



A Situational Analysis on Stillbirths, Newborn Deaths and Small and Sick Newborn Care

Key Findings from Pakistan - 2019

Foreword

Pakistan has not been able to significantly decrease its neonatal and stillbirth rates in the last two to three decades. Apart from secure pregnancy and delivery care, the quality management of in-patient newborns and young infants should be ensured to decrease such a high rate of mortality. Fixing the gaps and addressing the needs of sick newborns and young infants will assist enormously in enhancing the health status of babies and in decreasing the mortality rate, particularly for those admitted to hospitals.

The Department of Community Health Sciences, Aga Khan University (AKU), has set out its assessment focus to provide the most up-to-date evidence on inpatient care for Newborn and Young Infants. This work was supported by UNICEF and was carried out in close cooperation with the Ministry of National Health Services, Regulations and Coordination (MNHSR&C) and Health Services Academy Islamabad. The study carried out a detailed assessment of the facility with a view to assessing service readiness and the quality of in-patient neonatal care.

This report illustrates the situation analysis of existing services and challenges faced in the care of in-patient sick New-born and Young infants. The report, moreover, provide viewpoints of the key stakeholders about the current situation of in-patient new born and sick young infant care. This work is supplemented by presenting a policy landscape for maternal, neonatal and child wellbeing in the country.

Additionally, the report provides preliminary information on the neglected issue of stillbirths in Pakistan, which is based largely on already available data and is supplemented by the perceptions of key stakeholders on the underlying causes of stillbirths in Pakistan.

We believe that this report will provide useful information that will prompt the federal and provincial governments, especially the Ministry of Health Services Regulations and Coordination and the Departments of Health, and other stakeholders to think about the most feasible and cost-effective interventions that will help to decrease the unