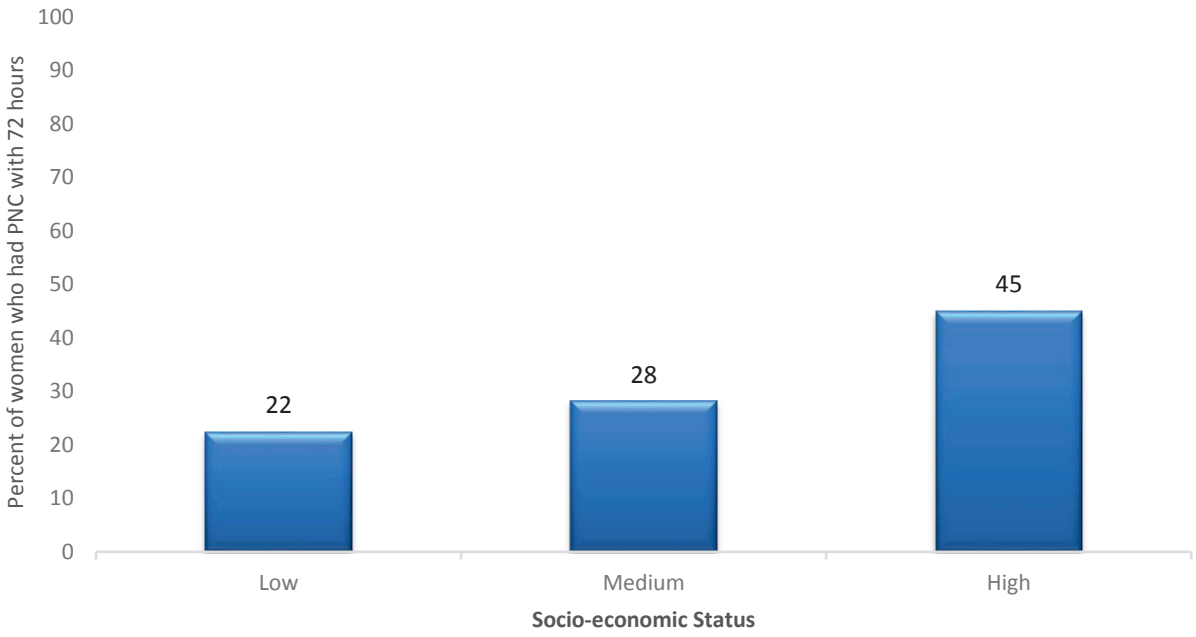
Note: This is a multiple response variable.

Among women who developed postnatal complications, slightly less than half did not have a PNC check up, one fifth had at least one check up, and one fifth had two or three or more visits (Table 3.16). A higher proportion of women who had PNC checkups were of higher socio-economic status (Figure 3.15).

Table 3.16: Proportion of deceased women who had PNC check ups, by district

No. of postnatal check ups	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
No PNC check up	58.1	44.8	43.5	34.9	54.9	52.8	48.7
1 check up	16.1	28.2	17.6	21.7	17.1	19.2	20.2
2-3 checkups	11.0	9.8	22.1	22.6	6.1	11.4	13.6
>3 check ups	2.6	10.4	7.6	15.1	1.2	3.1	6.5
Don't know	12.3	6.7	9.2	5.7	20.7	13.5	11.0
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	155	163	131	106	82	193	830

Figure 3.15: Percentage of deceased women who received PNC within 72 hours, by socio-economic status (all districts)



Reported ever use of FP among the deceased women was seven percent overall, with the highest proportion in Swabi (14%) and the lowest in DI Khan (1%, data not shown). This could be an underestimate as it is based on respondents' perceived knowledge of FP use.

3.6 Causes and Circumstances of Death

This section presents the study findings about the specific causes and circumstances of deceased women on the day of their demise. In particular, it looks at the stage of pregnancy when the death occurred, the location of women at the time of death, and the care-seeking behavior of women and their families in the days and hours leading up to their deaths, with a focus on sources of delay in obtaining care.

Direct and Indirect Causes of PRDs

Direct obstetric deaths are those resulting from obstetric complications during pregnancy, delivery, or the postpartum period that are caused by interventions, omissions, incorrect treatment, or a chain of events resulting from any of the above. Indirect obstetric deaths are deaths that occur due to pre-existing diseases or diseases that develop during pregnancy that are not due to direct obstetric causes but are aggravated by the physiological effects of pregnancy (WHO 2012).

In disaggregating the causes of PRDs, it was found that 13 percent of deaths were due to indirect causes and 84 percent to direct causes, while two percent of deaths were due to incidental or accidental causes. As shown in Table 3.17, by district the highest proportion of deaths by direct causes was in DI Khan (90%).

Table 3.17: Comparison of maternal deaths by direct and indirect causes, by district

	Direct cause		Indirect causes		Not able to categorize		Total*	
	%	N	%	%	%	N	%	%
Swabi	87.9	152	10.4	18	1.7	3	100.0	173
Mansehera	81.6	151	11.4	21	7.0	13	100.0	185
Nowshera	79.6	117	17.7	26	2.7	4	100.0	147
Haripur	77.7	94	18.2	22	4.1	5	100.0	121
Kohat	85.6	77	12.2	11	2.2	2	100.0	90
D.I.Khan	90.5	200	9.0	20	0.5	1	100.0	221
Total	84.4	791	12.6	118	3.0	28	100.0	937

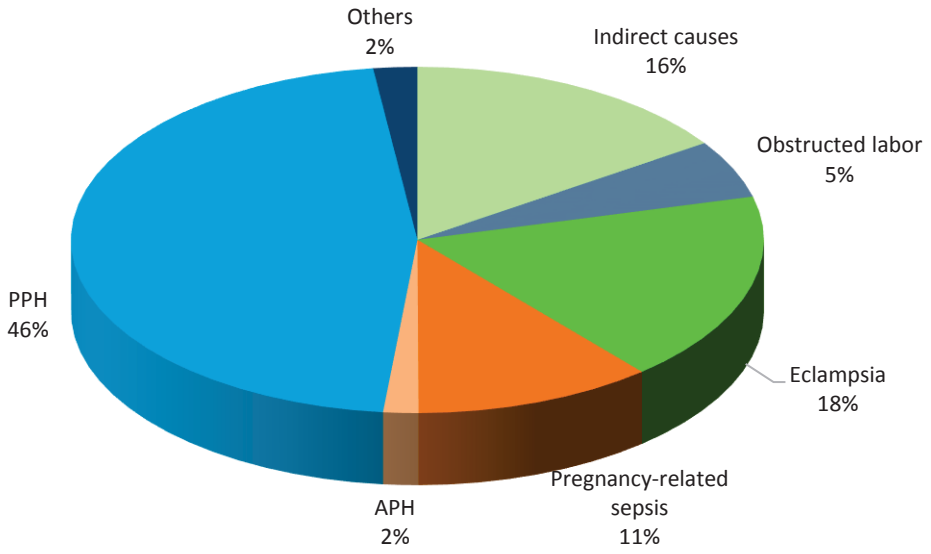
*Total does not include incidental deaths.

The specific causes of maternal death are listed in Table 3.18 and summarized in Figure 3.16. This study's findings are consistent with the finding of WHO that major direct causes of maternal death in developing countries continue to be severe bleeding, infection, and hypertension (WHO/UNICEF/UNFPA/World Bank 2010).

Table 3.18: Proportion of maternal deaths by cause (by districts)

	Swabi	Mansehra	Nowshera	Haripur	Kohat	D.I.Khan	Total
Indirect causes	10.4	11.4	17.7	18.2	12.2	9.0	12.6
Not able to categorize	1.7	7.0	2.7	4.1	2.2	0.5	3.0
Abortion related complications	1.2	0.0	3.4	3.3	0.0	0.0	1.2
Ectopic pregnancy	0.6	0.0	0.0	0.0	0.0	0.0	0.1
HELLP Syndrome	0.0	0.0	0.7	0.0	0.0	0.0	0.1
Obstructed labor	8.7	1.6	6.1	8.3	3.3	5.0	5.4
Eclampsia	22.5	12.4	21.1	23.1	15.6	14.5	17.8
Pregnancy-related sepsis	8.1	5.9	21.1	17.4	5.6	10.0	11.1
Rupture of uterus	0.6	0.0	0.0	3.3	0.0	0.0	0.5
Surgical complications	0.6	0.0	0.7	0.0	0.0	0.0	0.2
Antepartum hemorrhage	1.7	1.6	0.7	1.7	3.3	1.4	1.6
Postpartum hemorrhage	43.9	60.0	25.9	20.7	57.8	59.7	46.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	173	185	147	121	90	221	937

Figure 3.16: Proportion of maternal deaths by cause (all districts)



All the identified direct causes of maternal death, while neither fully preventable nor predictable, can be properly and opportunely treated at primary- and secondary facilities.

Among the causes of maternal deaths obstetric hemorrhage was identified as the leading cause of death. On disaggregating deaths by obstetric hemorrhage, it was found that two percent of cases were antepartum hemorrhage (APH) and 46 percent postpartum hemorrhage (PPH). Slightly less than one fifth of the deaths were due to eclampsia, while in more than one tenth of cases death was due to puerperal sepsis. These results are similar to those reported nationally by PDHS 2006-2007. The highest proportions of deaths due to PPH were reported from Mansehra and DI Khan (60%) followed by Kohat (57%), while the lowest proportion was reported from Haripur (20%).

Case Study—The tragic outcome of multiple pregnancies

The deceased belonged to Topi tehsil of district Swabi. She had 10 years of formal schooling and was a home-maker. Her husband was a government servant. She was married at the age of 17 and died at the age of 22.

She became pregnant four times in her life and had three children. She gave birth to all her children at home with the help of a traditional birth attendant. She was not willing to deliver at a hospital because she thought she would not be able to maintain *purdah* there.

She was quite well before her delivery. She delivered her last baby at home with a traditional birth attendant. Soon after the birth, she started experiencing heavy bleeding. In the view of her mother-in-law, this was due to negligence of the traditional birth attendant who reportedly pulled the baby with excessive force, which started the bleeding. When the bleeding became heavy, her family tried to shift her to the private hospital in the village but she died on the way.

As narrated by the deceased's mother-in-law

The link between obstetric hemorrhage and eclampsia by parity was also examined. It was found that a higher proportion of multiparous women (those who had borne more than one child) developed obstetric hemorrhage than nulliparous women (those who had not borne any child before). Postpartum hemorrhage was more common among multiparous women (women with 2 to 5 children). In grand multipara (where a woman has more than five children), PPH can occur due to uterine atony, lack of uterine retraction, and injuries and lacerations (Shahid and Mushtaq 2009, Miller et al. 2004).

Case Study—A young mother loses her life

The deceased was a poor and uneducated woman of 40 years who resided in Dl Khan tehsil of Dl Khan district. She had married twice. Her current husband was a daily wage laborer at a brick kiln.

She had been pregnant nine times in her life and had five children from her current marriage. She was physically weak and had experienced convulsions during her second last pregnancy. All of her children were delivered at home with the help of a traditional birth attendant. She could not deliver at a proper health facility due to financial constraints.

In her last pregnancy, a traditional birth attendant was called when she started labor pains. The baby was delivered but there was heavy postpartum bleeding. Her family tried to take her to the District Headquarters Hospital by public transport, but she expired on the way to the hospital. Her last child is alive and her grandmother is rearing her.

As narrated by the deceased's mother

Indirect causes of maternal mortality identified are listed in Table 3.19. Among these, major indirect causes were anemia of pregnancy followed by cardiac disease and respiratory ailments. The proportion of maternal deaths by indirect causes claimed by individual causes is shown in Table 3.19.

Table 3.19: Number of maternal deaths due to specific indirect causes, by district

	Swabi	Mansehra	Nowshera	Haripur	Kohat	Dl Khan	Total
Acute abdomen	0	1	0	0	0	0	1
Acute respiratory infection, including pneumonia	0	9	0	0	0	3	12
Anemia of pregnancy	6	2	6	9	6	3	32
Anesthesia related complications	0	0	0	3	0	0	3
Appendicitis	0	0	1	0	0	0	1
Asthma	0	0	0	0	0	1	1
Blood transfusion reaction	0	0	0	3	0	0	3
Cancer	0	0	0	2	0	0	2
Cardiac disease	7	2	9	0	0	3	21
Chronic hypertension	0	0	1	0	0	0	1
Chronic obstructive pulmonary disease	0	1	0	0	0	0	1
Chronic liver disease	0	0	6	1	0	1	8
Diabetes	0	1	0	0	1	0	2
Digestive neoplasms	0	0	0	0	1	0	1
Fever	0	0	0	1	0	0	1
Leukemia	0	0	0	0	0	1	1
Liver cirrhosis	0	0	0	0	1	0	1
Malaria	0	0	0	0	0	4	4
Pulmonary embolism	0	0	1	1	0	0	2
Pulmonary tuberculosis	0	5	0	0	0	0	5
Stroke	1	0	0	0	0	0	1
Suicide	1	0	1	0	0	0	2
Tuberculosis	3	0	1	2	2	4	12
Total	18	21	26	22	11	20	118

In estimating MMR, deaths by accidental and homicidal causes (listed in Table 3.20) were excluded. Among incidental causes, the highest proportion was in Nowshera, with eight incidental deaths reported. Three cases of homicide were reported in Haripur, and one case of snakebite in Nowshera. The fewest incidental deaths were reported in DI Khan. In 2.7 percent of the cases the cause could not be categorized.

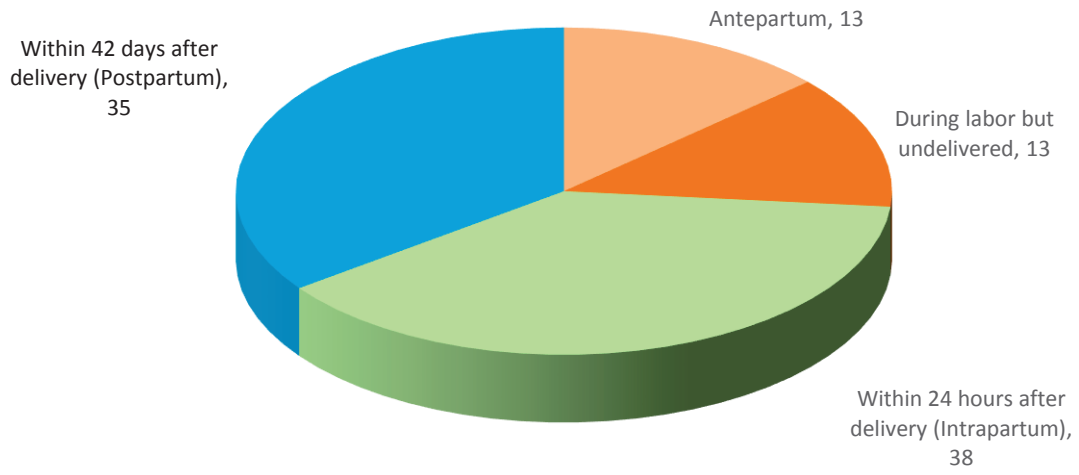
Table 3.20: Number of incidental PRDs, by district

	Swabi	Nowshera	Haripur	Kohat	DI Khan	Total
Accidental death	-	5	1	-	-	6
Assault	2	-	3	-	-	5
Burns	-	-	1	-	-	1
Electric shock	-	2	-	-	-	2
Intentional self-harm	3	-	-	2	1	6
Snakebite	-	1	-	-	-	1
Total	5	8	5	2	1	21

Time of Death

Figure 3.17 presents the study's findings on the stage of pregnancy at which pregnancy related deaths occurred. Nearly a seventh of all PRDs occurred before childbirth (antepartum period); the same proportion during the delivery (intrapartum period); while nearly two thirds were in the first 24 hours after delivery (immediately postpartum). The remaining third of deaths were between the second and forty-second postpartum day.

Figure 3.17: Distribution of PRDs by time of death (all districts)



This pattern was generally observed in almost all districts, as shown in Table 3.21. In DI Khan, Mansehra, and Swabi, two fifths of deaths were 24 hours after delivery, in the postpartum period. According to the Institute for Health Metrics and Evaluation (IHME), globally about one third (35%) of deaths are delayed postpartum. The study's findings are in agreement with the global evidence.

Table 3.21: Proportion of PRDs by timing, by district

Time of PRDs	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
During pregnancy	12.9	11.9	15.5	15.9	10.9	13.1	13.4
During labor but undelivered	16.3	12.4	9.7	10.3	18.5	13.1	13.2
Within 24 hours after delivery	30.3	36.2	48.4	45.2	45.7	32.9	38.4
Within 42 days after delivery	40.4	39.5	26.5	28.6	25.0	41.0	35.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	178	185	155	126	92	222	958

Places of Death

Of the total 958 deceased women, one third (33%) died at home (Figure 3.18). Nearly one third of PRDs were in a public facility, 15 percent at a private facility, and 11 percent *en route* to a facility (Table 3.22). Among the 316 women who died at home, 38 percent died without any medical attention, while 25 percent were assisted by a TBA, four percent by an LHV or nurse, and 10 percent by a SBA (data not shown).

Figure 3.18: Distribution of PRDs by place of death

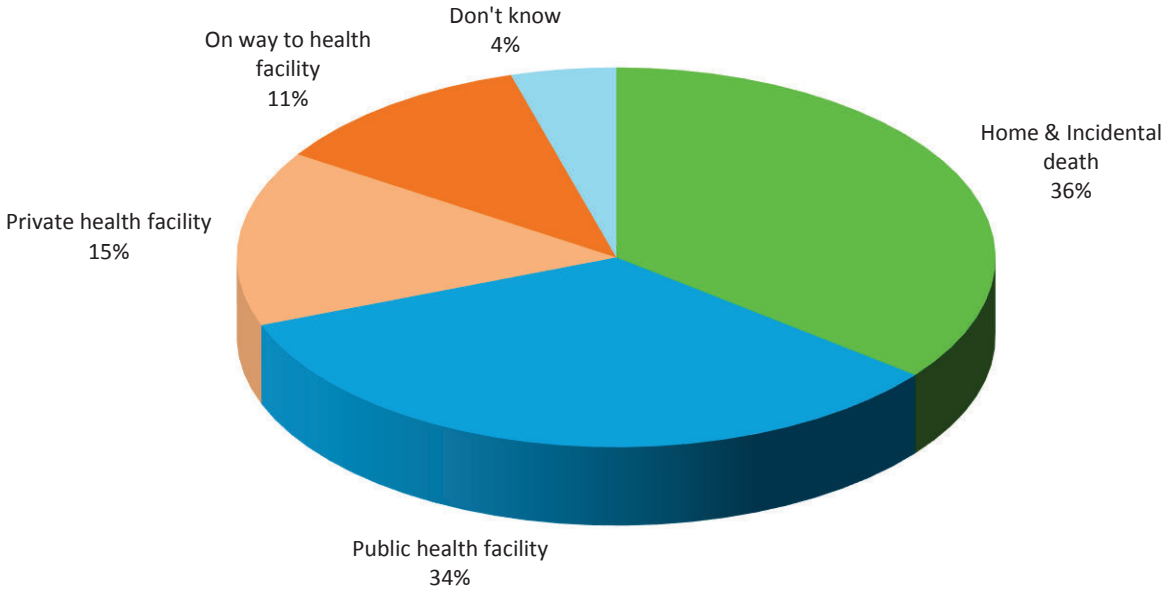


Table 3.22 shows the district breakdown of place of death. The highest proportion of deaths within the home were in Kohat, Swabi, and DI Khan, while the lowest number was in Nowshera.

Table 3.22: Proportion of PRDs by place of death and district

Place of death	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Home	39.3	35.1	21.3	23.0	40.2	38.7	33.4
DHQ/Teaching hospital	25.8	36.8	37.4	41.3	8.7	27.9	30.7
THQ	0.6	0.5	1.9	0.0	2.2	4.5	1.8
RHC/BHU	1.1	0.5	2.6	1.6	0.0	0.9	1.1
Private clinic	10.1	13.0	16.1	20.6	19.6	14.4	14.9
On way to health facility	12.9	13.0	14.8	7.9	13.0	7.7	11.4
Elsewhere (Incidental death)	2.8	0.0	5.2	4.0	2.2	0.5	2.2
Don't know	7.3	1.1	0.6	1.6	14.1	5.4	4.5
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	178	185	155	126	92	222	958

Notably, among poor women, a significantly higher proportion—47 percent—died at home, while 34 percent died at a health facility.

3.7 Care-Seeking Behaviors and Sources of Delay

According to the model suggested by Thaddeus and Maine (1994), there are three delays that can lead to adverse maternal outcomes. The first delay is at the household level and is related to the time taken to reach a decision of whether a woman needs help, from whom, and where. The second delay is associated with transporting the woman to a facility. The third delay is associated with the time spent at a facility before she is provided care. This study found such delays to be operating with fatal consequences in the PRDs identified.

The First Delay: Making the decision to seek care

As Table 3.23 shows, in four out of five cases, the woman's husband decided whether she should seek care at a health facility. Only about one third of women reportedly decided for themselves. The role of other family members was comparatively smaller but significant, especially for natal parents as well as parents in law.

In patriarchal societies such as Pakistan, men are seen as the main decision-makers for important family matters. Women are excluded from even the most routine decisions (Jejeebhoy and Sathar 2001, Bhatta 2013). This can have a direct impact on women's health and wellbeing, and of their families (Gallen et al. 1986). Research by Mullany et al. (2007) shows that educating men and women on maternal health care utilization and birth preparedness in urban Nepal led to a positive impact on maternal health behaviors, compared with solely educating women. Reaching men with safe motherhood messages can be an important strategy in ensuring women are able to access appropriate care in time.

Table 3.23: Decision-making to seek care at time of delivery, by district

Main decision-maker	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Patient herself	6.8	31.7	75.4	26.1	20.8	27.4	32.9
Husband	72.8	77.5	88.6	67.4	77.4	86.7	79.3
Father	11.7	11.7	5.3	9.8	24.5	20.7	13.3
Mother	21.4	24.2	28.9	26.1	34.0	20.7	25.0
Father-in-law	17.5	18.3	9.6	14.1	39.6	13.3	16.7
Mother-in-law	30.1	37.5	45.6	37.0	43.4	26.7	35.8
Brother	9.7	7.5	16.7	6.5	5.7	9.6	9.7
Sister	3.9	5.0	18.4	10.9	1.9	9.6	8.9
Brother-in-law	5.8	5.8	14.9	7.6	5.7	2.2	7.0
Sister-in-law	2.9	12.5	33.3	6.5	7.5	2.2	11.2
Others	1.0	0.8	0.0	2.2	0.0	0.7	0.8
Don't know	1.0	1.7	3.5	3.3	1.9	5.2	2.9
N	103	120	114	92	53	135	617

Note: This is a multiple response variable.

The crucial period within which a woman needs to reach a health facility, especially for obstetric hemorrhage, is within two hours. According to respondents, in most cases, the decision to seek care at a health facility was made in less than an hour, which is quite rapid. As Table 3.24 shows, in four out of five cases, the decision to seek care at a health facility was made immediately.

Table 3.24: Distribution of PRDs by Time taken to reach a decision, by district

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Less than 1 hour	83.5	74.2	83.3	73.9	90.6	75.6	79.1
1 hour	2.9	1.7	1.8	1.1	1.9	1.5	1.8
2 hours	1.9	6.7	0.0	4.3	1.9	1.5	2.8
3 hours	1.0	4.2	0.9	4.3	1.9	0.0	1.9
4+ hours	2.9	3.3	7.0	9.8	0.0	13.3	6.8
Don't know	7.8	10.0	7.0	6.5	3.8	8.1	7.6
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	103	120	114	92	53	135	617

In cases of delay, the main reason was due to the lack of readily available funds and time needed for arranging them (Table 3.25). This was followed by lack of transportation. The third most common (and related) reason was that the health facility was too distant.

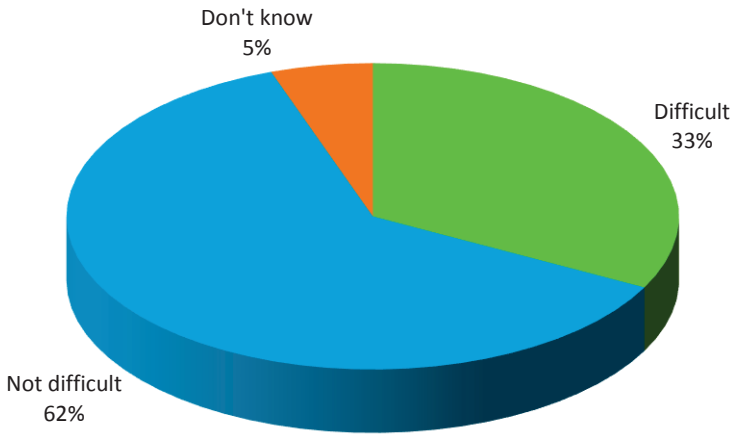
Table 3.25: Reasons for delay in decision-making by district

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Deceased woman refused to go to hospital	11.1	5.3	18.2	0.0	33.3	9.1	8.5
Health facility was too far	33.3	26.3	27.3	33.3	66.7	36.4	32.9
No transport was available	11.1	21.1	54.5	50.0	0.0	36.4	34.1
No money was available	44.4	42.1	63.6	27.8	0.0	59.1	45.1
Husband was away	22.2	10.5	9.1	11.1	0.0	9.1	11.0
Husband didn't agree	11.1	10.5	9.1	22.2	33.3	4.5	12.2
Elder woman / TBA didn't agree	11.1	10.5	9.1	0.0	0.0	13.6	8.5
Others	0.0	0.0	9.1	5.6	0.0	4.5	3.7
Don't know	11.1	0.0	0.0	5.6	0.0	9.1	4.9
N	9	19	11	18	3	22	82

Note: This is a multiple response variable.

As shown in Figure 3.19, the families of about one third of the deceased women reported finding it difficult to arrange funds for management of delivery-related complications. A higher proportion of respondents (44%) in DI Khan felt that costs of treatment were high and difficult to manage. One third of respondents in Mansehra, Nowshera, and Swabi, and one quarter in Haripur, mentioned high cost of treatment as an obstacle for accessing care. Despite the fact services at public facilities are free, families still incur the costs of transportation, blood transfusion, and medicines, among others, which are obstacles for poorer families.

Figure 3.19: Perception of respondents regarding affordability of costs of care



Among relatives of women who need delivery care, decisions of when and where to seek appropriate care can be influenced by their knowledge and understanding of danger signs in pregnancy (WHO 2002). Table 5.6 (page 55) indicates, except for awareness of excessive bleeding, minimal unprompted knowledge of other danger signs among family members. Nearly two thirds of respondents were unaware of any pregnancy danger signs. One quarter reported that obstetric hemorrhage could lead to maternal death, with one out of 10 reporting that severe headache and edema of hand and face can be fatal. Community awareness of these danger signs needs to be enhanced to make women and men better prepared to recognize early the onset of birth complications. This has always been a primary responsibility of LHWs, and one they should more actively pursue.

Table 3.26: Knowledge of danger signs of pregnancy among decision makers, by district

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
Not aware of any danger sign	72.9	36.4	65.2	49.2	86.1	76.8	62.5
Bleeding	21.2	52.1	12.6	34.2	12.5	19.3	26.9
Edema hand and face	6.8	15.2	12.6	9.2	0.0	4.4	8.7
Blurring of vision	5.1	1.2	1.5	3.3	0.0	0.6	1.9
Severe headache	7.6	15.8	15.6	15.0	1.4	2.2	10.0
Persistent vomiting	3.4	6.1	3.7	10.8	0.0	0.0	4.0
Epigastric pain	0.0	5.5	0.7	4.2	0.0	0.0	1.9
Tiredness and palpitation	3.4	2.4	8.1	4.2	0.0	0.0	3.0
Jaundice during antenatal period	0.0	1.8	1.5	1.7	0.0	1.1	1.1
Loss of foetal movements	1.7	7.9	0.0	14.2	0.0	0.6	4.2
Fever following abortion/ delivery	0.8	12.7	1.5	3.3	0.0	0.0	3.5
N	118	165	135	120	72	181	791

Note: This is a multiple response variable.

The Second Delay: Time to reach a facility

Virtually half of the women who had died at a facility had reached the first contact facility within half an hour of leaving their homes (Table 3.27). However, for 16 percent of women, it took about an hour to reach a facility.

Table 3.27: Time taken to reach first point of care

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
1-15 min	23.3	11.7	27.2	15.2	22.6	11.1	17.8
16-30 min	30.1	20.8	37.7	34.8	28.3	20.7	28.2
31-45 min	7.8	10.8	12.3	5.4	9.4	2.2	7.8
46-60 min	19.4	20.8	7.9	9.8	15.1	22.2	16.4
61+ min	17.5	30.0	8.8	29.3	24.5	35.6	24.6
Don't know	1.9	5.8	6.1	5.4	0.0	8.1	5.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	103	120	114	92	53	135	617

The Third and "Fourth" Delays

While relatives did manage to get transport for most of the women to get to facilities in time, in many cases, they nevertheless failed to access appropriate timely care due to the third and fourth sources of delay. The third delay was due to the lack of services available at the first point of care, requiring the woman to be referred to another facility. The fourth delay was being referred from the second point of contact to a higher facility.

Among women who did reach health facilities, a quarter of deaths took place at the first contact facility, a fifth died upon reaching a second contact facility, and a tenth died upon reaching the third facility (Table 3.28).

Table 3.28: Breakdown of PRDs by number of facilities accessed, by district

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
At home	39.3	36.2	21.3	23.0	40.2	38.7	33.6
On way to 1st facility	6.2	7.0	11.6	3.2	3.3	5.0	6.3
At 1st facility	18.0	23.8	15.5	23.0	25.0	32.9	23.5
On way to 2nd facility	6.2	3.2	3.2	4.0	4.3	1.8	3.7
At 2nd facility	15.7	17.3	26.5	23.0	16.3	14.4	18.5
On way to 3rd facility	0.6	1.6	0.0	0.8	5.4	0.9	1.3
At 3rd facility	11.2	10.8	16.8	19.0	3.3	5.9	11.1
Incidental death	2.8	0.0	5.2	4.0	2.2	0.5	2.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
N	178	185	155	126	92	222	958

In total 106 PRDs (11%) occurred while women were being transported to a facility. Among these, 59 women died *en route* to the first contact facility, 35 women died in transit to a second contact facility, and 12 women died on the way to a third contact facility. Table 3.28 s clearly how the unnecessary referrals of women from one facility to another becomes a fourth source of fatal delay.

Nearly three quarters of deceased women experienced problems with management at health facilities, with one third of respondents reporting that they were not satisfied with the treatment provided to the deceased (data not shown). In the perception of respondents, the major problem at the facility level that contributed to the death was avoidable incorrect treatment to the deceased, such as delayed blood transfusion, and non-availability of appropriate staff at the facility (Table 3.29).

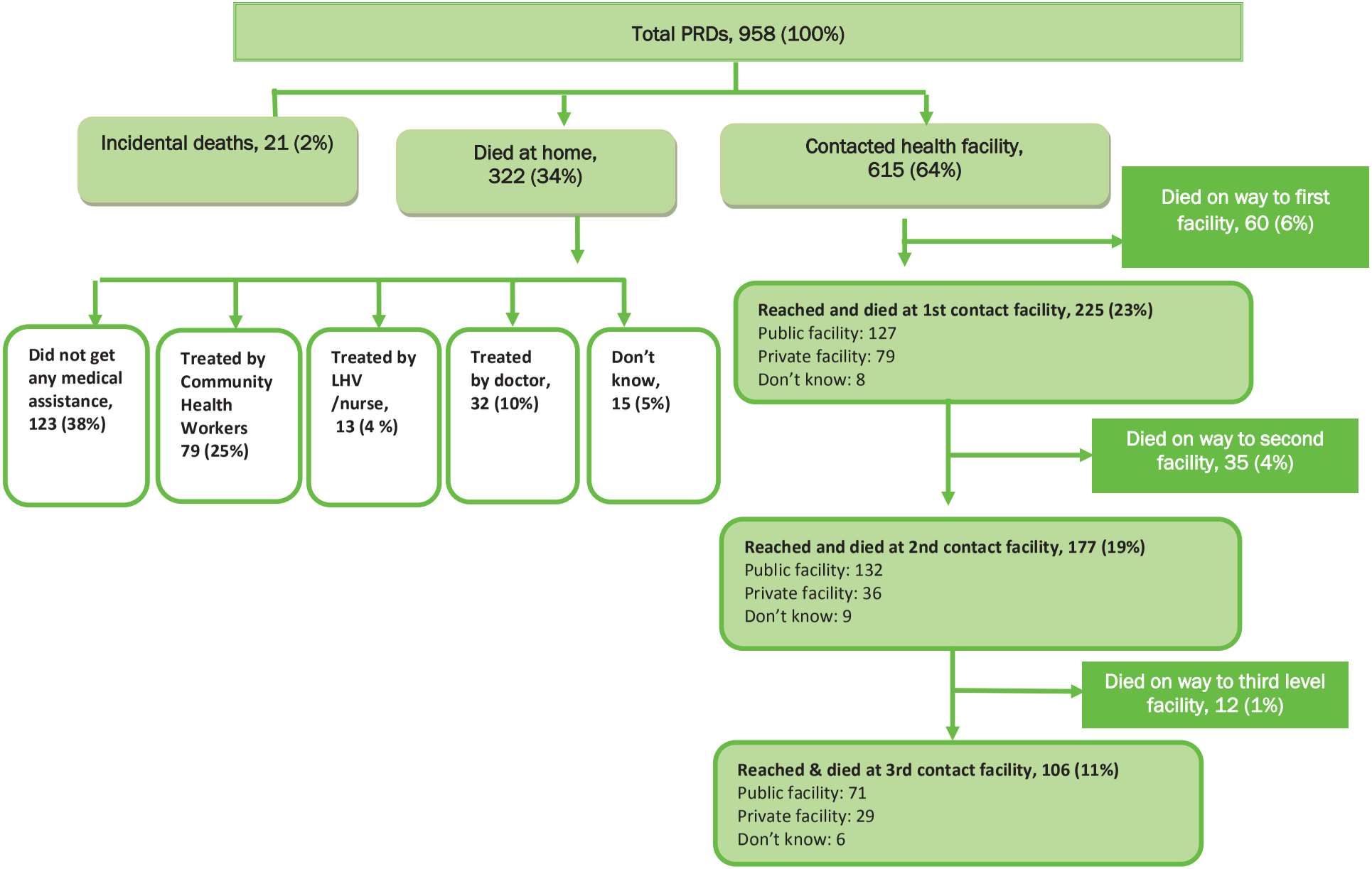
Table 3.29: Perception of respondents regarding facility problems, by districs

	Swabi	Mansehra	Nowshera	Haripur	Kohat	DI Khan	Total
None	29.0	25.8	35.2	19.0	70.6	31.9	35.2
Admission	12.8	7.8	2.3	3.0	4.9	11.3	7.4
Medical treatment	22.2	25.8	30.5	77.0	13.1	18.4	31.0
Medication	0.9	3.1	3.1	14.0	1.6	6.4	4.9
Diagnostic/ Laboratory Tests	6.8	3.9	4.7	17.0	0.0	8.5	7.1
Blood transfusion	11.1	15.6	16.4	10.0	3.3	9.2	11.7
Procedures	1.7	2.3	17.2	6.0	0.0	2.8	5.5
Provider's attitude	1.7	5.5	8.6	14.0	0.0	7.8	6.7
Respect shown to her	0.9	1.6	7.0	2.0	0.0	0.7	2.2
Maintenance of purdah	0.9	0.8	3.1	2.0	1.6	1.4	1.6
Staff was not available	9.4	7.8	8.6	18.0	0.0	5.7	8.6
Others	3.4	0.8	3.9	4.0	4.9	2.1	3.0
N	117	128	128	100	61	141	675

Note: This is a multiple response variable.

Figure 3.20 (following page) summarizes the key findings of the study on the care-seeking behaviors and experiences of deceased women at their deaths.

Figure 3.20: Care Seeking Behavior and Experiences of Deceased Women around Time of Death



Case Study—Shuffling between facilities

The deceased was a resident of tehsil Razar in district Swabi. She had completed schooling till 8th grade and was a home-maker. Her husband, a matriculate, was a laborer. She got pregnant three times in her life.

During her last pregnancy, she became hypertensive in the third trimester. She was receiving antenatal care from a specialist private provider.

When her labor pains commenced, she was taken to the provider's private clinic, but the doctor was out of the city. She was shifted to another private hospital of Mardan where a female doctor was also not available. They had reached the private hospital at 10 am. The nurse present at the facility maintained her IV line because her blood pressure was very high. At about 2 pm, the lady doctor at the facility arrived. She shifted the patient from the labor room to the general ward and went away. After 15 minutes, the patient's condition worsened and she started to perspire, although it was winter. She also started bleeding heavily. Her attendants called the doctor repeatedly and informed her of her worsening condition. The doctor returned only at 11 pm and after assessing the situation of the patient, referred her to the Lady Reading Hospital in Peshawar.

When the patient arrived at the Lady Reading Hospital, the nurse examined her and shifted her to the Intensive Care Unit (ICU) where she was given an IV drip. The lady doctor arrived the next morning, at 9 am, and decided immediately to carry out a hysterectomy. However, the patient lost consciousness before the doctor could proceed with surgery and eventually died.

As narrated by the deceased's mother

Four key observations emerge from this situation:

- First, a large proportion of deaths could have been averted, had there been widespread awareness among these women for where and how to reach an appropriate functional facility.
- Second, many women's deaths might have been avoided if their first or second contact facilities of contact, that referred them further, had been properly equipped to provide appropriate care on time.
- Third, if a functional referral system had been in place, these women could have been directly referred to a higher facility without having to go to inappropriate facilities, saving precious time. The major cause of death at these facilities was obstetric hemorrhage, which can be treated only within a time span of two hours.
- Fourth, poverty remains an obstacle in accessing timely and appropriate care and saving lives. Nearly two thirds of deaths were among women of low or medium socio-economic strata, while only a third of PRDs occurred in households of high socio-economic strata.

4. Study Cost and Value for Money

We estimated the cost of implementing the community based Made-In Made-For approach by calculating separately the logistical and administrative costs associated with the field work. The cost analysis included expenditures incurred in training, salaries for enumerators, accommodation for field staff, travel, field monitoring, supervision, and other general expenditures (supplies and services). Per unit cost was calculated as per unit WRA in the six districts. The cost of applying the technique came to 32 Pakistani Rupees (Rs.), or 31 cents (US$) per WRA. The estimated cost for PDHS 2006-2007 is Rs. 1,500 per household. According to Hill et al. (2007) the average cost of a household survey with a reasonable sample size is US $10 per household, and thus for a sample size of 100,000 the cost would be US $1 million. Further economies of scale can be achieved with combined trainings, bulk printing of materials, among others, if the KP government decides to introduce the technique in all the remaining districts.

The Council has in this project adopted ways to maximize benefits to the stakeholders by using already trained field staff from previous studies to minimize training costs, using district offices for training venues, involvement of a focal person from district health office, and building capacity of the government officials to ensure future sustainability. The network meetings with community leaders were organized using already available structures that ensured maximum participation, local ownership, and minimum implementation costs. Basic data entry and cleaning were on site, to quickly identify problems and enhance data quality. Lady Health Worker Supervisors were involved in Verbal Autopsies to build their capacity and raise awareness.

The overall result of our effort is that the actual cost of the MMR is within the affordable budgets of Health departments and can easily be institutionalized within government structures.

5. Study Limitations

The community-based informant (MADE-IN/MADE-FOR) technique can only be used if there are suitable informant networks available. Furthermore, our experience shows that the effectiveness of the capture-recapture technique is compromised in areas with scattered populations over large geographical areas, because in these areas matching cases between networks is not possible.

Since the data collection relies on families' memory of the circumstances of a death, some events and details may be overlooked. Moreover, in the data collected, deaths among women in early pregnancy may have been missed because respondents were unaware the deceased were pregnant. Sensitive deaths (e.g. among unmarried women or following an induced abortion) may also have been missed due to family members' fear of stigma and reluctance to share such information.

6. Discussion

A maternal death is a major tragedy that affects the lives of children, families, communities, and society at large. In Pakistan, this tragedy is compounded by the fact such deaths are largely avoidable, through timely and appropriate obstetric care. Regrettably, the country was unable to achieve MDG 5, which required a 75 percent reduction in maternal mortality from 1990 to 2015. To achieve the new SDGs, it will be important to periodically update estimates of maternal mortality, especially at the provincial and district levels, to identify specific areas where interventions are required and assess the overall impacts of existing efforts.

This study used the community informant-based technique (MADE-IN/MADE-FOR) to capture maternal deaths in six KP districts at the community level, upon which provincial MMR is estimated. While the main aim of this study was estimating KP's MMR, it also had a broad objective of demonstrating to provincial and district health officials the possibility of periodically obtaining data on maternal deaths through community-based networks and local government officials at the union council level. If district estimates are made available to provincial program managers and policy makers on a regular basis, that evidence can be utilized to maintain focus on maternal health improvement, and to justify the high priority and attention it requires.

The adjusted MMR for KP province is 271 per 100,000 live births (95% CI 260-290) and its unadjusted MMR is 198 per 100,000 live births (95% CI 190-210), based upon 958 physically verified deaths. There are considerable variations in MMR by district. The adjusted MMR is highest in DI Khan (397 per 100,000 live births), which lags other districts in all aspects of service provision. On the other hand, Nowshera and Haripur fare comparatively better, with adjusted MMRs of 263 and 264, respectively, perhaps because their health facilities here are better endowed, both public and private services are available, and literacy levels are higher.

The major direct cause of death is postpartum hemorrhage, which accounted for 46 percent of PRDs, followed by eclampsia (18%) and pregnancy-related sepsis (11%). Notably, postpartum hemorrhage was also identified as the leading direct cause of maternal deaths in PDHS 2006-2007. According to WHO, the major direct causes of maternal deaths in developing countries continue to be severe bleeding, infections, and eclampsia (WHO/UNICEF/UNFPA/World Bank 2010). Indirect causes account for 12.6 percent of PRDs in KP, with anemia during pregnancy, followed by renal failure and cardiac arrest the major issues.

A large proportion (38%) of deaths reported occurred by the end of the first postpartum day, while one third were between the second and forty-second postpartum days. Globally, as well, most maternal deaths occur between late pregnancy and about 48 hours after delivery (AbouZahr 1998).

Maternal complications are unpredictable, and it is not possible to prevent, detect, or treat all causes of maternal deaths during ANC examinations (Rooney 1992, Carroli et al. 2001). Good ANC can help screen some high risk cases, however, where a biomedical risk factor can be identified. In this study, almost two thirds of deceased women had at least one biomedical risk factor, the most important high parity—nearly one third were multiparous.

One positive development discerned by this study, as well as in the earlier study in Punjab, is a discernible change in people's health-seeking behaviors and attitudes. A large proportion of women realize the importance of ANC, and are more frequently having ANC check ups. Husbands are seen as more supportive, who are the primary makers of decisions for when and where to seek care. The high proportion of facility-based deliveries also reflects a change in health-seeking behaviors. The role of mothers-in-law in decision-making is seen as diminishing, and the role of TBAs has also been marginalized.

Access to quality services is dependent upon socio-economic status and varies by district. Among women with more than three ANC consultations, the highest proportion (two thirds) was reported from Mansehra, followed by Nowshera. The highest proportion of women with no ANC was reported in DI Khan, followed by Kohat. The study highlights the conspicuously more acute suffering of poor, illiterate women, reaffirming that economic barriers persist and affect poor women's ability to access appropriate care. This is evident by the lower proportion of poorer women seeking ANC or hospital-based care.

Most deaths were in hospital settings, and a disturbingly high proportion of deaths occurred during transportation between facilities, implying inefficiencies in referral systems. Many women's lives could have been saved had communities and families been informed about where to go and how to reach appropriate facilities where comprehensive emergency obstetric care was available.

Lack of functional first level care facilities is a major factor contributing to maternal deaths worldwide (Maine 1994). A global systematic review of the third delay has revealed, in the developing world, that supply side barriers still exist, compromising health systems' abilities to effectively deal with severe obstetric complications (Knight et al. 2013). In resource-constrained settings, the differences between rich and poor's ease of access to emergency care is a major reason for poor maternal health outcomes (Pathak et al. 2010). Similarly, education levels influence care-seeking behaviors, RH intentions, contraceptive use, and hygiene practices within the home (Cleland 2001 and Bongaarts 1999). Most PRDs in KP were among women of lower and medium-low socio-economic statuses, and respondents in these categories admitted that the costs of treatment for the deceased were prohibitive and beyond their means. This factor may have compelled them to resort to nearby facilities, regardless of level of services provided.

Many of these findings are in congruence with global evidence. There are also similarities with the Punjab MMR study, in maternal death causes and circumstances, implying that pregnant women in Pakistan face the same issues and problems, across geographic and cultural regions.

A main strength of this study is that it involves the participation of the entire district administration and health officials, who become more cognizant of the maternal health problems rural women face, and are now considering measures to avert such deaths. The health officials in all six districts have been trained in the use of the MIMF technique, and the necessary software and tools have been provided to them. In all six study districts, the district officers for community development, additional district officers (coordination), and secretaries of union councils are fully familiar with the process of collecting data and can continue it in the future.

The cost-effectiveness of the MADE-IN/MADE-FOR methodology was also confirmed by the study--at the district level, the cost amounts to Rs. 32 (31¢) per WRA, while the cost of a household survey is several times higher. Such studies can be repeated biannually and measure maternal deaths prospectively. Moreover, efforts to raise awareness of RH and rights issues can also integrated with data collection activities.

Another positive aspect of this methodology is that it meaningfully involves community members in collecting data on maternal deaths, paving the way for greater community receptivity for response measures. The KP Integrated Development Strategy 2014-2018 recognizes that participation of communities in public decision-making is essential for effective delivery of services, and inspiring confidence in the government's responsiveness. In these study districts, community notables beame better aware of maternal health issues after collecting information on these deaths and can serve as influential agents of change.

The study establishes the feasibility of community informant networks for collecting data on maternal deaths. Information collected within union councils can collated at district levels and communicated to all relevant departments as well as the provincial headquarters. Such networks can also contribute to improving vital events (births and deaths by cause) registration within union councils and, consequently, districts. In the long run, their roles could be expanded to epidemic control, for example, where they could help detect cases and identify the sources of outbreaks.

6.1 Conclusions and Recommendations

This study confirms that maternal mortality persists as a major public health issue in KP, and the problem may be much larger thanassumed. The study's success in identifying causes of death through verbal autopsies and their subsequent disaggregation into direct and indirect causes is important from policy and programmatic perspectives. Interventions need to focus both on direct and indirect causes of mortality if maternal mortality is to be lowered. Integrating the MIMF approach and institutionalizing it within the health system will ensure district maternal mortality estimates are available to planners and policymakers routinely, which will help monitor progress of specific interventions as well as improvements in the health delivery system as a whole.

The two major direct causes of death identified in this study are obstetric hemorrhage and eclampsia. These conditions should be considered when designing any future interventions, as simple strategies are now available to prevent the occurrence of both, such as community-based use of misoprostol by delivering women themselves, use of pressure vests, and training first level care providers in prophylactic use of aspirin and loading dose of magnesium sulfate, prior to referring women to a facility where treatment can be continued.

Moreover, to tackle anemia, a major indirect cause of death, there is urgent need for investing in proper health education, especially on the dietary needs of pregnant women. We know from the National Nutrition Survey 2014 that nearly 48 percent of pregnant and non-pregnant women suffer from anemia, which not only leads to premature and low birth babies, but leads, indirectly, to maternal death. Sound nutritional advice during pregnancy, and ending gender biases in providing food to young girls, can prevent anemia in women.

With a higher proportion of deaths reported in multiparous and older women, the need for improving access to FP services and information cannot be emphasized enough.

Research by Mullany et al. (2007) in urban Nepal indicates that educating both men and women on maternal health care utilization and birth preparedness has a more positive impact on maternal health behaviors than educating women alone. Reaching men with safe motherhood messages can be an important strategy for ensuring women are able to access appropriate care on time. The improvements observed during this study in health-seeking behaviors, in particular the supportive role of husbands, suggest such interventions would be well-received. Use of the MADE-IN/MADE-FOR method also affords a unique opportunity for involving community influentials—specifically informants recruited to collect PRD data—to share study results with their communities, along with health education messages, to create awareness and influence health-seeking behaviors.

The government of KP is expanding the deployment of community midwives to increase the proportion of deliveries by SBAs. There is sparse global evidence, however, showing that this indicator alone is correlated with lower maternal mortality (Ronsmans et al. 2003, Borghi et al. 2006). Empirical evidence shows, to reduce maternal and neonatal mortality, that encouraging women to deliver in an environment that is clean, has technically competent and skilled staff, and is equipped with life-saving supplies is important: Whether deliveries occur at home or are facility-based, SBAs readily linked to a fully functional health system can avert many deaths. Our findings show that in acute emergencies women's lives cannot be saved unless SBAs are integrated with a good referral system able to transport women to facilities that can provide comprehensive obstetric care. SBAs should, therefore, be an integral part of a continuum of care that begins with interventions targeting women at home, at the community level, and includes outpatient services and respectful care in clinical care settings. The government's recent initiative of paying pregnant women, to encourage deliveries at health facilities, is a positive step.

The study also raises issues about the quality of emergency obstetric care available. Improving the quality of care, providing at least comprehensive emergency obstetric care at RHC and THQ levels, would help poor families' access appropriate care closer to their homes. The recent introduction of a safe childbirth checklist in two districts, as part of the Quality and Safety in Childbirth in Obstetrics project, should help address quality gaps.

This study has successfully identified different networks that can be used within communities to capture data on deaths in Pakistan, establishing that the LHW network is a reliable source of mortality information. LHWs' ability to capture women's deaths could be improved, however, through proper training. Supplementing their information with a second network would enhance the probability of capturing deaths. In areas not covered by LHWs, other potential networks include religious leaders, *Nikah* registrars, and women councilors. No single approach can adequately meet all requirements for estimating maternal mortality efficiently, and with reliable precision. Complementary measurement options and opportunities, such as the household census and periodic demographic and health surveys, must also be considered to validate results.

An aspect that needs exploration through further research, and not fully examined in Pakistan, are the consequences of maternal deaths on deceased women's families and communities, in terms of e psychological costs to their children, other family members, and economic costs to households and communities. Evidence from outside Pakistan shows that children who have lost their mothers tend to be more malnourished (stunted) and educated less than children who lost their fathers (Ainsworth and Semali 1998). Such research can help in formulate interventions to improve families' coping abilities (until maternal mortality is reduced substantially) to bear this tragic loss in a manner minimizing its possible negative outcomes.

The main aim of this MIMF study in KP, in collaboration with and support from district health officials, ensuring their participation at every stage of study implementation, was to improve the capacities of district health systems and enable their officials to use this methodology and continue it. A policy decision must institutionalize this approach, however. We will make efforts to engage with policy makers at the highest levels so the necessary resources are available to districts, and capacities in the other remaining KP districts are enhanced so they can adopt the methodology. With the assistance of health department staff, Population Council has already provided training in the six study districts, and can provide technical assistance in developing the capacities of the remaining districts.

This study has very clearly emphasized the plight of pregnant women who overcome immense hurdles posed by poverty and restrictive socio-cultural norms to reach a health facility, only to lose their lives at the hands of a poorly functioning health system. If progress is to be made, and health outcomes for women improved, the health system must be strengthened, especially availability of quality care and an efficient referral system. Bangladesh has shown that it is possible within the region, having achieved an impressive 3.6 percent annual decline in MMR (Kassebaum et al. 2014), a rate 12 times higher than Pakistan's.

With a demonstrated means for estimating the scale of the issue and detecting its underlying causes now at Pakistan's disposal, there is an opportunity to make up for lost time and minimizing avoidable pregnancy-related deaths in Pakistan.

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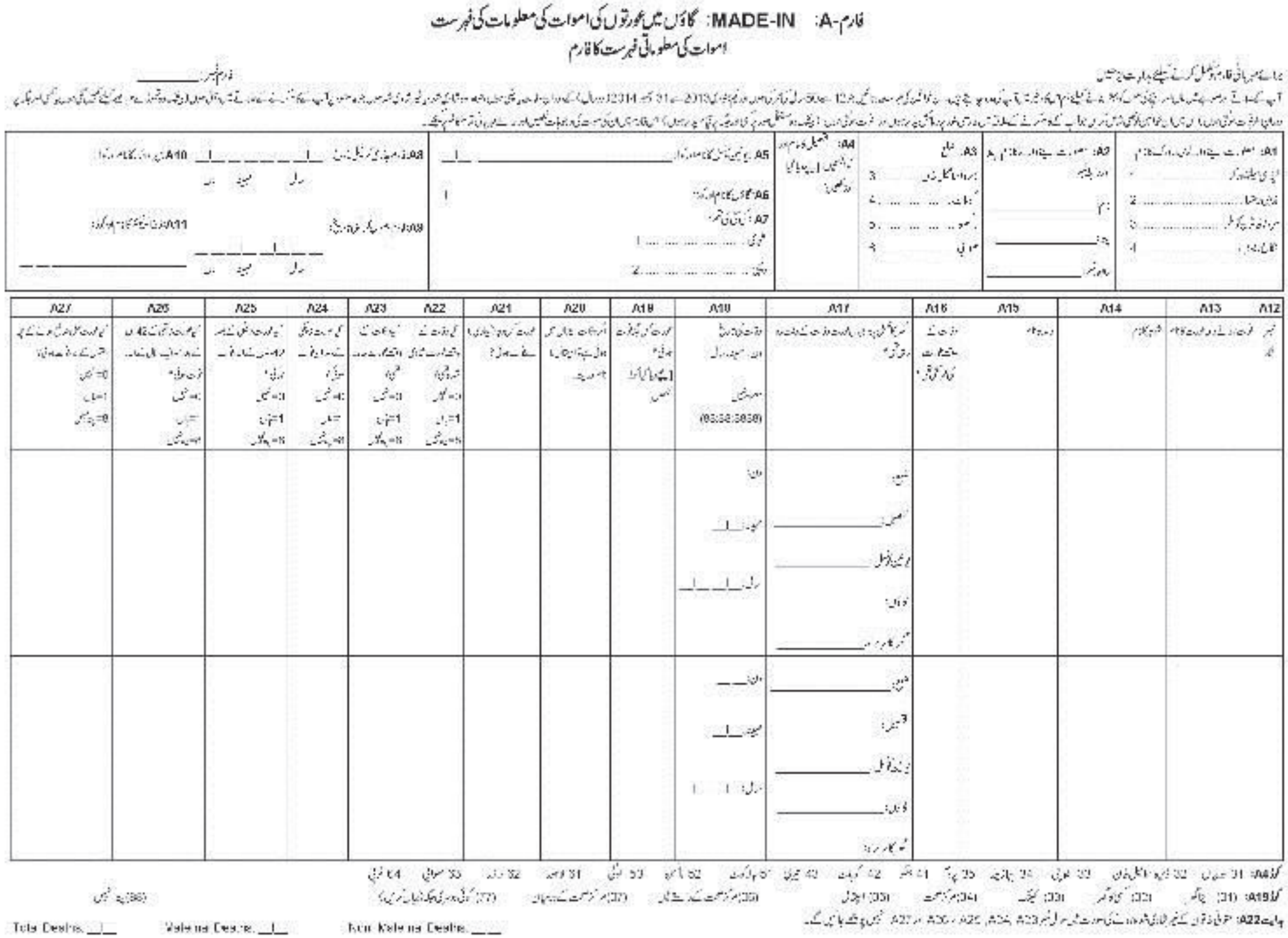
8. Appendices

8.1 Listing forms



فارم-B: MADE-IN: گاؤں میں عورتوں کی اموات کی معلومات کی فہرست

اموات کی معلوماتی فہرست کا فارم

فارم نمبر ________

[illegible] ہدایات پڑھیں

[illegible] 12 سے 50 سال [illegible] 2013 سے 31 دسمبر 2014 [illegible]

[illegible] Mop-up visits [illegible]

B1	B2	B3	B4	B5	B6	B7	B8	B9
1 ...... 2 ...... 3 ...... 4	3 4 ...... 5 6	[illegible]	________	1	1 2	__ / __ / __		________

B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 99/99/9999	[illegible]	[illegible]	[illegible]	0-[illegible] 1-[illegible] 9-[illegible]	0-[illegible] 1-[illegible] 9-[illegible]	0-[illegible] 1-[illegible] 8-[illegible]	0-[illegible] 1-[illegible] 8-[illegible]	0-[illegible] 1-[illegible] 8-[illegible]	0-[illegible] 1-[illegible]
					ضلع ____ تحصیل ____ [illegible] ____ گاؤں ____ [illegible] ____	__ / __ __ / __ سال __ / __ / __									
					ضلع ____ تحصیل ____ [illegible] ____ گاؤں ____ [illegible] ____	__ / __ __ / __ سال __ / __ / __									

A4b: 31-[illegible] 32-[illegible] 33-[illegible] 34-[illegible] 35-[illegible] 1-[illegible] 12-[illegible] 15-[illegible] 51-[illegible] 52-[illegible] 55-[illegible] 61-[illegible] 62-[illegible] 63-[illegible] [illegible]

B17: (01) [illegible] (02) [illegible] (03) [illegible] (04) [illegible] (05) [illegible] (06) [illegible] (07) [illegible] (77) [illegible] ________ (99) [illegible]

B20: [illegible] D21, D22, D23 [illegible] D24 [illegible]

Total Deaths ___ Maternal Deaths: __|__ Non Maternal Deaths: __|__

فارم-C: MADE-IN: گاؤں میں عورتوں کی اموات کی معلومات کی فہرست

اموات کی معلوماتی فہرست کا فارم

فارم نمبر: ______

C26	C25	C24	C23	C22	C21	C20	C19	C18	C17	C16	C15	C14	C13	C12	C11	C10

Total Deaths: __|__ Maternal Deaths: __|__ Non Maternal Deaths: __|__

8.2 Verbal Autopsy Questionnaire

PROCESSING CODE

District (Code)	Tehsil (Code)	Union Council (Code)	Village/PSU (Code)	Woman line # (Form-C)

S. No. of Form C: __I__I__I__

Was the death maternal, non-maternal or late maternal	Maternal..... 1 Non-maternal..... 2 Late maternal 3

VERBAL AUTOPSY QUESTIONNAIRE

Informed Consent for the Respondents of Verbal Autopsy

Purpose of the study:
The purpose of this interview is to find out the circumstances of death of your wife/ daughter/ sister/ aunt/ relative. Your answers are very important to us and will help to find better ways to deliver health services to other women in Pakistan to prevent them from dying during pregnancy and in childbirth.

Procedures to be followed:
My name is _____ and I am working with an organization called Population Council, which is a research organization working with the Government of Pakistan to improve the wellbeing of the people. We are conducting a study in six districts of the Khyber Pakhtunkhwa province to estimate the maternal mortality ratio in Khyber Pakhtunkhwa. We would like to seek your cooperation in getting a better idea of the maternal mortality situation in Pakistan, but especially in the Khyber Pakhtunkhwa province.

Discomforts and risks:

If this is not a convenient time for you, we can come later to discuss with you. You may end the interview at any time without penalty or loss. You don't have to answer any questions that you don't want to answer, and you may end this interview at any time you want to. You may feel sad, distressed in recalling the past events. If you do so and want to discontinue the interview you can do so at any time.

Benefits:

There are no direct benefits to you for participating in the study. You may find an indirect benefit in knowing you have participated in an important study that could help others in the future.

Duration of the procedures and study:
We will greatly appreciate if you base your answers on your knowledge regarding the circumstances and cause of death of the deceased woman (to be filled in after exploring relationship). We request you however, to answer as fully as possible because your perceptions and opinions are valuable information.

Your responses to this questionnaire will be completely confidential and will be used for research purposes only. No personal reference will be made to your participation in this survey. We will combine your responses with those of other participants in a report to estimate the maternal mortality and causes of death to get the broader picture regarding maternal health situation in Pakistan.

The interview will take 30-45 minutes to complete. The duration of the entire study is about six months. We may need to contact you again if we need clarification to clear a point, for which you can agree or disagree.

Compensation:
Your participation in this study is purely voluntary and will not be paid any compensation for participation in the study. There is no penalty for refusing to take part. If you agree to participate in this study, you may end your participation at any time without any penalty or loss.

Whom to call in case of an emergency:
If you have a concern about any aspect of the study, you should ask to speak to the researchers who will do their best to answer your questions (Dr. Mumtaz focal person 0334-3403478). Any complaint about the way you have been treated during the study or any possible harm you might suffer will be addressed. You may call Dr Saleem Shaikh at this number 0092-51-8445566 Ext. 195 for any complaints.

Offer to answer questions and freedom to withdraw from the study:
Your participation in this study is purely voluntary. If you do not agree to participate in the study, you can withdraw from the study at any time without prejudice.

Confidentiality:
Your responses to this questionnaire will be completely confidential and will be used for research purposes only. No personal reference will be made to your participation in this study of measuring maternal mortality. We will combine your responses with those of other participants to describe the general picture in Pakistan. Data will be stored in a locked cabinet dedicated to this study that only the study team can access.

Subject's statement:

"I have been given an opportunity to ask any questions I may have, and all such questions or inquiries have been answered to my satisfaction."

"I further understand that my records will be kept confidential and that I may withdraw from this study at any time.

"My withdrawal from this study or my refusal to participate will in no way affect my medical care from the hospital or clinic.

"I have been informed orally and in writing of whom to contact in case of an emergency. I agree to participate in this study as a volunteer subject."

_____ _____
Date Signature of Volunteer

Investigator's statement:

An example of a suggested statement is as follows:

"I, the undersigned, have explained to the volunteer in a language he/she understands the procedures to be followed in the study and the risks and benefits involved.

_____ _____
Date Signature of Investigator

_____ _____
Date Signature of Witness to the Above Signatures and Explanations

The Informed Consent must include any additional information that applicable Federal, State, or local laws require to be disclosed in order for informed consent to be legally effective.

_____

جواب دہندہ سے انٹرویو کا اجازت نامہ

میرا نام۔۔۔۔۔۔۔۔۔۔۔۔۔۔۔ ہے اور میرا تعلق پاپولیشن کونسل سے ہے ۔جو تحقیق کا ایک ادارہ ہے اور حکومت پاکستان کے ساتھ مل کر لوگوں کی فلاح و بہبود کے لئے کام کر رہا ہے۔ ہم صوبہ خیبر پختونخواہ میں پیدائش کے عمل کے دوران فوت ہونے والی عورتوں کی شرح کا اندازہ لگانے کے لئے چھ اضلاع میں ایک تحقیق کر رہے ہیں ۔ ہمیں اس شرح کا اندازہ لگانے کے لئے آپ کا تعاون درکار ہے۔

تحقیق کا مقصد:۔

اس انٹر ویو کا مقصد یہ ہے کہ ان حالات و واقعات کے بارے میں جانا جائے جو خاتون کی موت کی وجہ بنے۔ آپ کی دی گئی معلومات عورتوں کو حمل اور زچگی کے دوران صحت کی بہتر سہولتیں فراہم کرنے اور اموات سے بچانے میں مددگار ہوں گی۔

خدشات:۔

اگر اس وقت آپ مصروف ہیں تو ہم آپ کے ساتھ بات چیت کے لئے بعد میں آجائیں گے۔ آپ جس وقت چاہیں انٹرویو ختم کر سکتی ہیں اور اس کا آپ کو کوئی نقصان نہیں ہوگا۔ آپ کو اس بات کا اختیار ہوگا کہ آپ کو جو سوال اچھا نہ لگے اس کا جواب نہ دیں ۔ ماضی کے واقعات کو یاد کر کے اگر آپ پریشان ہوجائیں اور انٹرویو ختم کر ناچاہیں تو کر سکتی ہیں۔

فائدہ :۔

آپ کو اس تحقیق میں شرکت کرنے کا کوئی براہ راست فائدہ نہیں ہوگا لیکن یہ بات آپ کے لئے سکون کا باعث ہوگی کہ آپ نے ایک ایسی تحقیق میں حصہ لیا ہے جو دوسروں کے لئے فائدہ مند ہے۔

انٹرویو کا دورانیہ:۔

یہ بات ہمارے لئے باعث اطمینان ہوگی کہ آپ کی دی گئی معلومات اُن حالات و واقعات کی بنیاد پر ہوں جو خاتون کی موت کی وجہ بنے۔ہم آپ سے درخواست کریں گے کہ آپ سوالات کا تفصیلی جواب دیں کیونکہ آپ کی آراء اور معلومات قیمتی ہیں ۔آپ کی معلومات مکمل طور پر صیغہ راز میں رکھی جائیں گی اور صرف تحقیق کے لئے استعمال ہوں گی۔ آپ کی کوئی ذاتی معلومات انٹرویو میں شامل نہیں ہو گی۔ ہم آپ کے جوابات کو دوسرے لوگوں کے جوابات کے ساتھ ایک رپورٹ میں جمع کریں گے تاکہ ماوں کی شرح اموات ، اموات کی وجو ہات کا بہتر اندازہ لگایا جا سکے۔ انٹرویو مکمل کرنے میں 45-30 منٹ لگیں گے۔ تحقیق کا مکمل دورانیہ تقریبا تین مہینے ہے۔ ہوسکتا ہے کہ کسی بات کی وضاحت کے لئے آپ سے دوبارہ رابطہ کریں ۔.

ادائیگی:۔

آپ کی اس تحقیق میں شرکت خالصتا رضاکارانہ ہوگی اور آپ کو کوئی مالی ادائیگی نہیں کی جائے گی۔ اگر آپ اس تحقیق میں شرکت نہ کرنا چاہیں تو آپ پر کوئی جرمانہ بھی نہ ہوگا۔اگر آپ رضامند ہیں تو انٹر ویو شر وع کیا جا سکتا ہے آپ جس وقت چاہیں انٹرویو چھوڑ سکتی ہیں ۔

ہنگامی صورتحال میں کسی سے رابطہ کرنا ہے :۔

اگر تحقیق کے کسی پہلو کے بارے میں آپ کو کوئی خدشات ہوں تو آپ محقیقین سے رابطہ کر سکتی/سکتے ہیں وہ آپ کے سوالات کے جوابات دے کر آپ کو مطمئن کرنے کی کوشش کریں گے۔ آپ کسی بھی شکایت کے لئے ڈاکٹر سلیم شیخ سے اس نمبر پر رابطہ کر سکتے/سکتی ہیں ۔ (051-8445566)

آپ اپنے حقوق کے بارےمیں جاننے یا اُن کی خلاف ورزی کی صورت میں ہمارے فوکل پرسن ڈاکٹر ممتاز سے اس نمبر 0334-3403478 پر رابطہ کر سکتے /سکتی ہیں ۔

سوالات کے جوابات دینے اور تحقیق میں حصہ نہ لینے کی پیشکش:۔

آپ کی اس تحقیق میں شرکت مکمل طور پر رضا کارانہ ہے اگر آپ تحقیق میں حصہ نہ لینا چاہیں یا کسی بھی موقع پر تحقیق میں حصہ نہ لینا چاہیں تو آپ بغیر وجہ بتائے چھوڑ سکتے / سکتی ہیں۔

رازداری :۔

آپ کے جوابات مکمل طور پر رازداری میں رکھے جائیں گے اور صرف تحقیقی مقاصد کے لئے استعمال کئے جائیں گے ۔ شرح اموات کا اندازہ لگانے کی اس تحقیق میں آپ کی شرکت کا کوئی ذاتی حوالہ نہیں دیا جائے گا۔

ہم آپ کی رائے کو دوسرے جواب دہندہ لوگوں کی رائے کے ساتھ ملائیں گے ۔ آپ کی دی گئی معلومات کو ایک تالابند الماری میں رکھا جائے گا اور صرف تحقیقی ٹیم کی اس تک رسائی ہو گی۔

اعترافی بیان:۔

مجھے سوالات کرنے کا پورا موقع دیا گیا اور تمام سوالات کے تسلی بخش جوابات دیئے گے ۔ مجھے مزید یہ بھی سمجھایا گیا کہ میرے تمام معلومات راز میں رکھی جائیں گی اور یہ کہ میں کسی بھی وقت اس تحقیق سے الگ ہو سکتا/سکتی ہوں ۔ تحقیق سے علیحدگی صحت کی سہولت سے میرے علاج پر اثر انداز نہیں ہو گی۔ مجھے یہ بھی بتایا گیا کہ ہنگامی صورتحال میں کس سے رابطہ کرنا ہے۔ میں اس تحقیق میں رضاکارانہ طور پر شرکت کر رہا/رہی ہوں

جواب دہندہ کے دستخط:-------------------- -- تاریخ:---------------------------

انٹرویو کرنے والے /والی کا بیان :۔

میں نے جواب دہندہ کو اس کی زبان میں تحقیق کے سارے مقاصد اور مراحل سے آگاہ کر دیا ہے اور ممکنہ خدشات اور فوائد کے بارے میں بھی بتا دیا ہے۔

انٹرویو کرنے والے /والی کے دستخط:------------------ تاریخ:----------------------------

SECTION-A: IDENTIFICATION

A1- Name of District	
3 – DI Khan 4 – Kohat	5 – Mansehra 6 – Swabi

A2- Name of Tehsil			
31 - Darabin 32 - Dera Ismail Khan 33 - Kulachi 34 - Paharpur 35 - Paroa	41 – Hangu 42 – Kohat 43 – Teri	51 – Balakot 52 – Mansehra 53 – Oghi	61 – Lahore 62 – Razar 63 – Swabi 64 – Topi

A3- Name and code of Union Council	__|__|__
A4- Name and code of village/PSU	__|__|__
A5- Woman line number (From Form-C)	__|__

A6-Type of network **(Circle all death reporting networks)**	LHW .....1 Religious Leader .....2 M / F Councilor .....3 Nikah Registrar 4
A7-Complete address of household	

A8- Number of visits to complete the interview	__|__
A9- Duration of interview	__|__ (Minutes)
A10-Date of last visit for interview	__|__:__|__:__|__|__|__ DD MM YYYY
A11-Name and code of interviewer	__|__|__

A12-Result of interview	Complete ..... 01 Incomplete..... 02 Refused..... 03	HH not found..... 04 Shifted..... 05 Duplicate..... 06	Out of criteria (Age) . 07 Out of criteria (Year) 08 Others (Specify) 77

If A12 > 02 then end interview

SECTION-B: INFORMATION ABOUT THE RESPONDENT

Q.NO.	Questions and Filters	Coding Categories
B1 (2A120)	Name of verbal autopsy respondent: _____ انٹرویو دینے والی/ والے کا نام Complete address of respondent: انٹرویو دینے والی/ والے کا مکمل ایڈریس _____	
B2 (2A110)	What is your relationship to the deceased? آپ کا مرحومہ سے کیا رشتہ ہے؟	Husband .....01 Father/Mother.....02 Sibling .....03 Parent in Law.....04 Sibling in Law.....05 Neighbor .....06 Son/Daughter.....07 Son/Daughter in law .....08 Uncle .....09 Aunt.....10 Cousin .....11 Nephew.....12 Niece.....13 Other relative (specify).....77 No relation 97
B3	Gender of the Respondent انٹرویو دینے والی/ والے کی جنس	Male .....1 Female 2
B4 (2A115)	Did you live with the deceased in the period leading to her death? جس وقت مرحومہ کی موت واقع ہوئی تو کیا آپ اس عرصے میں اس کے ساتھ رہتی/رہتے تھے؟	Yes.....1 No.....**(Go to B6)**.....2
B5	Since how long you were living with the deceased? آپ کتنے عرصے سے مرحومہ کے ساتھ رہ رہی تھیں/تھے؟	(a) Weeks..... __|__ (b) Months ..... __|__ (c) Years..... __|__ Don't know.....88
B6	Were you present with deceased at the time of death کیا مرحومہ کی وفات کے وقت آپ اس کے پاس موجود تھیں/ تھے؟	Yes.....1 No.....2

SECTION-C: DECEASED WOMAN'S HOUSEHOLD CHARACTERISTICS

In order to get an idea of the socio-economic conditions of the deceased woman we shall ask a few questions related to her (deceased woman's) living conditions

مرحومہ کی سماجی اور معاشی حالات کا اندازہ لگانے کے لیے ہم اس کے روزمرہ کی زندگی سے متعلق کچھ سوالات کریں گے

Q.NO.	Questions and Filters	Coding Categories
C1	What is the main source of drinking water of deceased's household. مرحومہ کے گھر میں پینے کے پانی کا اہم ذریعہ کیا ہے؟	Govt. supply (tap water inside) .....01 Govt. supply (communal) .....02 Motorized/Hand pump (inside).....03 Motorized/Hand pump (outside) .....04 Well (inside).....05 Well (outside) .....06 Tube-well .....07 River/Canal/Stream .....08 Pooled/Pond water .....09 Others **[Specify]**.....77
C2	What kind of toilet facility do deceased's household members usually use? عموماً مرحومہ کے گھر والے بیت الخلاء کے لیے کس طرح کی سہولت استعمال کرتے ہیں؟	Flush to sewerage.....01 Flush connected to septic tank.....02 Flush connected to open drain.....03 Raised latrine .....04 Pit latrine .....05 In fields .....06 Others **[Specify]**.....77
C3	What is the main type of fuel used for cooking in the household? گھر میں کھانا پکانے کے لیے ایندھن کے کون سے ذرائع استعمال ہوتے ہیں؟ **(Please observe)**	Fire wood.....01 Kerosene oil .....02 Gas Cylinder.....03 Natural gas (Sui gas) .....04 Dung Dry.....05 Charcoal/Coal .....06 Others **[Specify]**.....77
C4	What is the main material of the roof of the house? **(Please observe)** گھر کی چھت کس چیز کی بنی ہوئی ہے؟	Concrete ..... 01 Iron sheet ..... 02 Guarder and T-iron ..... 03 Wood/Bamboo and mud..... 04 Other s**[Specify]** _____ 77

Q.NO.	Questions and Filters	Coding Categories
C5	What is the main material of the floor of the house? گھر کا فرش کس چیز کا بنا ہوا ہے؟ **(Please observe)**	Earth/sand/mud ..... 01 Chips ..... 02 Ceramic tiles ..... 03 Marble ..... 04 Cement ..... 05 Bricks ..... 06 Others**[Specify]**..... 77
C6	What is the main material of the walls of the house? گھر کی دیواریں کس چیز کی بنی ہوئی ہیں؟ **(Please observe)**	Burnt bricks/Blocks..... 01 Mud bricks/Mud..... 02 Wood/Bamboo ..... 03 Stones ..... 04 Others **[Specify]**..... 77

C7 Does the household of the deceased have the following: کیا مرحومہ کے گھر میں درج ذیل اشیاء موجود ہیں؟

	Household possessions	Yes	No
a.	Wall Clock	1	2
b.	Chairs	1	2
c.	Bed	1	2
d.	Sofa	1	2
e.	Electricity	1	2
f.	Sewing Machine	1	2
g.	Camera	1	2
h.	Radio/tape recorder	1	2
i.	Television	1	2
j.	Refrigerator	1	2
k.	Land line telephone	1	2
l.	Mobile telephone	1	2
m.	Room cooler/ air conditioner	1	2
n.	Washing machine	1	2
o.	Cycle	1	2
p.	Motor cycle	1	2
q.	Jeep/ car	1	2
r.	Tractor	1	2
s.	Personal computer	1	2

SECTION-D: DECEASED WOMAN'S BACKGROUND CHARACTERISTICS

Now I would like to ask you some questions related to deceased woman's background characteristics

اب ہم مرحومہ سے متعلق کچھ ایسے سوالات کریں گے جو ہمیں اس کے پس منظر اور خصوصیات کے بارے میں معلومات فراہم کریں گے۔

Q.NO.	Questions and Filters	Coding Categories
D1 **(1A100)**	What was the name of the deceased woman? مرحومہ کا نام کیا تھا؟ _____	
D2 **(1A200)**	Is date of birth / year known? کیا آپ کو مرحومہ کی تاریخ پیدائش معلوم ہے؟	Yes ..... 1 No ..... **(Go to D4)**..... 2
D3 **(1A210)**	When was the deceased born? مرحومہ کی پیدائش کب ہوئی تھی؟	__|__:__|__:__|__|__|__ DD MM YYYY
D4 **(1A220)**	Is date of death / year known? کیا اس کی موت کی تاریخ معلوم ہے؟	Yes ..... 1 No ..... **(Go to D6)**..... 2
D5 **(1A230)**	When did she die? اس کی موت کب واقع ہوئی؟	__|__:__|__:__|__|__|__ DD MM YYYY
D6 **(1A240)**	How old was the deceased when she died? جب اس کی موت واقع ہوئی تو اس کی عمر کیا تھی؟	Age in years ..... __|__
D7 **(1A500)**	What was her citizenship/nationality? اس کی شہریت/قومیت کیا تھی؟	Pakistani..... 1 Afghani ..... 2 Others (Specify)..... 7
D8 **(1A510)**	What was her ethnicity? (mother tongue) اس کا تعلق زبان/لسانی لحاظ سے کس طبقے سے تھا؟	Punjabi ..... 01 Sindhi..... 02 Balochi..... 03 Pakhtun ..... 04 Saraiki ..... 05 Hindko ..... 06 Others (Specify)..... 77
D9 **(1A520)**	What was her place of birth? وہ کہاں پیدا ہوئی تھی؟	a) Province ..... b) District..... c) Tehsil ..... d) UC.....
D10	At the time of death was she living in a nuclear or joint family? موت کے وقت وہ کس قسم کے خاندان میں رہتی تھی؟	In nuclear family ..... 1 In joint family..... 2
D11 **(1A630)**	What is /was the name of her mother? اس کی ماں کا نام کیا ہے/تھا؟	

Q.NO.	Questions and Filters	Coding Categories
D12 **(1A620)**	What is / was the name of her father? اس کے باپ کا کیا نام ہے/تھا؟	
D13	What is/ was the name of her husband? اس کے شوہر کا کیا نام ہے/تھا؟	
D14 **(1A640)**	Was she able to read and write? کیا وہ پڑھنا لکھنا جانتی تھی؟	Only read ..... 1 Both read and write ..... 2 None.....**(Go to D16)**..... 3 Don't know 8
D15 **(1A650)**	What was her highest level of schooling? اس کی تعلیم کیا تھی؟	No formal education ..... 0 Primary ..... 1 Middle..... 2 Matriculation ..... 3 Intermediate..... 4 Higher ..... 5 Don't know 8
D16 **(1A670)**	What was her occupation, that is, what kind of work did she mainly do? اس کا پیشہ کیا تھا؟ یعنی وہ کس طرح کا کام کرتی تھی؟	Employed..... 01 Unemployed ..... 02 Self-employed ..... 03 Not economically active ..... 04 House wife..... 05 Student..... 06 Others (specify)..... 77 Don't know 88
D17 **(1A680)**	What is/ was the main occupation of her husband? اس کے خاوند کا پیشہ کیا ہے /تھا ؟	Agriculture/Livestock/Poultry ..... 01 Petty trader..... 02 Labor (Daily wages) ..... 03 Government service..... 04 Private service..... 05 Own business..... 06 Abroad ..... 07 Unemployed ..... 08 Skilled worker..... 09 Retired..... 10 Others (Specify)..... 77 Don't know 88
D18	What is / was the monthly income of her husband? اس کے خاوند کی ماہانہ آمدن کیا ہے/ تھی ؟	Rupees..... __|__|__|__|__|__ Don't know 888888
D19	What is /was the level of schooling of her husband? اس کے خاوند کی تعلیم کتنی ہے / تھی ؟	No formal education ..... 1 Primary ..... 2 Middle..... 3 Matriculation ..... 4 Higher ..... 5 Don't know 8

SECTION-E: BIRTH AND PREGNANCY INFORMATION

Now I would like to ask you some questions related deceased woman's pregnancies and births.

اب ہم مرحومہ خاتون کے حمل اور پیدائشوں سے متعلق سولات کریں گے

Q.NO.	Questions and Filters	Coding Categories
E1 (1A600)	What was her marital status at the time of death? موت کے وقت اس کی ازدواجی حیثیت کیا تھی؟	Never married…**(Go to section-F)** ..... 1 Married ..... 2 Widow ..... 3 Divorced ..... 4 Separated 5
E2 (1A610)	What was the date of marriage or year? اس کی شادی کی تاریخ کیا تھی؟	__|__:__|__:__|__|__|__ DD MM YYYY Don't know..... 88:88:8888
E3	How old was the deceased when she got married? جب اس کی شادی ہوئی تو اس وقت اس کی عمر کیا تھی؟	Age in years ..... __|__ Don't know..... 88
E4	Did she get pregnant in her lifetime? کیا وہ اپنی پوری زندگی میں حاملہ ہوئی تھی؟	Yes ..... 1 No.....**(Go to section-F)**..... 2
E5	How many times did she get pregnant in her lifetime? (if currently pregnant, how many times before current pregnancy) وہ کتنی بار حاملہ ہوئی تھی؟ (اگر اس وقت حاملہ ہے تو اس سے پہلے کتنی دفعہ حاملہ ہوئی)	Number of pregnancies.....__|__ First pregnancy.....**(Go to section-F)** 96
E6 (3C230)	How many live births did she have in her lifetime? اس نے کتنے زندہ بچوں کو پیدا کیا؟ **(If no live birth write "<u>00</u>")**	(a) Total ..... __|__ (b) Son(s) ..... __|__ (c) Daughter(s) ..... __|__ Don't know..... 88
E7	How many of her pregnancies resulted in spontaneous and induced abortion(s)? اس کے کتنے حمل کا نتیجہ ارادی یا غیر ارادی اسقاط حمل کی صورت میں نکلا؟ **(If no abortion write "<u>00</u>")**	(a) Total abortion(s) ..... __|__ (b) Spontaneous abortion(s) ..... __|__ (c) Induced abortion(s)..... __|__ Don't know..... 88
E8	How many stillbirths did she have in her lifetime? اس نے کتنے مردہ بچوں کو پیدا کیا؟ **(If no stillbirth write "<u>00</u>")**	(a) Total ..... __|__ (b) Son(s) ..... __|__ (c) Daughter(s) ..... __|__ Don't know..... 88
E9	How many of her children are living now? اس وقت اس کے کتنے بچے زندہ ہیں؟ **(If no living child write "<u>00</u>")**	(a) Total ..... __|__ (b) Son(s) ..... __|__ (c) Daughter(s) ..... __|__ Don't know..... 88

Pregnancy History

E10	E11	E12	E13	E14	E15	E16
SNO	List all pregnancies حمل کی فہرست (Start from last pregnancy)	Duration of pregnancy in months حمل کا دورانیہ [مہینوں میں] Less than 1 month = 00 Don't know = 88	Outcome of pregnancy حمل کا نتیجہ 1. Live birth 2. Still birth 3. Spontaneous abortion 4. Induced abortion 5. Multiple births **(Write code below)** (If still birth, spontaneous or induced abortion **GO to next pregnancy**)	Is child still alive کیا بچہ ابھی زندہ ہے؟ 1. Yes 2. No **(Write code below)**	Gender of child بچے کی جنس 1. Boy 2. Girl **(Write code below)**	Age of child in days, or months (If died age at death) بچوں کی عمریں [اگر فوت ہوگئے ہیں تو موت کے وقت عمر] [دن/مہینے] Don't know = 88
1	Last	__|__				D: __|__ M: __|__ Y: ___|___
2	2nd last	__|__				D: __|__ M: __|__ Y: ___|___
3	3rd last	__|__				D: __|__ M: __|__ Y: ___|___
4	4th last	__|__				D: __|__ M: __|__ Y: ___|___
5	5th last	__|__				D: __|__ M: __|__ Y: ___|___
6	6th last	__|__				D: __|__ M: __|__ Y: ___|___
7	7th last	__|__				D: __|__ M: __|__ Y: ___|___
8	8th last	__|__				D: __|__ M: __|__ Y: ___|___
9	9th last	__|__				D: __|__ M: __|__ Y: ___|___
10	10th last	__|__				D: __|__ M: __|__ Y: ___|___
11	11th last	__|__				D: __|__ M: __|__ Y: ___|___
12	12th last	__|__				D: __|__ M: __|__ Y: ___|___
13	13th last	__|__				D: __|__ M: __|__ Y: ___|___
14	14th last	__|__				D: __|__ M: __|__ Y: ___|___
15	15th last	__|__				D: __|__ M: __|__ Y: ___|___
16	16th last	__|__				D: __|__ M: __|__ Y: ___|___

SECTION-F: INFORMATION RELATED TO PLACE OF DEATH

موت کی جگہ سے متعلق معلومات

Q.NO.	Questions and Filters	Coding Categories
F1 **(1A550)**	Where did death occur (location)? اس کی موت کہاں واقع ہوئی؟ [جگہ]	a) Province..... __|__ b) District..... __|__ c) Tehsil ..... __|__ d) UC..... __|__
F2 **(1A560)**	What was the place of death? اس کی موت کی جگہ کیا تھی؟	Husband's home..... 1 Mother/Father's home..... 2 Neighbor/Relative's home ..... 3 At health facility .....**(Go to F4)**..... 4 On way to health facility .....**(Go to F5)**..... 5 Others (Specify)..... 7
F3	If she died at home, who provided the treatment? اگر وہ گھر پر فوت ہوئی تو اس کو علاج کس نے مہیا کیا؟	No one..... 00 Doctor..... 01 LHV/Nurse ..... 02 LHW ..... 03 TBA/Dai ..... 04 CMW..... 05 Hakeem/Homeopath..... 06 Relative/Friend ..... 07 Others (Specify)..... 77
F4	If she died within a health facility, what was the name and address of the health facility? اگر وہ کسی صحت کی سہولت پر فوت ہوئی تو اس صحت کی سہولت کس سطح کی تھی؟ **Write address of facility here** نام اور ایڈریس یہاں لکھیں _____ _____	DHQ..... 01 THQ..... 02 RHC..... 03 BHU ..... 04 Teaching Hospital ..... 05 Private hospital..... 06 Private clinic ..... 07 Others (Specify)..... 77
F5	What was the state of pregnancy at the time of her death? اس کی موت کن دنوں میں واقع ہوئی؟	During pregnancy ..... 1 During delivery ..... 2 Within 42 days of delivery..... 3 After 42 days but less than 1 year..... 4
F6	In the final days before death, did she travel to a hospital or health facility? موت کے آخری ایام میں، کیا مرحومہ نے کسی ہسپتال یا صحت کے مرکز سے رجوع کیا؟یعنی وہ وہاں گئی تھی؟	Yes ..... 1 No..... **(Go to G1)**..... 2 Don't know..... **(Go to G1)**..... 8

Q.NO.	Questions and Filters	Coding Categories		
F7	If yes how many facilities did she visit before reaching final faciliy where she died? اگر ہاں تو صحت کی کتنی سہولیات پر مرحومہ کو لیکے جایا گیا؟	Number of facilities ..... __|__ Don't know 88		
F8	What was the level of Treatment /Contact facility علاج کے لیے کس سطح کے صحت کے مرکز پر لے جایا گیا؟	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	DHQ	01	01	01
	THQ	02	02	02
	RHC	03	03	03
	BHU	04	04	04
	Teaching Hospital	05	05	05
	Other Govt. Hospital	06	06	06
	Private Hospital	07	07	07
	Private Clinic	08	08	08
	Others (Specify)	77	77	77
	Don't know	88	88	88
F9	Who provided treatment at the contact /referral facility ریفرل والی سہولت پر کس نے علاج فراہم کیا؟	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	Gynecologist	01	01	01
	Doctor	02	02	02
	Nurse	03	03	03
	Lady Health Visitor (LHV)	04	04	04
	Lady Health Worker (LHW)	05	05	05
	Traditional Birth Attendant (TBA)	06	06	06
	Dispenser	07	07	07
	Female Health Technician (FHT)	08	08	08
	Male Health Technician (MHT)	09	09	09
	Others (Specify)	77	77	77
	Don't know	88	88	88
F10	What was the reason for shifting from health facilities? صحت کے مرکز سے رجوع یا ریفرل کی بنیادی وجہ کیا تھی؟	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	Facility was not equipped	01	01	01
	No facility for surgery	02	02	02
	No blood transfusion facility	03	03	03
	Lack of equipment and consumables	04	04	04
	Routine Check-up	05	05	05

Q.NO.	Questions and Filters	Coding Categories		
	Booked case	06	06	06
	Delivery	07	07	07
	C- Section	08	08	08
	Abnormal lie/ Presentation	09	09	09
	High BP	10	10	10
	Anemia	11	11	11
	Fits	12	12	12
	Unconsciousness	13	13	13
	Others (Specify)	77	77	77
	Don't know	88	88	88
F11	What was the time taken to reach the facility (From home to 1st, 1st to 2nd, 2nd to 3rd facility)	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	ہسپتال تک پہنچنے کے لیے کتنا وقت لگا تھا؟ Minutes	__|__	__|__	__|__
	[پہلے، دوسرے، تیسرے مرکز صحت پر] Hours	__|__	__|__	__|__
	Don't know	88	88	88
F12	What was the duration of stay (At each facility) علاج کی غرض سے ہر صحت کے مرکز میں کتنی دیر رہے [ہر سہولت پر]	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	Minutes	__|__	__|__	__|__
	Hours	__|__	__|__	__|__
	Don't know	88	88	88
F13 (4A130)	Were there any problems in the following with the way she was treated in the hospital or health facility? جس ہسپتال یا صحت کی سہولت پر خاتون کا علاج ہوا وہاں پر کون کون سے مسائل پیش آئے؟	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	(1) None	00	00	00
	(2) Admission	01	01	01
	(3) Medical treatment	02	02	02
	(4) Medication **(4A140)**	03	03	03
	(5) Diagnostic/ Laboratory Tests **(4A140)**	04	04	04
	(6) Blood transfusion	05	05	05
	(7) Procedures	06	06	06
	(8) Provider's attitude	07	07	07
	(9) Respect shown to her	08	08	08
	(10) Maintenance of dignity	09	09	09
	(11) Staff was not available	10	10	10
	(12) Others (Specify)	77	77	77

Q.NO.	Questions and Filters	Coding Categories		
	(13) Don't know	88	88	88
F14	Where did the death occur مرحومہ کی موت کہاں واقع ہوئی؟	(a) 1st Contact	(b) 2nd Contact	(c) 3rd Contact
	At referral facility	1	1	1
	On the way to referral facility	2	2	2
	At home	3	3	3
F15	At the time of final illness who was involved in decision making for treatment? موت کے آخری ایام میں علاج معالجے کا فیصلہ کرنے میں کون کون شامل تھا؟ **(Multiple responses are allowed)**	Patient herself ..... 01 Husband ..... 02 Father ..... 03 Mother ..... 04 Father in law ..... 05 Mother in law ..... 06 Brother ..... 07 Sister ..... 08 Brother in law ..... 09 Sister in law ..... 10 Others (specify) ..... 77 Don't know 88		
F16	After acute symptoms developed, Was the decision taken Immediately? کیا فیصلہ فوری کیا گیا؟	Yes..... **(Go to F18)** ..... 1 No..... ..... 2 Don't know 8		
F17	How long was the delay in making decision? فیصلہ کرنے میں کتنی دیر لگی تھی؟	(a) Minutes ..... __|__ (b) Hours ..... __|__ (c) Days ..... __|__ Don't know 88		
F18	What were the reasons for the delay? فیصلہ میں دیر ہونے کی کیا وجوہات تھیں؟ **(Multiple responses are allowed)**	Deceased woman refused to go to hospital.. 01 Health facility was too far ..... 02 No transport was available ..... 03 No money was available ..... 04 Husband was away ..... 05 Husband didn't agree ..... 06 Elder woman / TBA didn't agree ..... 07 Others (Specify) ..... 77 Don't know 88		
F19	Was it difficult to find the funds to send the woman for treatment? کیا خاتون کو علاج کے لیے رقم جمع کرنے میں کوئی مسئلہ درپیش تھا؟	Yes ..... 1 No ..... 2 Don't know 8		
F20	At the time of final illness after leaving home, what type of transport did she use to reach the health facility? گھر سے نکلنے کے بعد صحت کی سہولت تک پہنچنے کے لیے کس قسم کی ٹرانسپورٹ کا استعمال کیا گیا؟	On foot ..... 01 Bus/Van ..... 02 Ambulance ..... 03 Car/Jeep/Taxi ..... 04 Motorcycle 05		

Q.NO.	Questions and Filters	Coding Categories
		Cycle ..... 06 Tanga ..... 07 Trolley ..... 08 Animal cart ..... 09 Rickshaw ..... 10 Others (Specify) 77
F21	Were you satisfied with the way she was treated? مرحومہ کا جس طرح علاج کیا گیا، تو کیا آپ اس سے مطمئن ہیں؟	Yes ..... 1 No ..... 2 Don't know 8
F22 **(4A170)**	In the final illness before death, was traditional medicine used? بیماری کے آخری ایام میں کیا اسے کوئی گھریلو دوا دی گئی؟	Yes ..... 1 No ..... 2 Don't know 8
F23 **(4A190)**	Over the course of illness, did the total costs of care and treatment prohibit other household payments? علاج معالجے کے اخراجات کی وجہ سے گھر کا کوئی دوسرا خرچہ متاثر ہوا؟	Yes ..... 1 No ..... 2 Don't know 8

SECTION-G: CONTEXT AND HISTORY OF PREVIOUS KNOWN MEDICAL CONDITIONS

I would like to ask you some questions concerning the context and previously known medical conditions the deceased had; prior to death she was diagnosed with name of disease?

اب میں آپ سے مرحومہ کی طبی حالات سے متعلق سوالات کروں گی، ہر بیماری کو پڑھیں ، اس کے بارے میں پوچھیں اور اگر جواب ہاں میں ہو تو اس کے عرصے [ہفتوں، مہینوں] کے بارے میں پوچھیں کہ موت سے کتنا عرصہ پہلے اس بیماری کی تشخیص ہوئی تھی؟

S.No.	Disease	Yes.....No.....Don't Know
G1 (3A100)	Tuberculosis تپ دق	1 ..... 2.....8
G2 (3A110)	HIV/AIDS ایچ آئی وی ایڈز	1 ..... 2.....8
G3 (3A120)	Positive test for Malaria ملیریا کا پازیٹیو ٹیسٹ	1 ..... 2.....8
G4 (3A130)	Negative test for Malaria ملیریا کا نیگٹیو ٹیسٹ	1 ..... 2.....8
G5 (3A140)	Measles خسرہ	1 ..... 2.....8
G6 (3A150)	High Blood Pressure بلند فشار خون / ہائی بلڈ پریشر	1 ..... 2.....8
G7 (3A160)	Heart Disease دل کی بیماری	1 ..... 2.....8
G8 (3A170)	Diabetes شوگر	1 ..... 2.....8
G9 (3A180)	Asthma دمہ	1 ..... 2.....8
G10 (3A190)	Epilepsy مرگی	1 ..... 2.....8
G11 (3A200)	Cancer سرطان/کینسر	1 ..... 2.....8
G12 (3A210)	Chronic Obstructive Pulmonary Disease پھیپڑوں کی پرانی بیماری	1 ..... 2.....8
G13 (3A220)	Dementia دماغی بیماری	1 ..... 2.....8
G14 (3A230)	Depression ذہنی دباو	1 ..... 2.....8
G15 (3A240)	Stroke فالج	1 ..... 2.....8
G16 (3A250)	Sickle Cell disease خون کے سرخ خلیوں کی بیماری	1 ..... 2.....8
G17 (3A260)	Kidney disease گردوں کی بیماری	1 ..... 2.....8
G18 (3A270)	Liver disease / Jaundice جگر کی بیماری / یرقان	1 ..... 2.....8

SECTION-H: HISTROY OF DEATH DUE TO INJURY/ACCIDENTS/VIOLENCE

I would like to ask you some questions concerning the context and previously known medical conditions the deceased had; injuries and accidents that the deceased suffered; and signs and symptoms that the deceased had/showed when she was ill. Some of these questions may not appear to be directly related to her death.

اب میں آپ سے مرحومہ کی طبی حالات سے متعلق سوالات کروں گی، جیسا کہ کوئی ذخم ، حادثہ وغیرہ ہوا ہو، جس میں مرحومہ کو کوئی نقصان پہنچا ہو؛ اور کوئی علامات ظاہر ہوئی ہو جب وہ بیمار تھی۔ اس میں سے بہت سارے سوالات ایسے ہونگے جن کا تعلق براہ راست مرحومہ کی موت سے نہیں ہوگا۔

Q.NO.	Questions and Filters	Coding Categories
H1 **(3A300)**	For how long was she ill before she died? مرنے سے پہلے کتنے عرصے سے وہ بیمار تھی؟	(a) Number of days ..... __|__ (b) Number of weeks ..... __|__ (c) Number of months ..... __|__ Don't know 88
H2 **(3E100)**	Did she suffer from any injury or accident that led to her death? کیا اس کو کوئی ایسا زخم آیا یا ایساحادثہ ہوا، جس کی وجہ سے اس کی موت واقع ہوئی؟	Yes ..... 1 No ..... **(Go to H4)** ..... 2 Don't know ..... **(Go to H4)** 8
H3	What kind of injury/accident was it? اس زخم یا/ حادثے کی نوعیت کیا تھی؟	Road traffic accident ..... 01 Fall ..... 02 Drowning ..... 03 Poisoning ..... 04 Burns ..... 05 Violence/assault/homicide/abuse ..... 06 Natural calamity ..... 07 Fire arm ..... 08 Stab/Cut/ Pierce ..... 09 Hurt by animal ..... 10 Other (Specify) ..... 77 Don't know 88
H4	Did she suffer from any plant/animal/insect bite or sting that led to her death? کیا اس کی موت کسی پودے/جانور/ کیڑے کے کاٹنے یا ڈنگ مارنے کی وجہ سے ہوئی؟	Yes ..... 1 No ..... **(Go to H6)** ..... 2 Don't know ..... **(Go to H6)** 8
H5	What type of animal/insect was it? وہ کس قسم کا جانور/کیڑا تھا؟	Dog ..... 1 Snake ..... 2 Scorpion ..... 3 Other (Specify) 7
H6 **(3E700)**	Do you think that she committed suicide? کیا آپ کے خیال میں اس نے خودکشی کی؟	Yes ..... 1 No ..... **(Go to H7)** ..... 2 Don't know ..... **(Go to H7)** 8
H7 **(3A310)**	Did she die suddenly? کیا اس کا اچانک انتقال ہوگیا؟	Yes ..... 1 No ..... **(Go to H8)** ..... 2 Don't know ..... **(Go to H8)** 8
H8 **(Q1305)**	Did someone else hurt her? کیا کسی اور نے اسے تکلیف پہنچائی یا مارا؟	Yes ..... 1 No ..... 2 Don't know 8

SECTION-I: SYMPTOMS AND SIGNS ASSOCIATED WITH PREGNANCY

حمل سے متعلق علامات

Q.NO.	Questions and Filters	Coding Categories
I1 (3C110)	Was she pregnant at the time of death? کیا وہ موت کے وقت حاملہ تھی؟	Yes ..... 1 No ..... 2 Don't know 8
I2 (3C130)	Did she die within 6 weeks of termination of pregnancy? کیاوہ حمل کے ضائع ہونے کے بعد چھ ہفتوں کے اندر فوت ہو گئیں تھیں؟	Yes..... 1 No ..... 2 Don't know 8
I3 (3C210)	Did she die during labor, but undelivered? کیا وہ دوران زچگی فوت ہو گئی اور کسی بچے کو پیدا نہیں کیا؟	Yes..... 1 No ..... 2 Don't know. 8
I4 (3C200)	Did she die within 24 hours after delivery? کیا وہ بچے کی پیدائش کے چوبیس گھنٹوں کے اندر اندر فوت ہو گئی تھی؟	Yes..... 1 No ..... 2 Don't know 8
I5 (3C120)	Did she die after 42 days and within 42 days of giving birth? کیا وہ بچے کی پیدائش کے بیالیس دنوں کے دوران فوت ہو گئی تھی؟	Yes..... 1 No..... 2 Don't know 8
I6	Did She die within one year of giving birth? کیا بچے کی پیدائش کے ایک سال کے اندر اس کی وفات ہو گئی تھی؟	Yes..... 1 No ..... 2 Don't know 8
I7 (3C250)	Did she die during or after a multiple pregnancy? کیا وہ دو یا اس سے زیادہ بچوں کی پیدائش کے دوران یا اس کے بعد فوت ہوئی؟	Yes..... 1 No ..... 2 Don't know 8
I8	At the time of death what was the duration of this pregnancy in weeks? ہفتوں کے اعتبار سے اس کی زچگی کی مدت کتنی تھی؟	Weeks ..... __|__ Don't know 88
I9 (3C240)	Did she have any previous C-section? کیا اس کا بچے کی پیدائش کے سلسلے میں کبھی پہلے بڑا آپریشن ہوا تھا؟	Yes..... 1 No.....**(Go to I12)**..... 2 Don't know.....**(Go to I12)**..... 8
I10	What was the number of the previous C-Sections? اس کے کتنے بڑے آپریشن ہو چکے تھے؟	# of previous C-Sections..... __|__
I11	What were the reasons for previous C-Section? بڑے آپریشن کی کیا وجہ تھی؟	High blood pressure..... 1 Bleeding ..... 2 Size of baby..... 3 Breach position ..... 4 Others (Specify) 7
I12 (3C400)	Did she give birth in a health facility? کیا اس نے بچے کو کسی صحت کی سہولت پر جنم دیا؟	Yes..... 1 No.....**(Go to I14)**..... 2 Don't know.....**(Go to I14)**..... 8

Q.NO.	Questions and Filters	Coding Categories
I13	What was the type of facility? وہ صحت کی سہولت /ہسپتال کس سطح کا تھا ؟	Teaching Hospital..... 01 DHQ..... 02 THQ..... 03 RHC..... 04 BHU..... 05 Private hospital..... 06 Private clinic..... 07 Others (Specify)..... 77
I14 **(3C410)**	Did she give birth at home? کیا اس کے بچے کی پیدائش گھر پر ہوئی؟	Yes..... 1 No.....**(Go to I16)**..... 2 Don't know.....**(Go to I16)**..... 8
I15	What were the reasons for delivering at home? گھر پر زچگی کروانے کی کیا وجوہات تھیں؟ **(Multiple responses allowed)**	No funds..... 1 Tradition/custom..... 2 Elder women didn't agree..... 3 Health facility was far away..... 4 Others (Specify)..... 7
I16 **(3C420)**	Did she give birth elsewhere, e.g. on the way to a facility? کیا اس کے بچے کی پیدائش کہیں اور ہوئی، مثال کے طور پر صحت کی سہولت پر جاتے ہوئے راستے میں ؟	Yes..... 1 No..... 2 Don't know..... 8
I17 **(3C430)**	Did she receive professional assistance for the delivery? کیا بچے کی پیدائش کے دوران اس کو پیشہ وارانہ طبی معاونت فراہم کی گئی؟	Yes..... 1 No.....**(Go to I19)**..... 2 Don't know.....**(Go to I19)**..... 8
I18	If yes, by whom اگر ہاں ، تو کس نے فراہم کی؟	Gynecologist..... 01 Doctor..... 02 LHV..... 03 Nurse..... 04 CMW..... 05 Others (Specify)..... 77
I19	If no, by whom اگر نہیں تو پھر کس نے کی؟	L H W..... 1 TBA/Dai..... 2 Friend/Relative..... 3 Others (Specify)..... 7
I20 **(3C450)**	Did she have a normal vaginal delivery? کیا اس کے ہاں بچے کی نارمل پیدائش ہوئی؟	Yes..... 1 No..... 2 Don't know..... 8
I21 **(3C460)**	Did she have an assisted delivery, with forceps/vacuum? کیا اس کے بچے کی ڈلیوری اوزار [فورسیپس/ویکیوم] کی مدد سے ہوئی؟	Yes..... 1 No..... 2 Don't know..... 8
I22 **(3C470)**	Was it a delivery with caesarean section? کیا اس کے ہاں بچے کی پیدائش بڑے آپریشن کے ذریعے ہوئی؟	Yes..... 1 No..... 2 Don't know..... 8
I23 **(3C440)**	Did she have an operation to remove her uterus shortly before death? کیاموت سے پہلے بچہ دانی کو باہر نکالنے کے لیے اس کا کوئی آپریشن ہوا تھا ؟	Yes..... 1 No..... 2 Don't know..... 8

I24	What was the outcome of the Pregnancy? اس حمل کا نتیجہ کیا نکلا تھا؟	Live birth ..... 01 Still birth..... 02 Miscarriage ..... 03 Induced abortion ..... 04 Undelivered ..... 05 Multiple births ..... 06 Don't know 88
I25	Time interval between onset of pain and delivery (in hours) درد شروع ہوجانے اور ڈلیوری کے درمیان کتنا دورانیہ تھا؟	Hours..... __|__ Don't know 88
126	What, if anything, was done to help the baby come out? کیا کچھ ایسا کیا گیا کہ بچے کو باہر نکالا جائے؟ **(Multiple responses are allowed)**	Nothing ..... 00 External pressure..... 01 I/V drip..... 02 Put hand/fingers..... 03 Forceps ..... 04 Vacuum..... 05 Episiotomy ..... 06 Cesarean section ..... 07 Others (Specify) ..... 77 Don't know 88
I27 **(3C360)**	Was the placenta completely delivered? کیا آنول کو مکمل طور پر باہر نکال لیا گیا تھا؟	Yes..... 1 No ..... 2 Don't know 8
I28	Did she have difficulty in delivering the placenta? کیا آنول کو باہر نکلنے میں کوئی تکلیف پیش آئی تھی؟	Yes..... 1 No ..... 2 Don't know 8
I29 **(3C365)**	Did she deliver or try to deliver an abnormally positioned (e.g breech, arm) baby? کیا اس نے غیر معمولی پوزیشن والے بچے کو پیدا کرنے کی کوشش تھی؟	Yes..... 1 No ..... 2 Don't know 8
I30 **(3C370)**	Was she in labor for unusually long (more than 24 hours)? کیا اس کی زچگی کا دورانیہ چوبیس گھنٹے سے زیادہ تھا؟	Yes..... 1 No ..... 2 Don't know 8
I31	What was the duration of the Labor in Hours? زچگی کے درد کا دورانیہ کتنا تھا؟	__|__
I32 **(3C480)**	Was the baby born more than one month early? کیا بچہ ایک ماہ سے زیادہ پہلے پیدا ہوگیا تھا؟	Yes..... 1 No ..... 2 Don't know 8
I33 **(3C260)**	During pregnancy, did she suffer from high blood pressure? دوران حمل کیا خاتون کو ہائی بلڈ پریشر تھا؟	Yes..... 1 No.....**(Go to i35)**..... 2 Don't know.....**(Go to i35)**..... 8
I34	Did she receive treatment for high blood pressure? کیا اس نے بلڈ پریشر کا علاج کروایا تھا؟	Yes..... 1 No ..... 2 Don't know 8
I35 **(3C270)**	Did she have foul smelling vaginal discharge during pregnancy or after delivery? کیا حمل یا ڈلیوری کے دوران اس کی انہدام نہانی سے بدبو دار مادے کا اخراج ہوتا تھا؟	Yes..... 1 No ..... 2 Don't know 8
I36 **(3C290)**	During the last 3 months of pregnancy, did she suffer from blurred vision? حمل کے آخری تین ماہ کے دوران کیا اس کو دھندلا نظر آتا تھا؟	Yes..... 1 No ..... 2 Don't know 8

I37 (3C280)	During the last 3 months of pregnancy, did she suffer from convulsions? حمل کے آخری تین ماہ کے دوران کیا اس کو جھٹکے یا پٹھوں میں اکڑاو ہوتا تھا؟	Yes.....1 No.....**(Go to i44)**.....2 Don't know.....**(Go to i44)**.....8
I38	For how many days did she have convulsion? اس کو کتنے دنوں سے جھٹکے لگ رہے تھے؟	Number of days ..... __|__ Don't know 8
I39	What was the number of convulsions she had in a day? وفات سے پہلے اس کو دن میں کتنے جھٹکے لگتے تھے؟	Number of convulsion ..... __|__ Don't know 88
I40	During convulsions did her entire body or only part of the body convulse? جھٹکوں کے دوران اس کا پورا جسم متاثر ہوتا تھا یا جسم کے کچھ حصے؟	Part .....1 Entire Body .....2 Don't know 8
I41	After convulsion did she become unconscious? جھٹکوں کے بعد کیا وہ بے ہوش ہو جاتی تھی؟	Yes.....1 No .....2 Don't know 8
I42	Did she have fever during the convulsions? کیا اسے جھٹکوں کے دوران بخار ہوتا تھا؟	Yes.....1 No .....2 Don't know 8
I43	During convulsion did she have difficulty opening her mouth? کیا جھٹکوں کے دوران اس کو اپنا منہ کھولنے میں دشواری محسوس ہوتی تھی؟	Yes.....1 No .....2 Don't know 8
I44	Did she have swollen hands or face anytime during her pregnancy? کیا حمل کے دوارن اس کے ہاتھوں یا منہ پر سوجن ہوئی تھی؟	Yes.....1 No .....2 Don't know 8
I45 (3C310)	Was there any excessive vaginal bleeding during pregnancy? کیا حمل کے دوران اس کا بہت زیادہ خون آیا تھا؟	Yes..... .....1 No .....2 Don't know 8
I46 (3C320)	Was there vaginal bleeding during the first 6 months of pregnancy? کیا حمل کے پہلے چھ ماہ کے دوران اس کا بہت زیادہ خون آیا تھا؟	Yes.....1 No .....2 Don't know 8
I47 (3C330)	Was there vaginal bleeding during the last 3 months of pregnancy but before labor started? حمل کے آخری تین ماہ کے دوران اس کی اندام نہانی سے خون آیا تھا؟ [مگر درد شروع ہونے سے پہلے]	Yes.....1 No .....2 Don't know 8
I48 (3C340)	Was there excessive vaginal bleeding during labor? کیا دوران زچگی اس کا بہت زیادہ خون بہہ گیا تھا؟	Yes.....1 No .....2 Don't know 8
I49	Was there excessive vaginal bleeding after delivery? کیا زچگی کے بعد اس کا بہت زیادہ خون بہہ گیا تھا؟	Yes.....1 No .....2 Don't know 8
I50	The quantity of blood was more than a cup? خون کی مقدار ایک کپ سے زیادہ تھی؟	Yes.....1 No .....2 Don't know 8
I51	Was there constant trickling of blood? کیا خون مسلسل بہہ رہا تھا؟	Yes.....1 No .....2 Don't know 8
I52	Was she bleeding when she was being taken to health facility? جب اس کو صحت کی سہولت پر لے جایا جارہا تھا تو کیا اس دوران بھی اس کا خون بہہ رہا تھا؟	Yes.....1 No .....2 Don't know 8
I53	Was she in pain while bleeding? کیا خون آنے کے دوران اس کو درد ہوتا تھا؟	Yes.....1 No .....2 Don't know 8

SECTION-J: SYMPTOMS NOTED DURING THE FINAL ILLNESS

بیماری کے آخری ایام میں مشاہدہ کی جانے والی علامات

Q.NO.	Questions and Filters	Coding Categories
J1 (3B100)	Did she have a fever? موت سے پہلے کیا اس کو بخار تھا؟	Yes.....1 No.....**(Go to J3)** .....2 Don't know.....**(Go to J3)** 8
J2 (3B110)	For how long did she have a fever? اس کو کتنے عرصے سے بخار تھا؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J3 (3B120)	Did she have night sweats? کیا اس کو رات کو پسینے آتے تھے؟	Yes.....1 No.....2 Don't know.....8
J4 (3B130)	Did she have a cough? کیا اس کو کھانسی تھی؟	Yes.....1 No.....**(Go to J8)**.....2 Don't know.....**(Go to J8)**.....8
J5 (3B140)	For how long did she have a cough? اس کو کب سے کھانسی تھی؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J6 (3B150)	Was the cough productive with sputum? کیا اس کو کھانسی کے ساتھ بلغم بھی آتا تھا؟	Yes.....1 No.....2 Don't know.....8
J7 (3B160)	Did she cough out blood? کیا اس کو کھانسی کے ساتھ خون آتا تھا؟	Yes.....1 No.....2 Don't know.....8
J8 (3B180)	Did she have any breathing problem? کیا اس کو سانس کا کوئی مسئلہ درپیش تھا؟	Yes.....1 No.....**(Go to J15)**.....2 Don't know.....**(Go to J15)** 8
J9 (3B190)	Did she have fast breathing? کیا وہ تیز سانس لیتی تھی؟	Yes.....1 No.....**(Go to J11)**.....2 Don't know.....**(Go to J11)**.....8
J10 (3B200)	For how long did she have fast breathing? وہ کب سے تیز سانس لے رہی تھی؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J11 (3B210)	Did she have breathlessness? کیا اس کا سانس اکھڑتا تھا؟	Yes.....1 No.....**(Go to J13)**.....2 Don't know.....**(Go to J13)**.....8
J12 (3B220)	For how long did she have breathlessness? اس کا سانس کب سے اکھڑتا تھا؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J13 (3B230)	Was she unable to carry out daily routine activities due to breathlessness? کیا سانس کے اکھڑنے کی وجہ سے اس کو گھر کے کام کاج کرنے میں دشواری پیش آتی تھی؟	Yes.....1 No.....2 Don't know.....8
J14 (3B240)	Was she breathless while lying flat?	Yes.....1 No.....2

Q.NO.	Questions and Filters	Coding Categories
	کیا سیدھے لیٹنے سے اس کو سانس لینے میں دشواری پیش آتی تھی؟	Don't know.....8
J15 (3B260)	Did she have noisy breathing (grunting or wheezing)? کیا سانس لیتے وقت دشواری کی وجہ سے کوئی آواز آتی تھی؟ **(DEMONSTRATE)**	Yes.....1 No.....2 Don't know.....8
J16 (3B270)	Did she have severe chest pain? کیا اس کی چھاتی میں شدید درد ہوتا تھا؟	Yes.....1 No.....2 Don't know.....8
J17 (3B280)	Did she have diarrhea? کیا اس کو اسہال تھے؟	Yes.....1 No.....**(Go to J19)**.....2 Don't know.....**(Go to J19)**.....8
J18 (3B290)	For how long did she have diarrhea? اس کو کب سے اسہال تھے ؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J19 (3B300)	At any time during the final illness was there blood in the stools? کیا موت کے آخری ایام میں اس کے پاخانے میں خون آتا تھا؟	Yes.....1 No.....2 Don't know.....8
J20 (3B310)	Did she vomit? کیا اسے قے آئی تھی؟	Yes.....1 No.....**(Go to J22)**.....2 Don't know.....**(Go to J22)**.....8
J21 (3B320)	Did she vomit "coffee grounds" or bright red/blood? کیا اس کی قے کا رنگ بھورا یا ہلکا سرخ یا اس میں خون تھا؟	Yes.....1 No.....2 Don't know.....8
J22 (3B330)	Did she have any abdominal problem? کیا اس کے پیٹ میں کوئی مسئلہ تھا؟	Yes.....1 No.....**(Go to J25)**.....2 Don't know.....**(Go to J25)**.....8
J23 (3B340)	Did she have severe abdominal pain? کیااس کے پیٹ میں شدید درد تھا؟	Yes.....1 No.....**(Go to J25)**.....2 Don't know.....**(Go to J25)**.....8
J24 (3B350)	For how long before death did she have severe abdominal pain? موت سے کتنے دن پہلے اس کے پیٹ میں شدید درد تھا؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J25 (3B360)	Did she have more than usual protruding abdomen? کیا اس کا پیٹ ضرورت سے زیادہ آگے کی طرف نکلا ہوا تھا؟	Yes.....1 No.....**(Go to J27)**.....2 Don't know.....**(Go to J27)**.....8
J26 (3B370)	For how long did she have a more than usual protruding abdomen? اس کا پیٹ کب سے ضرورت سے زیادہ بڑھا ہوا تھا؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J27 (3B380)	Did she have any lump inside the abdomen? کیا اس کے پیٹ کے اندر گلٹیاں تھیں؟	Yes.....1 No.....**(Go to J29)**.....2 Don't know.....**(Go to J29)**.....8
J28 (3B390)	For how long did she have the lump inside the abdomen? اس کے پیٹ کے اندر کب سے گلٹیاں تھیں؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J29	Did she have a severe headache?	Yes.....1

Q.NO.	Questions and Filters	Coding Categories
(3B400)	کیا اس کے سر میں شدید درد ہوتا تھا؟	No.....2 Don't know.....8
J30 (3B405)	Did she have a stiff or painful neck? کیا اس کی گردن اکڑ گئی تھی، یا اس میں درد تھا؟	Yes.....1 No.....**(Go to J32)**..... Don't know.....**(Go to J32)**.....8
J31 (3B410)	For how long did she have a stiff or painful neck? اس کی گردن کب سے اکڑی ہوئی تھی، یا اس میں کب سے درد تھا؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J32 (3B420)	Did she have mental confusion? کیا وہ ذہنی طور پر گھبراہٹ کا شکار رہتی تھی؟	Yes.....1 No.....**(Go to J34)**.....2 Don't know.....**(Go to J34)**.....8
J33 (3B430)	For how long did she have mental confusion? اسے گھبراہٹ کب سے تھی؟	(a) Number of days .....__|__ (b) Number of weeks .....__|__ Don't know.....88
J34 (3B440)	Was she unconscious for more than 24 hours just before death? کیا موت سے پہلے چوبیس گھنٹوں کے دوران وہ بے ہوش ہوئی تھی؟	Yes.....1 No.....**(Go to J36)**.....2 Don't know.....**(Go to J36)**.....8
J35 (3B450)	Did the unconsciousness start suddenly, quickly (at least within a single day)? کیا وہ اچانک بے ہوش ہوجاتی تھی؟	Yes.....1 No.....2 Don't know.....8
J36 (3B490)	Did she have any urine problems? کیا اسے چھوٹے پیشاب کا کوئی مسئلہ تھا؟	Yes.....1 No.....**(Go to J40)**.....2 Don't know.....**(Go to J40)**.....8
J37 (3B500)	Did she pass no urine at all? کیا اسے چھوٹا پیشاب بالکل نہیں آتا تھا؟	Yes.....1 No.....2 Don't know.....8
J38 (3B510)	Did she go to urinate more often than usual? کیا وہ چھوٹے پیشاپ کے لیے بار بار جاتی تھی؟	Yes.....1 No.....2 Don't know.....8
J39 (3B520)	During the final illness did she ever pass blood in the urine? بیماری کے آخری ایام میں اس کے چھوٹے پیشاب میں کبھی خون آیا؟	Yes.....1 No.....2 Don't know.....8
J40 (3B530)	Did she have any skin problems? کیا اس کو جلد کا کوئی مسئلہ تھا؟	Yes.....1 No.....2 Don't know.....8
J41 (3B540)	Did she have any ulcers, abscess or sores anywhere except the feet? کیا پاوں کے علاوہ کہیں اس کو کوئی زخم یا السر تھا؟	Yes.....1 No.....2 Don't know.....8
J42 (3B550)	Did she have any ulcers, abscess or sores on the feet that were not also on other parts of the body? کیا اس کے پاوں پر کوئی زخم یا السر تھا جو کہ جسم کے کسی اور حصے پر نہیں تھا؟	Yes.....1 No.....2 Don't know.....8

Q.NO.	Questions and Filters	Coding Categories
J43 (3B560)	During the illness that led to death, did s/he have any skin rash? بیماری اور موت کے آخری ایام میں اس کی جلد پر کوئی دھبے تھے؟	Yes.....1 No.....**(Go to J45)**.....2 Don't know.....**(Go to J45)**.....8
J44 (3B570)	For how long did she have the skin rash? اس کی جلد پر کب سے دھبے تھے؟	(a) Number of days ..... __|__ (b) Number of weeks ..... __|__ Don't know.....88
J45 (3B580)	Did she have measles rash? کیااس کے جسم پر خسرے کے دھبے/نشان تھے؟	Yes.....1 No.....2 Don't know.....8
J46 (3B590)	Did she ever have shingles/herpes zoster? کیا اس کو جلد کی کوئی ایسی بیماری تھی جس میں سوزش اور دھبے ہوں؟	Yes.....1 No.....2 Don't know.....8
J47 (3B600)	Did she have bleeding from the nose, mouth, or anus? کیا اس کے ناک، منہ یا پیشاب کی جگہ سے خون آتا تھا؟	Yes.....1 No.....2 Don't know.....8
J48 (3B610)	Did she have weight loss? کیا اس کا وزن کم ہوگیا تھا؟	Yes.....1 No.....2 Don't know.....8
J49 (3B620)	Was she severely thin or wasted? کیا وہ شدید کمزور ہوگئی تھی؟	Yes.....1 No.....2 Don't know.....8
J50 (3B630)	Did she have mouth sores or white patches in the mouth or on the tongue? کیا اس کے منہ میں سوجن تھی یا منہ اور زبان پر سفید رنگ کے داغ تھے؟	Yes.....1 No.....2 Don't know.....8
J51 (3B640)	Did she have stiffness of the whole body or was unable to open the mouth? کیا اس کے پورے جسم میں اکڑاو آجاتا تھا اور وہ اپنا منہ نہیں کھول سکتی تھی؟	Yes.....1 No.....2 Don't know.....8
J52 (3B650)	Did she have swelling (puffiness) of the face? کیا اس کے چہرے پر سوجن تھی؟	Yes.....1 No.....2 Don't know.....8
J53 (3B660)	Did she have both feet swollen? کیا اس کے دونوں پاوں میں سوجن تھی؟	Yes.....1 No.....2 Don't know.....8
J54 (3B670)	Did she have any lumps? کیاں اس کو کوئی گلٹیاں تھیں؟	Yes.....1 No.....**(Go to J59)**.....2 Don't know.....**(Go to J59)**.....8
J55 (3B680)	Did she have any lumps or lesions in the mouth? کیا اس کے منہ میں گلٹیاں یازخم کے نشان تھے؟	Yes.....1 No.....2 Don't know.....8
J56 (3B690)	Did she have any lumps on the neck? کیا اس کی گردن پر کوئی گلٹی تھی؟	Yes.....1 No.....2 Don't know.....8
J57 (3B700)	Did she have any lumps on the armpit? کیا اس کے بغل میں گلٹیاں تھیں؟	Yes.....1 No.....2

Q.NO.	Questions and Filters	Coding Categories
		Don't know.....8
J58 (3B710)	Did she have any lumpon the groin? کیا اس کے دونوں ٹانگوں کے درمیان گلٹیاں تھیں؟	Yes.....1 No.....2 Don't know.....8
J59 (3B730)	Did she have paralysis of one side of the body? کیا اس کے جسم کا ایک حصہ مفلوج تھا؟	Yes.....1 No.....2 Don't know.....8
J60 (3B740)	Did she have difficulty or pain while swallowing liquids? کیا اس کو کوئی پینے کی چیز نگلنے میں دشواری پیش آتی تھی؟	Yes.....1 No.....2 Don't know.....8
J61 (3B750)	Did she have yellow discoloration of the eyes? کیا اس کی آنکھوں میں پیلا پن تھا؟	Yes.....1 No.....2 Don't know.....8
J62 (3B770)	Did she look pale (thinning/lack of blood) or have pale palms, eyes or nail beds? کیا وہ کمزور دکھائی دیتی تھی یعنی اسے خون کی کمی وغیرہ تھی ؟	Yes.....1 No.....2 Don't know.....8
J63 (3B780)	Did she have sunken eyes? کیا اس کی آنکھیں اندر کے جانب دھنسی ہوئی تھی؟	Yes.....1 No.....2 Don't know.....8
J64 (3B790)	Did she drink a lot more water than usual? کیا وہ معمول سے زیادہ پانی پیتی تھی؟	Yes.....1 No.....2 Don't know.....8
J65 (3F110)	Did she smoke tobacco or any other intoxicant? (Cigarette, Hukka, Naswar, Paan, Gutka, etc.)? کیا وہ تمباکو نوشی یا کوئی نشہ وغیرہ کرتی تھی؟	Yes.....1 No.....2 Don't know.....8
J66 (Q1306)	Did she ever use any family planning method? کیا اس نے کبھی کوئی خاندانی منصوبہ بندی کا طریقہ استعمال کیا؟	Yes.....1 No.....**(Go to J67)** .....2 Don't know...**(Go to J67)** 8
J66 a	Are her mother curently using any family planning method? کیا اس وقت کوئی خاندانی منصوبہ بندی کا طریقہ استعمال کر رہی ہیں؟	Yes..... 1 No.....**(Go to END)**..... 2
J66 b	Which family planning method are you/mother is using now? نوزائیدہ کی ماں اس وقت کون سا خاندانی منصوبہ بندی کا طریقہ استعمال کر رہی ہیں؟	Breast feeding/LAM ..... 01 Safe period..... ..... 02 Wtihdrawal ..... 03 Condom..... 04 Pills ..... 05 Injectables..... 06 IUCD ..... 07 Implants ..... 08 Female sterilization..... 09 Male sterilization ..... 10 Others **(Specify)** 77
J67 (3B720)	Did she have an ulcer or swelling in the breast? کیا اس کی چھاتی پر کوئی زخم یا سوجن تھی؟	Yes..... 1 No.....2

		Don't know 8
J68 (3B800)	Did she have excessive vaginal bleeding in between menstrual periods? کیا ماہواری کے دوران اس کو بہت زیادہ خون آتا تھا؟	Yes..... 1 No.....2 Don't know 8
J69 (3B810)	Did her vaginal bleeding stop naturally during menopause? کیا اس کی ماہواری قدررتی طور پر رک گئی تھی؟	Yes..... 1 No.....2 Don't know 8
J70 (3B820)	Did she have vaginal bleeding after menopause? کیا ماہواری کے قدرتی طور پر رک جانے کے بعد اس کو خون آیا؟	Yes..... 1 No.....2 Don't know 8

SECTION-K: TREATMENT AND HEALTH SERVICE USE FOR THE FINAL ILLNESS

بیماری کے آخری ایام میں صحت کی سہولیات سے استفادہ حاصل کرنا اور اس کا علاج کروانا

Q.NO.	Questions and Filters	Coding Categories
K1	Did she receive any treatment for the illness that led to death?	Yes..... 1
(3G110)	کیا اس نے بیماری کا علاج کروایا تھا، جس کی وجہ سے اس کی موت واقع ہوئی؟	No.....**(Go to Section L)**..... 2
		Don't know.....**(Go to Section L)**..... 8
K2	Did she receive (or needed) intravenous fluids (drip) treatment?	Yes..... 1
(3G130)	بیماری کے آخری ایام میں کیا اس کو کبھی گلوکوز کی بوتل یعنی ڈرپ لگی تھی؟	No 2
		Don't know 8
K3	Did she receive (or needed) a blood transfusion?	Yes..... 1
(3G140)	بیماری کے آخری ایام میں کیا کبھی اس کو خون لگا تھا؟	No 2
		Don't know 8
K4	Did she receive (or needed) treatment/food through a tube passed through the nose?	Yes..... 1
(3G150)	بیماری کے آخری ایام میں کیا اس کو کبھی ناک کی نالی کے ذریعے خوراک دی گئی تھی؟	No 2
		Don't know 8
K5	Did she receive (or needed) injectable (IV or IM) antibiotics?	Yes..... 1
(3G160)	بیماری کے آخری ایام میں کیا اس کو کبھی اینٹی بائیوٹیک کے ٹیکے لگے تھے؟	No 2
		Don't know 8
K6	Did she have (or needed) an operation for the illness?	Yes..... 1
(3G170)	کیا اس کا بیماری کے سلسلے میں کوئی آپریشن ہوا تھا، یا آپریشن ہونا ضروری تھا؟	No 2
		Don't know 8
K7	Did she have the operation within 1 month before death?	Yes..... 1
(3G180)	کیا موت سے ایک ماہ پہلے اس کا آپریشن ہوا تھا؟	No 2
		Don't know 8
K8	Was she discharged from the hospital very ill?	Yes..... 1
(3G190)	کیا ہسپتال سے اس کو بہت زیادہ بیماری کی حالت میں ڈسچارج کیا گیا تھا؟	No 2
		Don't know 8

SECTION-L: HEALTH CARE INCLUDING ANTENATAL CARE BEFORE DEATH DURING MOST RECENT PREGNANCY/DELIVERY (IF CURRENTLY PREGNANT, ASK ABOUT BEFORE THIS PREGNANCY)

(Both Delivered Alive or Stillbirth)

موت سے پہلے حمل کے سلسلے میں چیک اپ ۔ حال ہی میں ہونے والے حمل یا ڈلیوری سے متعلق معلومات[مردہ اور زندہ دونوں بچے]

Q.NO.	Questions and Filters	Coding Categories
L1	Did she receive antenatal care for her most recent pregnancy? کیا اس نے حالیہ حمل کے دوران طبی معائنہ کروایا؟	Yes.....**(Go to L3)** ..... 1 No ..... 2 Don't know.....**(Go to L22)** 8
L2	If no what were the reasons for not seeking ANC? دوران حمل خدمات نہ حاصل کرنے کی کیا وجوہات تھیں؟ **(Multiple responses are allowed)**	Lack of awareness..... 01 Not easy to reach..... 02 Lack of funds..... 03 Lack of attendee ..... 04 Family problems ..... 05 Others (Specify) 77
	After asking L2 ---- Go to L22	
L3	Where did she go for antenatal care for this most recent pregnancy? موجودہ حمل کی دیکھ بھال کے لیے وہ کہاں جاتی تھی؟ **(Multiple responses are allowed)**	Private Clinic/ Hospital ..... 01 Government Hospital ..... 02 LHW House ..... 03 Community health center..... 04 TBA..... 05 Others (specify)..... 77
L4	Did she see any of the following for antenatal care for this most recent pregnancy? حالیہ حمل کے دوران چیک اپ کے سلسلے میں کیا اس نے درج زیل میں سے کسی سے بھی ملاقات کی تھی؟ **(Multiple responses are allowed)**	Doctor/OB/GYN ..... 1 Nurse/LHV..... 2 LHW ..... 3 TBA..... 4 Others (Specify) 7
L5	How many antenatal visits in total during the entire duration of the pregnancy? دوران حمل چیک اپ کے لیے کتنی دفعہ گئی تھی ؟	Number of visits.....__|__ Don't know 88
L6	How many months pregnant was she when she had her first antenatal care visit? جب دوران حمل اس نے چیک اپ کے لیے رجوع کیا تو اس کے حمل کا کون سا مہینہ چل رہا تھا؟	Month of pregnancy .....__|__ Don't know 88
L7	How many months pregnant was she when she had her last antenatal care visit? اس کا حمل کتنے ماہ کا تھا جب وہ چیک اپ کے لیے آخری بار گئی؟	Month of pregnancy .....__|__ Don't know 88
L9	During the antenatal visit was she told that she had high blood pressure anytime during her pregnancy? کیا حمل کے دوران کسی بھی وقت اس کا بلڈ پریشر زیادہ ہوا تھا؟	Yes..... 1 No ..... 2 Don't know 8
L10	Was she given treatment for high blood pressure? کیا ہائی بلڈ پریشر کا علاج ہوا تھا؟	Yes..... 1 No ..... 2 Don't know 8

Q.NO.	Questions and Filters	Coding Categories
L11	If yes what was the treatment? اگر ہاں تو کیا علاج ہوا تھا؟	Injection ..... 1 Tablet 2
L12	Did she consume any Iron/ Folic acid tablets? کیا اس نے کسی قسم کی آئرن/فولک ایسڈ/طاقت کی گولیاں کھائی تھیں؟	Yes..... 1 No.....**(Go to L14)** ..... 2 Don't know.....**(Go to L14)** 8
L13	How many tablets did she consume in a day? حمل کے دوران ٹوٹل کتنی گولیاں کھائی تھی؟	Number of tablets .....__|__ Don't Know 88
L14	Was she advised to deliver her baby in a health facility? کیا اسے تاکید کی گئی تھی کہ وہ اپنے بچے کی پیدائش صحت کی سہولت پر کروائے؟	Yes..... 1 No.....**(Go to L16)** ..... 2 Don't know.....**(Go to L16)**..... 8
L15	Why was she advised to deliver in a health facility? صحت کی سہولت پر بچے کی پیدائش کا مشورہ کیوں دیا گیا تھا؟	Bad history of previous delivery .....1 Sick in this pregnancy .....2 High risk delivery .....3 Other (Specify).....7 Don't know 8
L16 **(3G100)**	Was she vaccinated for tetanus? کیا اسے تشنج کے ٹیکے لگے تھے؟	Yes.....1 No.....**(Go to 18)** .....2 Don't know.....**(Go to 18)**.....8
L17	If yes how many doses did she received? اگر ہاں تو کتنی بار اس کو تشنج کے ٹیکے لگے تھے؟	Number of doses .....__|__ Don't Know 88
L18	Did she get the urine test? کیا اس نے چھوٹے پیشاب کے ٹیسٹ کروائے تھے؟	Yes.....1 No .....2 Don't know 8
L19	Did she get Hepatitis B and C test? کیا اس نے ہیپٹائٹس بی اور سی کے ٹیسٹ کروائے تھے؟	Yes.....1 No .....2 Don't know 8
L20	Did she get the Hemoglobin test? کیا اس نے ہیموگلوبن کا ٹیسٹ کروایا تھا؟	Yes.....1 No .....2 Don't know 8
L21	Whether the family members were aware of the danger signs of pregnancy? کیا خاندان کے دیگر افراد حمل کی خطرناک علامات سے واقف تھے؟ **(Multiple responses allowed)**	Bleeding .....01 Edema hand and face .....02 Blurring of vision .....03 Severe headache .....04 Persistent vomiting .....05 Epigastric pain.....06 Tiredness and palpitation .....07 Jaundice during antenatal period ....08 Loss of foetal movements.....09 Fever following abortion/ delivery ..10 Other.....77

Q.NO.	Questions and Filters	Coding Categories
L22	Did she receive the Postnatal care? کیا بچے کی پیدائش کے بعد اس کی دیکھ بھال کی گئی تھی؟	Yes ..... 1 No.....**(Go to L26)** ..... 2 Don't know.....**(Go to L26)** 8
L23	How many times she had Postnatal checkups? بچے کی پیدائش کے بعد اس کا کتنی دفعہ چیک اپ ہوا تھا؟	1 checkup.....1 2-3 Checkups .....2 >3 Checkups.....3 Don't know 8
L24	When were postpartum care services provided? بعد از زچگی /چھلے کے دوران کب اس کا معائنہ کیا گیا؟	First 24 hours ..... 1 72 hours postpartum (Day 1 - 3)..... 2 First week postpartum (Day 1 - 7) ..... 3 6 weeks postpartum ..... 4 Others (Specify) 7
L25	Where was postpartum care services provided? بعد از زچگی /چھلے کے دوران کہاں پر اس کو خدمات فراہم کی گئیں؟ **(Multiple responses are allowed)**	Private Clinic/ Hospital .....01 Government hospital.....02 LHW House .....03 Community health center.....04 TBA.....05 Others (specify).....77
L26	Were there any problems during the post partum period? بچے کی پیدائش کے بعد مرحومہ کو کوئی مسائل درپیش آئے تھے؟	Yes.....1 No.....**(Go to Section M)** .....2 Don't know.....**(Go to Section M)** 8
L27	What were the problems? وہ مسائل کیا تھے؟ **(Multiple responses are allowed)**	Severe bleeding .....01 Fever .....02 Foul smelling discharge .....03 Unconsciousness .....05 Visual disturbance .....06 Fits .....07 High BP .....08 Bleeding from multiple sites.....09 Abnormal behavior .....10 Abdominal Pain.....11 Vomiting .....12 Severe anemia .....13 High BP .....14 Non healing of Perineal and abdominal stiches 15
L28	Did she seek treatment? کیا اس نے ان مسائل کا علاج کروایا تھا؟	Yes .....1 No.....**(Go to section-M)**.....2 Don't know.....**(Go to section-M)** 8
L29	What happened during postnatal checkup? بعد از زچگی اس کے معائنے کے دوران کیا ہوا تھا؟	BP Check .....1 Fever check.....2 Blood tests .....3 Physical examination 4

SECTION-M: Newborn (IF CURRENTLY PREGNANT, ASK ABOUT BEFORE THIS PREGNANCY)

M1	What was the sex of the baby? بچے کی جنس کیا تھی؟	Boy ..... 1 Girl 2
M2	What was the weight of the baby? بچے کا وزن کتنا تھا؟	Weight in KGs ..... __|__ Don't know 88
M3	Was the child born in a health facility? کیا بچہ صحت کی سہولت/ہسپتال میں پیدا ہوا تھا	Yes.....1 No.....**(Go to M5)**.....2 Don't know.....**(Go to M5)** 8
M4	What was the type of health facility? اس صحت کی سہولت کی سطح کیا تھی؟	Teaching hospital .....01 DHQ.....02 THQ .....03 RHC .....04 BHU .....05 Private Clinic .....06 Private hospital .....07 Others (Specify) 77
M5	Was the child born at home? کیا بچہ گھر پر پیدا ہوا تھا؟	Yes.....**(Go to M7)**.....1 No .....2 Don't know.....**(Go to M7)** 8
M6	Was the child born somewhere else (e.g. on the way to a health facility)? کیا بچہ کسی اور جگہ پر پیدا ہوا تھا[مثال کے طور پر صحت کی سہولت پر سفر کے دوران] ؟	Yes.....1 No .....2 Don't know 8
M7	Was the baby born 24 hours or more after the water broke? کیا بچہ پانی کی تھیلی پھٹنے کے 24 گھنٹوں کے بعد پیدا ہوا تھا؟	Yes.....1 No .....2 Don't know 8
M8	What was the gestational age of the baby at birth? بچے کی پیدائش کی وقت حمل کا دورانیہ کتنا تھا؟	Before 37 weeks .....1 37-42 weeks.....2 After 42 weeks 3
M9	Was baby born by normal vaginal delivery? کیا بچے کی پیدائش نارمل طریقے سے ہوئی تھی؟	Yes.....1 No .....2 Don't know 8
M10	Was baby born with forceps/vacuum? کیا بچے کی پیدائش کے لے فورسیپ یا اوزار کی مدد لی گئی تھی؟	Yes.....1 No .....2 Don't know 8
M11	Was baby delivered by caesarean section? کیا بچہ بڑے آپریشن کے ذریعے پیدا ہوا تھا؟	Yes.....1 No .....2 Don't know 8
M12	Was the umbilical cord wrapped several times (more than once) around the neck of the child at birth? کیا ناڑو بچے کی گردن پر لپٹا ہوا تھا؟	Yes.....1 No .....2 Don't know 8

M13	Did the baby cry immediately after birth? کیا بچہ پیدائش کے فورا بعد رویا تھا؟	Yes.....1 No .....2 Don't know 8
M14	Was the baby given assistance to breathe at birth? کیا بچے کو پیدائش کے وقت سانس لینے کے لیے مدد فراہم کی گئی تھی؟	Yes.....1 No .....2 Don't know 8
M15	Did the baby need hospitalization? کیا بچے کو علاج وغیرہ کی ضرورت تھی؟	Yes.....1 No .....**(Go to Section N)**.....2 Don't know.....**(Go to Section N)** 8
M16	For how many days baby remained hospitalized? بچہ کتنے عرصے تک ہسپتال میں زیر علاج رہا؟	Number of days ..... __|__ Don't know 88
M17	Why the baby need hospitalization? بچے کو علاج کی کیوں ضرورت تھی؟ **(Multiple responses are allowed)**	Fever .....01 Fits .....02 Feeding problems .....03 Excessive cry .....04 Breathing problems .....05 Yellow Skin .....06 Hypothermia .....07 Heart Problems .....08 Others (Specify) 77
M18	Was the baby discharged from hospital کیا بچے کو ہسپتال سے ڈسچارج کیا گیا تھا؟	Yes.....**(Go to Section N)**.....1 No .....2 Don't know 8
M19	Did the baby die at hospital کیا بچہ ہسپتال میں مر گیا تھا؟	Yes.....1 No .....2 Don't know 8

انٹرویو لینے والی کے لئے ہدایات:۔

برائے مہربانی جہاں تک ممکن ہو گہرائی میں جا کر (تفصیل سے) ان حالات کے بارے میں جو مرحومہ کو مرنے سے پہلے پیش آئیں، وہ معلومات لینے کی کوشش کریں ؟

صحت کے مسائل کا آغاز :۔

برائے مہربانی سے تفصیل سے جوابات دیں؟

- حمل کے کون سے مرحلے میں مرحومہ کو صحت کی خرابی کے مسائل پیش آئے ؟
- صحت کی خرابی کے وہ کون سے مسائل تھے؟
- یہ کیسے پتہ چلا کہ اسے یہ مسائل درپیش ہیں؟
- ان مسائل کا کس کو پتہ چلا (مرحومہ خود، شوہر کو ، اس کے خاندان کے لوگوں کو ، اس کے سسرال والوں کو ، دوستوں کو)

علاج حاصل کرنے کے لیے فیصلہ سازی :۔

- صحت کی خرابی کے مسائل معلوم ہونے پر علاج کے لئے جانے میں کس نے پہل کی؟(خود عورت نے، خاوند نے، ساس نے یا دوسرے رشتہ داروں نے)
- علاج حاصل کرنے میں اسکا اپنا، شوہر کا ، سسرال والوں کا، خاندان کے افراد کا ، دوستوں کا اور سہولت مہیا کرنے والے کا کیا کردار تھا؟ کوئی اختلاف تھا یا سارے متفق تھے
- خاندان والے افراد کے درمیان مرحومہ کو علاج کے لئے لے جانے میں باہمی مشاورت کس درجے کی تھی؟ اگر اختلاف تھا تو اس کی کیا وجوہات تھیں؟
- آخر میں کس نے فیصلہ کیا کہ علاج کی سہولت حاصل کی جائے اور یہ فیصلہ کرنے میں کتنا وقت لگا؟
- کیا آپ کے خیال میں فیصلہ کرنے میں تاخیر برتی گئی؟
- اگر ہاں تو تاخیر کے کیا عوامل تھے؟
- آپ کے خیال میں ان عوامل کا مرحومہ کی موت میں کتنا کردار تھا؟

محکمہ صحت تک رسائی

- سہولت حاصل کرنے کے فیصلے کے بعد ذرائع آمد ورفت کا انتظام کیسے کیا گیا؟
- کیا انہیں ذرائع آمد ورفت کا ایک سے زیادہ دفعہ انتظام کرنا پڑا، یعنی مرحومہ کو ایک طبعی سہولت سے دوسری سہولت میں منتقل کرنے کے دوران ہر دفعہ استعمال کئے جانے والے ذرائع آمد ورفت کون سے تھے؟
- کیا انہیں ذرائع آمد رفت کا انتظام کرنے میں کوئی مسئلہ ہوا؟
- کیا آپ سمجھتے ہیں کہ ذرائع آمد ورفت کا انتظام کرنے میں تاخیر کی گئی؟
- اگر ہاں تو وہ کیا عوامل تھے جن کی وجہ سے فیصلہ کرنے میں تاخیر ہوئی؟(گاڑی کا انتظام، کرائے کی رقم کا انتظام)
- آپ کے خیال میں وہ تمام عوامل مرحومہ کی موت کا کیسے سبب بنے یا آپ کے خیال میں ان تمام عوامل کا مرحومہ کی موت میں کتنا کردار ہے؟

طبعی سہولتوں پر دی جانے والی خدمات:۔

- پہلی طبعی سہولت پہنچنے پر (سرکاری/غیر سرکاری سہولت) اس کا کیسے استقبال کیا گیاکیسے خدمات دی گئی اور کیسا برتاو کیا گیا؟

ہر صحت کی سہولت کے بارے میں الگ الگ لکھیں

- کیا ہوا ادھر اور مہیا کی جانے والی سہولیات کیسی تھیں ؟ انکا معیار کیسا تھا؟
- اوزار اور فراہمی (آکسیجن)
- آپریشن تھیٹر فعال
- خدمات دینے والے کا رویہ
- خدمات دینے والے کی مہارت
- کیا مریضہ کو ایک طبعی سہولت سے دوسری میں منتقل کرنے میں ، سہولت فراہم کرنے والے اور خاندان کے افراد کی باہمی مشاور ت شامل تھی یا صرف ان میں سے کسی ایک کا فیصلہ تھا؟
- آپ کے خیال میں منتقل [ریفرل] کرنے سے پیچیدگی ہوئی ؟

- آپ کیا سمجھتے ہیں منتقل [ریفرل] کرنے کا فیصلہ بر وقت کیا گیا؟
- آپ کے خیال میں سہولیات حاصل کرنے میں تاخیر کی گئی؟
- اگر ہاں تو وہ کون سے عوامل تھے جن کی وجہ سے سہولت میں دیر ہوئی ؟
- آپ کیا سمجھتے ہیں مر حومہ کی موت میں ان عوامل کا کتنا عمل دخل تھا؟

انٹرویو دینے والے کی تجاویز اور سفارشات:۔

- کیا آپ کے خیال میں ان نتائج کو تبدیل کیا جاسکتا تھا یا موت کو روکا جا سکتا تھا؟
- دوران زچگی و حمل ماں کی دیکھ بھال کو بہتر بنانے کے لئے تجاویز؟

SECTION-O: DEATH REGISTERATION AND CERTIFICATION

موت کی رجسٹریشن اور سرٹیفیکیٹ

Q.NO.	Questions and Filters	Coding Categories
O1 **(1A700)**	Was the death registered? کیا یہ موت رجسٹرڈ تھی؟	Yes..... 1 No.....**(Go to O5)**..... 2
O2 **(1A710)**	Death registration number موت کا رجسٹریشن نمبر	
O3 **(1A720)**	Date of registration رجسٹریشن کی تاریخ	__|__:__|__:__|__|__|__ DD MM YYYY Don't know 88:88:8888
O4 **(1A730)**	Place where the death is registered: وہ جگہ جہاں موت کی رجسٹریشن کی گئی	a) Province ..... __|__ b) District ..... __|__ c) Tehsil..... __|__
O5 **(1A740)**	What was the reason for not registering the death? موت کو رجسٹر نہ کرانے کی کیا وجہ تھی؟	

Would it be all right if we come back to talk to you again after some time

اگر ہم دوبارہ آپ کے پاس بات چیت کرنے کے لیے آئیں تو کیا آپ سے بات چیت ہو سکے گی؟

Yes.....1

No 2

Thank you very much for the information you provided and the time you spared for me.

آپ کی طرف سے معلومات فراہم کرنے اور ہمارے لیے وقت نکالنے کا بہت شکریہ

SUPERVISOR'S OBSERVATIONS

سپروائزر کے مشاہدات/ملاحظات

_____

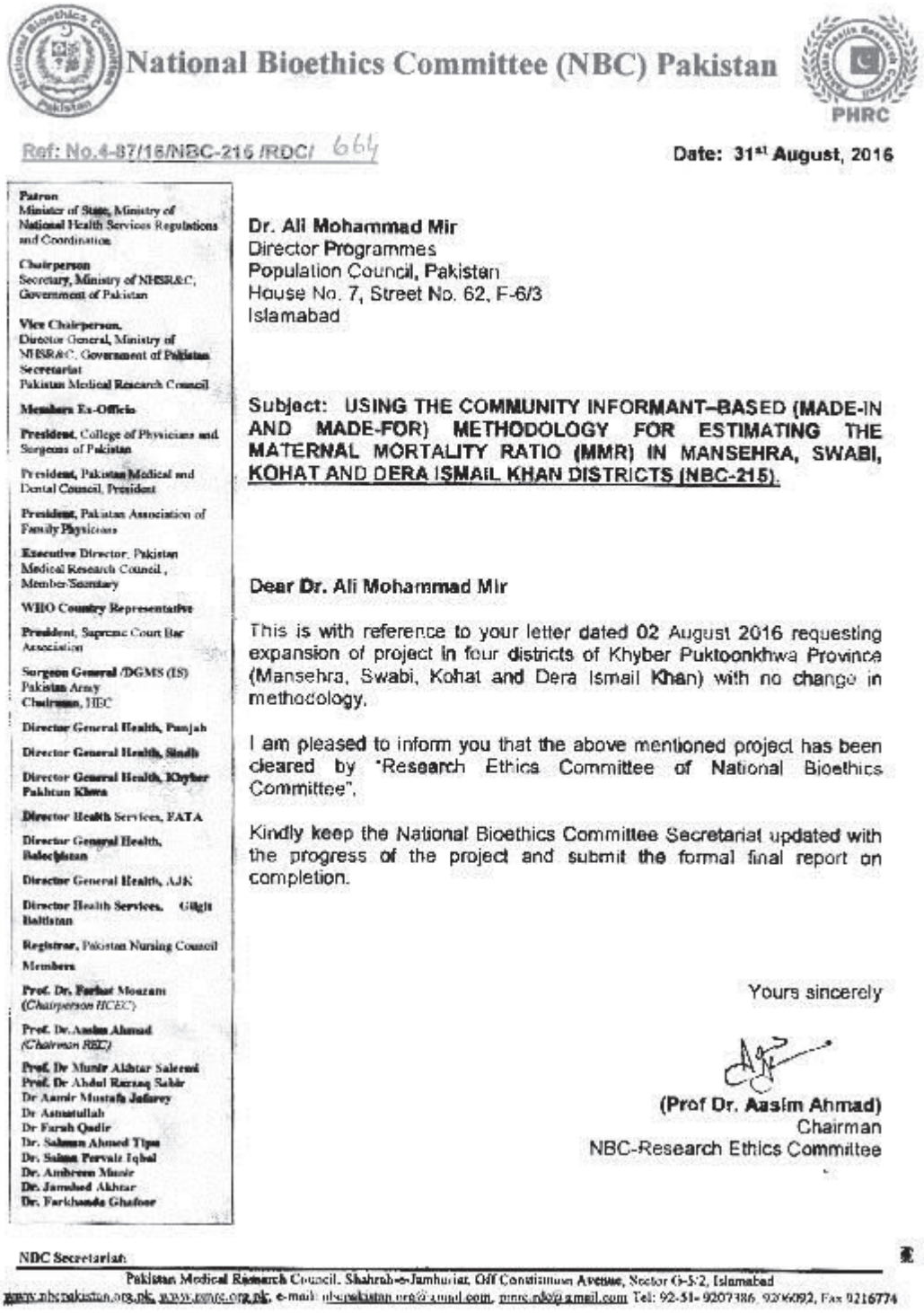
_____

_____

_____

NAME OF THE SUPERVISOR:_____DATE:_____

8.3 Ethical Approval from National Bioethics Committee of Pakistan



National Bioethics Committee (NBC) Pakistan

PHRC

Ref: No.4-87/16/NBC-215 /RDC/ 664

Date: 31st August, 2016

Patron
Minister of State, Ministry of National Health Services Regulations and Coordination

Chairperson
Secretary, Ministry of NHSR&C, Government of Pakistan

Vice Chairperson,
Director General, Ministry of NHSR&C, Government of Pakistan Secretariat
Pakistan Medical Research Council

Members Ex-Officio

President, College of Physicians and Surgeons of Pakistan

President, Pakistan Medical and Dental Council, President

President, Pakistan Association of Family Physicians

Executive Director, Pakistan Medical Research Council, Member/Secretary

WHO Country Representative

President, Supreme Court Bar Association

Surgeon General /DGMS (IS) Pakistan Army
Chairman, HEC

Director General Health, Punjab

Director General Health, Sindh

Director General Health, Khyber Pakhtun Khwa

Director Health Services, FATA

Director General Health, Balochistan

Director General Health, AJK

Director Health Services, Gilgit Baltistan

Registrar, Pakistan Nursing Council

Members

Prof. Dr. Farhat Mozam
(Chairperson HCEC)

Prof. Dr. Aasim Ahmad
(Chairman REC)

Prof. Dr Munir Akhtar Saleemi
Prof. Dr Abdul Razzaq Sahir
Dr Aamir Mustafa Jafarey
Dr Asmatullah
Dr Farah Qadir
Dr. Salman Ahmed Tipu
Dr. Salma Parvaiz Iqbal
Dr. Ambreen Munir
Dr. Jamshed Akhtar
Dr. Farkhanda Ghafoor

Dr. Ali Mohammad Mir
Director Programmes
Population Council, Pakistan
House No. 7, Street No. 62, F-6/3
Islamabad

Subject: USING THE COMMUNITY INFORMANT–BASED (MADE-IN AND MADE-FOR) METHODOLOGY FOR ESTIMATING THE MATERNAL MORTALITY RATIO (MMR) IN MANSEHRA, SWABI, KOHAT AND DERA ISMAIL KHAN DISTRICTS (NBC-215).

Dear Dr. Ali Mohammad Mir

This is with reference to your letter dated 02 August 2016 requesting expansion of project in four districts of Khyber Puktoonkhwa Province (Mansehra, Swabi, Kohat and Dera Ismail Khan) with no change in methodology.

I am pleased to inform you that the above mentioned project has been cleared by "Research Ethics Committee of National Bioethics Committee".

Kindly keep the National Bioethics Committee Secretariat updated with the progress of the project and submit the formal final report on completion.

Yours sincerely

(Prof Dr. Aasim Ahmad)
Chairman
NBC-Research Ethics Committee

NBC Secretariat:
Pakistan Medical Research Council, Shahrah-e-Jamhuriat, Off Constitution Avenue, Sector G-5/2, Islamabad
www.nbcpakistan.org.pk, www.pmrc.org.pk, e-mail: nb-cpakistan.org@gmail.com, pmrc.ndc@gmail.com Tel: 92-51- 9207386, 9206092, Fax 9216774

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

giz House 2; Street 27 • F 7-2 Islamabad • Pakistan

To
Dr. Pervez Kamal Khan
DG Health Services
Directorate of Health Services
Khyber Road, Peshawar
Khyber Pakhtunkhwa

Deutsche Entwicklungszusammenarbeit
Reproductive, Maternal and Newborn Health Project

Jasmin Dirinpur
House 2; Street 27
F 7-2 Islamabad, Pakistan
T +92512655920
F +92512655923
Jasmin.Dirinpur@giz.de

Ihr Zeichen
Unser Zeichen JD RMNHP / 007

03, Aug. 2015

Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Sitz der Gesellschaft Bonn und Eschborn

Friedrich-Ebert-Allee 36 + 40
53113 Bonn, Deutschland
T +49 228 44 60-0
F +49 228 44 60-17 66

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn, Deutschland
T +49 61 96 79-0
F +49 61 96 79-11 15

E info@giz.de
I www.giz.de

Amtsgericht Bonn
Eintragungs-Nr. HRB 18384
Amtsgericht Frankfurt am Main
Eintragungs-Nr. HRB 12394

Vorsitzender des Aufsichtsrats
Staatssekretär Dr. Friedrich Kitschelt

Vorstand
Tanja Gönner (Vorstandssprecherin)
Dr. Christoph Beier (Stellv. Vorstandssprecher)
Dr. Hans-Joachim Preuß
Cornelia Richter

Subject: Roll out of the Made-In Made-For to estimate maternal mortality in Haripur and Nowshera, Khyber Pakhtunkhwa

Respected Director General,

Working on behalf of the German Federal Ministry for Economic Development and Cooperation (BMZ), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH through Health Sector Support Programme (HSSP) is assisting the Government of Pakistan to strengthen the capacities of the health system to ensure effective, efficient, client-oriented and affordable health care provision.

Our *Reproductive, Maternal and Newborn Health Project* (RMNHP) aims to strengthen the health system and to improve the quality of healthcare for mothers and children. We have partnered with the Population Council to support the use of the community-based methodology for estimating maternal mortality ratio (MMR) in Nowshera and Haripur districts as this initiative is supposed to contribute to the overall RMNHP objective.

The initiative requires RMNCH-related data collection at the community level. We would be extremely obliged and grateful for your kind facilitation and approval to the concerned authorities in the districts for facilitation of the field teams. We anticipate that this initiative will assist your esteemed health department in provision of even better health services to the people of Khyber Pakhtunkhwa.

Yours sincerely,

Dr. Ruth Hildebrandt
Principal Advisor
HSSP / RMNHP

Jasmin Dirinpur
Implementation Responsible
RMNHP

8.4 Study Support Letters

DIRECTORATE
GENERAL HEALTH SERVICES
KHYBER PAKHTUNKHWA
PESHAWAR

All communications should be addressed to the Director General Health Services Peshawar and not to any official by name.

E-Mail Address:
Office Phone:
Exchange #

No. 3467-74/DHS
Dated 21/08/2015

To

The Deputy Commissioner,
Nowshera / Haripur
Khyber Pakhtunkhwa,

Subject: **Cooperation in KAP-Survey in Nowshera & Haripur District KP.**

In line with the Provincial Acceleration Operational Plan for Child and Maternal Health 2012-2015 Khyber Pakhtunkhwa, the Integrated Development Strategy 2014-18 for improved Health Services Delivery the Department of Health Khyber Pakhtunkhwa in collaboration with Health Sector Support Programme (HSSP) GIZ is implementing Reproductive, Maternal and Newborn Health Project (RMNHP) in two districts of KP-Haripur and Nowshera, on behalf of the German Ministry for Economic Cooperation and Development.

Reference is made to the requested received from the principal advisor HSSP and RMNHP Islamabad on 03.08.2015 to undertake the field survey on the subject matter (copy attached)

You are requested to take necessary action and extend maximum cooperation and help with the research team.

21/8/15

Director General Health Service,
Khyber Pakhtunkhwa, Peshawar.

Cc:

1. The Director Health Services, Khyber Pakhtunkhwa.
2. District Health Officer (Nowshera / Haripur).
3. Dr. Ruth Hildebrandt, Principal Advisor, GIZ Health Sector Support Programme Pakistan.
4. Dr. Ayesha Khan, Research and Development Solutions.
5. PS to Secretary Home and Tribal Affairs Khyber Pakhtunkhwa.
6. PS to Secretary Health Khyber Pakhtunkhwa.

DIRECTORATE
GENERAL HEALTH SERVICES
KHYBER PAKHTUNKHWA
PESHAWAR

No. 3483-90/DHS
Dated 21/8/2015

To

The Deputy Commissioner,
Nowshera / Haripur
Khyber Pakhtunkhwa.

Subject: **COOPERATION IN IMPLEMENTATION OF THE WHO SAFE CHILD BIRTH INITIATIVE IN DISTRICT NOWSHERA & HARIPUR KP.**

In line with the Provincial Acceleration Operational Plan for Child and Maternal Health 2012-2015 Khyber Pakhtunkhwa, the Integrated Development Strategy 2014-18 for improved Health Services Delivery the Department of Health Khyber Pakhtunkhwa in collaboration with Health Sector Support Programme (HSSP) GIZ is implementing Reproductive, Maternal and Newborn Health Project (RMNHP) in two districts of KP-Haripur and Nowshera, on behalf of the German Ministry for Economic Cooperation and Development.

Reference is made to the requested received from the principal advisor HSSP and RMNHP Islamabad on 03.08.2015 to undertake the field survey on the subject matter (copy attached)

You are requested to take necessary action and extend maximum cooperation and help with the research team.

Director General Health Service,
Khyber Pakhtunkhwa, Peshawar.

Cc:

1. The Director Health Services, Khyber Pakhtunkhwa.
2. District Health Officer (Nowshera / Haripur).
3. Dr. Ruth Hildebrandt, Principal Advisor, GIZ Health Sector Support Programme Pakistan.
4. Prof. Sabastian Vollmer, University of Gottingen.
5. PS to Secretary Home and Tribal Affairs Khyber Pakhtunkhwa.
6. PS to Secretary Health Khyber Pakhtunkhwa.

DIRECTORATE GENERAL HEALTH SERVICES PAKHTUNKHWA PESHAWAR

All communications should be addressed to the Director General Health Services Peshawar and not to any official by name.
Office Ph : 091 - 9210269 Exchange : 091 - 9210187, 091 - 9210196 Fax # 091 - 9210230

No. 281-90/RH Dated: 02/08/2016

To

District Health Officers (DHOs)
Districts: Mansehra, Swabi, Kohat, Dera Ismail Khan
Khyber Pakhtunkhwa

Subject: Cooperation in Roll Out of the Made-In Made-For to Estimate Maternal Mortality in the Districts of: Mansehra, Swabi, Kohat, Dera Ismail Khan in KP Province

In line with the Provincial Acceleration Operational Plan for Child and Maternal Health 2013-2015 Khyber Pakhtunkhwa, the Integrated Development Strategy 2014-2018 for Improved Health Services Delivery the Department of Health Khyber Pakhtunkhwa in collaboration with Health Sector Support Program (HSSP) GIZ is implementing *Reproductive, Maternal and Newborn Health Project* (RMNHP) in KP, on behalf of the GermanMinistry for Economic Cooperation and Development.

Reference is made to the request received from the Director Programs, Population Council, Islamabad 27.07.2016 to undertake the field survey on the subject matter (Copy attached).

You are requested to direct the concerned officials at the Union Council(s), under your jurisdiction to extend maximum cooperation and help with the research team.

01/8/16
Director General Health
Services Khyber Pakhtunkhwa

CC:

- The Director Health, Khyber Pakhtunkhwa, Peshawar
- Deputy Director RH DGHS Khyber Pakhtunkhwa, Peshawar
- Dr. Ruth Hildebrandt, Principal Advisor, GIZ Health Sector Support Program Pakistan
- Dr. Saleem Shaikh, Project Manager, Population Council, Islamabad

OFFICE OF THE DIRECTOR GENERAL
LOCAL GOVERNMENT & RURAL DEVELOPMENT
DEPARTMENT KHYBER PAKHTUNKHWA

No. Director (LG) 3-23/Project File/2013/3635
Dated Peshawar, the 24th August 2015

The Assistant Directors,
LG&RDD, Nowshera & Haripur

Subject: - **REQUESTING SUPPORT LETTER FOR A RESEARCH STUDY ON "MEASURING PROVINCIAL ESTIMATES FOR MATERNAL MOTILITY RATIO IN NOWSHERA AND HARIPUR DISTRICT OF KHYBER PAKHTUNKHWA / REPRODUCTIVE, MATERNAL AND NEW BORN HEALTH PROJECT"**

I am directed to refer to subject noted above and to inform that a team of population council (an NGO) will visited at your office on account of data collection / survey on maternal mortality in your respective district and to request you to extend your support to the visiting team subject to approval from the Deputy Commissioner of the concerned district.

Deputy Director (Admin)
LG&RDD

Cc.

1. Dr. Ali Muhammad Mir Director Programme Population Council
2. PA to Director General LG&RDD, Khyber Pakhtunkhwa.

Deputy Director (Admin)
LG&RDD

Office Tel: 091-9223563: Fax: 091-5270460: e-mail: dir.a.lg@kp.gov.pk

OFFICE OF THE DIRECTOR GENERAL
LOCAL GOVERNMENT & RURAL DEVELOPMENT
DEPARTMENT KHYBER PAKHTUNKHWA

No. Director (LG) 3-23/Project File/2013/7762
Dated Peshawar, the 18th August, 2016

To

The Assistant Directors,
LG&RDD, D.I.Khan, Kohat, Swabi & Mansehra

Subject: **REQUESTING SUPPORT LETTER FOR A RESEARCH STUDY ON "MEASURING PROVINCIAL ESTIMATE FOR MATERNAL MOLILITY RATIO IN D.I. KHAN, KOHAT, SWABI & MANSEHRA DISTRICTS OF KHYBER PAKHTUMKHWA / REPRODUCTIVE, MATERNAL AND NEW BOWN HEALTH PROJECT".**

I am directed to refer to subject noted above and to inform that a team of Population Council, a Research Organization will visit at your office on account of data collection / survey on maternal mortality in your respective district and to request you to extend your support to the visiting team.

Director (Admin/HR)
LG&RDD

1. Dr. Afi Muhammad Mir Director Programme Population Council
2. PA to Director General LG&RDD, Khyber Pakhtunkhwa.

Director (Admin/HR)
LG&RDD

Office Tel: 091-9211451; Fax: 091-5270460; e-mail: dir.a.lg@kp.gov.pk

OFFICE OF THE DEPUTY COMMISSIONER HARIPUR,
No. 11457-63 /PS/DC (H).
Dated: September 7, 2015.

To,

Dr. Ali Mohammad Mir,
Director Programmes and Research,
Population Council Islamabad.

SUBJECT:- REQUEST FOR USING THE COMMUNITY INFRMANT BASED (MADE-IN / MADE-FOR) METHODOLOGY FOR ESTIMATING MMR IN DISTRICT HARIPUR.

Memo;

With reference to your request dated 31.08.2015 for grant of permission to conduct MMR study in District Haripur, it is to inform you that this office will extend full support in connection with subject study, however, it is desired that all the stakeholders including A.C Haripur, DHO Haripur, M.S DHQ Haripur, DSM Haripur, AD LG Haripur and the representatives of District Government Haripur may be taken onboard. The day-to-day activities relating to the subject study may be shared with this office.

Deputy Commissioner
Haripur.
DEPUTY COMMISSIONER
HARIPUR

Copy to the:-

1. D.G Health, Khyber Pakhtunkhwa, Peshawar.
2. D.G Local Government, Khyber Pakhtunkhwa, Peshawar.
3. A.C Haripur.
4. M.S Haripur.
5. DHO Haripur.
6. DSM Haripur.

Deputy Commissioner
Haripur.

Office of The Deputy Commissioner, Haripur.
Phone No. 0995- 613391, 613349, Fax – 615412
No.1 (2)/2015/AE/DC (H)
Dated: 30 / 09 /2015

Office Order.

The Population Council, Islamabad office will conduct interview to hire Filed Staff for MMR (Maternal Mortality Ratio) Study in District Haripur in the office of District Health Officer, Haripur on 01.10.2015.

Mr. Atta-ur-Rehman Abbasi, Accounts Officer is hereby deputed to participate in the Interview Panel / Selection Committee on behalf of DC Office.

Deputy Commissioner,
Haripur.

Copy to the:-

1. District Health Officer, Haripur.
2. Director Programmes & Research, Population Council, Islamabad.
   (House No.7, St No.62, F-6/3, Islamabad, Ph: 0518445566, Fax: 051-2821401)
3. Accounts Officer O/O DC Haripur.

Deputy Commissioner,
Haripur.

OFFICE OF THE ASSISTANT DIRECTOR
LOCAL GOVERNMENT & RURAL DEVELOPMENT
DEPARTMENT NOWSHERA

No. 1965-69 /AD/LG&RDD/NSR Dated Nowshera 17/11/2015

To

All the Secretaries,
Village Councils/Neighborhood Councils,
Nowshera

Subject: - **REQUESTING SUPPORT LETTER FOR A RESEARCH STUDY ON "MEASURING PROVINCIAL ESTIAMTES FOR MATERNAL MOTILITY RATIO IN NOWSHERA DISTRICT OF KHYBER PAKHTUNKHWA/REPRODUCTIVE, MATERNAL AND NEW BORN HEALTH PROJECT".**

Memo:

The Director General, Local Govt: and Rural Development Department Khyber Pakhtunkhwa vide his letter No. Director(LG)3-23/Project File/2013/3635 dated 24-08-2015 has informed that a team of population council (An NGO) will visited your offices on account of data collection/survey on maternal motility in the jurisdiction of each Village Council/Neighborhood Council.

Therefore, you are all directed to extend your possible co-operation to the visiting team under the rules/accordingly.

Assistant Director
Local Govt: & Rural Dev: Department
Nowshera

Endst: No and Date Even:

Copy of the above is forwarded to:-

1. The Director General, Local Govt: and Rural Development Department Khyber Pakhtunkhwa.
2. The Director General, Health Services, Khyber Pakhtunkhwa.
3. The Deputy Commissioner, Nowshera.
4. The Director Program, Population Council Islamabad.

For information with reference to above please.

Assistant Director
Local Govt: & Rural Dev: Department
Nowshera

DIRECTORATE
GENERAL HEALTH SERVICES
KHYBER PAKHTUNKHWA
PESHAWAR

All communications should be addressed to the Director General Health Services Peshawar and not to any official by name.

E-Mail Address:
dghealthkpk2014@gmail.com
Office Ph# 091-9210269
Exchange# 091-9210187, 9210196

No. 3475-82/DHS
Dated 21/08/2015

To

The Deputy Commissioner,
Nowshera / Haripur
Khyber Pakhtunkhwa,

Subject: **COOPERATION IN ROLL OUT OF THE MADE-IN MADE-FOR TO ESTIMATE MATERNAL MORTALITY IN NOWSHERA & HARIPUR DISTRICT KP.**

In line with the Provincial Acceleration Operational Plan for Child and Maternal Health 2012-2015 Khyber Pakhtunkhwa, the Integrated Development Strategy 2014-18 for improved Health Services Delivery the Department of Health Khyber Pakhtunkhwa in collaboration with Health Sector Support Programme (HSSP) GIZ is implementing Reproductive, Maternal and Newborn Health Project (RMNHP) in two districts of KP-Haripur and Nowshera, on behalf of the German Ministry for Economic Cooperation and Development.

Reference is made to the requested received from the principal advisor HSSP and RMNHP Islamabad on 03.08.2015 to undertake the field survey on the subject matter (copy attached)

You are requested to take necessary action and extend maximum cooperation and help with the research team.

Director General Health Service,
Khyber Pakhtunkhwa, Peshawar.

Cc:

1. The Director Health Services, Khyber Pakhtunkhwa.
2. District Health Officer (Nowshera / Haripur).
3. Dr. Ruth Hildebrandt, Principal Advisor, GIZ Health Sector Support Programme Pakistan.
4. Dr. Ali Mir, Director Programme and Research Population Council, Islamabad.
5. PS to Secretary Home and Tribal Affairs Khyber Pakhtunkhwa.
6. PS to Secretary Health Khyber Pakhtunkhwa.

OFFICE OF THE DISTRICT HEALTH OFFICER, MANSEHRA.

Reference Number, 3883 Date 05/08/2016

To

Director Programs

Population Council,

No.7, Street 62, F-6/3, Islamabad.

Subject: **Research Study on "Using the Community Informants Based Made-in and Made-for (MIMF) Methodology for Estimating Maternal Mortality Ratio (MMR) in Mansehra."**

This is in continuation to the letter issued by the Director General Health, Directorate General of Health Services, Govt: of KP, dated 25/7/2016 Ref No.1414-21/DHD, you are hereby allowed to conduct research related activities on measuring maternal mortality in District Mansehra.

District Health Officer,

Mansehra.

Office of the District Health Officer
Dera Ismail Khan

Phone No. 0966-9280199
Fax No. 0966-9280200

No 10400 Dated: 26 /10/2016

To,

The Director Programs
Population Council,
No.7, Street 62, F-6/3, Islamabad.

Subject: **RESEARCH STUDY ON "USING THE COMMUNITY INFORMANTS BASED MADE IN AND MADE FOR (MIMF) METHODOLOGY FOR ESTIMATING MATERNAL MORTALITY RATION (MMR) IN DIKHAN.**

This is in continuation to the letter issued by the Director General Health, Directorate General of Health Services, Govt: of KP, dated 25/07/2016 Ref No. 1414-21/DHD, you are hereby allowed to conduct research related activities on measuring maternal mortality in District DIKhan.

District Health Officer
Dera Ismail Khan

OFFICE OF THE
DISTRICT HEALTH OFFICER
KOHAT
No. 4123-24 /G-1
Dated: 13 /10/2016

To,

Dr. Ali Muhammad Mir,
Director Program (Research)
Population Council,
No.&, street 62, F-6/3, Islamabad.

Subject: **Research Study on "Using the Community Informants Based Made-in and Made-for (MIMF) Methodology for Estimating Maternal Mortality Ratio (MMR) in Kohat."**

This is in continuation to the letter issued by the Director General Health Services, Govt: of KP, dated 02-08-2016 reference No.281-90/RH, you are hereby allowed to conduct research related activities on measuring maternal mortality in District Kohat.

DISTRICT HEALTH OFFICER
KOHAT

No 4123-24 /G-1 dated _____/10/2016.

Copy forwarded to Director General Health services KP Peshawar w.r.to his letter referred above.

DISTRICT HEALTH OFFICER
KOHAT

Office Of The District Health Officer Swabi

Email ID: [illegible]
Office Tel & Fax: [illegible]

No 1046 /DHO Swabi Dated 5/12/16.

To

Director Programs
Population Council,
No. 7, Street 62, F-6/3 Islamabad

Subject: **Research Study on "Using the community information Based Made-in and Made –for (MIMF) Methodology for Estimating Maternal Mortality Ratio (MMR) In Swabi.**

This is in continuation to the letter issued by the Director General Health, Directorate General of Health Services, Govt: of kp dated 25/7/2016 ref No.1414-21/DHD, you are hereby allowed to conduct research related activities on measuring maternal mortality in District Swabi.

District Health Officer
Swabi

District Health Officer
Swabi

OFFICE OF THE ASSISTANT DIRECTOR
LOCAL GOVERNMENT & RURAL DEVELOPMENT DEPARTMENT
DERA ISMAIL KHAN

No:2624-31/AD/LG & RDD Dated: 27/10/2016

To

The Director Admin/HR
LG & RDD KPK Peshawar.

Subject: - **REQUESTING SUPPORT LETTER FOR A RESEARCH STUDY ON "MEASURING PROVINCIAL ESTIMATE FOR MATERNAL MORTALITY RATIO IN D.I.KHAN, KOHAT, SWABI & MANSEHRA DISTRICT OF KHYBER PAKHTUNKHWA/REPRODUCTIVE MATERNAL AND NEW BOWN HEALTH PROJECT".**

Reference your letter No. Director(LG)3-23/Project File/2013/7762 dated 18th August 2016 on the subject captioned above.

The programme manager Population Council Mr. Mamraiz Khan visited office of the undersigned on dated 26.10.2016 to request for support in the above subject matter and the undersigned extended full support as directed.

Assistant Director
Local Govt: & RDD D.I.Khan

Endst No. & date even:-

Copy to

1. The Nazim District Govt: D.I.Khan.
2. The Deputy Commissioner D.I.Khan.
3. PA to Director General LG & RDD KPK Peshawar.
4. Mr. Mamraiz Khan Programme Manager Population Council to collect the nominated names of Village Secretaries as desired please.
5. Mr. Mamoon Nawaz Progress Officer LG & RDD is nominated as Focal Person to the said project.
6. All Supervisor LG & RDD D.I.Khan are directed to inform the mentioned Village Secretaries
7. The Secretary Village Councils Concerned are directed to extend your full cooperation with the Team of Population Council.

Assistant Director
Local Govt: & RDD D.I.Khan

OFFICE OF THE ASSISTANT DIRECTOR

LOCAL GOVERNMENT AND RURAL DEVELOPMENT DEPARTMENT MANSEHRA

No. ADRDD (M) Dated:24 /10/2016

To

All Secretaries of Village council

District Mansehra

Subject: **REQUESTING SUPPORT LETTER FOR A RESERCH STUDY ON "Using The Community Informants Based Made-in and Made-For (MIMF) Methodology for Estimating Maternal Mortality Ratio (MMR) in Mansehra District"**

With reference to letter No: Director (LG)3-23/project File/2013/7762, dated Peshawar, the 18th August 2016, from the office director general local government and rural development department Khyber Pakhtunkhwa.

I am directed to refer the subject noted above and to inform that a team of Population council will visit to all Union Council/Village Council offices for the data collection on Maternal Mortality Ratio in the district. You are directed to extend your full cooperation to the visiting teams.

Assistant Director

LG&RDD Mansehra

Copy Forward to

1. Dr.Ali Muhammad Mir Director Program Population Council
2. PA to Director General LG&RDD, Khyber Paktunkhwa

OFFICE OF THE ASSISTANT DIRECTOR
LOCAL GOVT. & RURAL DEVELOPMENT DEPARTMENT
KOHAT

Email: adlgkohat@gmail.com Ph & Fax # 0922-513940

No 850-51 /AD/KT
Date: 04/01/2017

To

1. All the Nazimeen VC/NCs
   District Kohat. (1-91)
2. All the Secretaries VC/NCs
   District Kohat. (1-91)

Subject:- **REQEUSTING SUPPORT LETTER FOR A RESEARCH STUDY ON "USING THE COMMUNITY INFORMANTS BASED MADE-IN AND MADE-FOR (MMIF) METHODOLOGY FOR ESTIMATING MATERNAL MORTALITY RATIO (MMR) IN KOHAT DISTRICT**

With reference to letter No. Director (LG)3-23/Project File/2013/7762, dated Peshawar, the 18th August 2016, from the office of the Director General Local Govt. & Rural Development Department Khyber Pakhtunkhwa.

I am directed to refer to the subject noted above and to inform that a team of Population Council will visit all Union Councils/Village & Neighborhood Council offices for the data collection on Maternal Mortality in the district. You are directed to extend your full co-operation to the visiting teams.

Progress Officer,
Local Govt. & RDD,
Kohat

Cc:

1. The Director General, LG & RDD, Khyber Pakhtunkhwa, Peshawar.
2. Dr. Ali Muhammad Mir, Director Program Population Council

Progress Officer,
Local Govt. & RDD,
Kohat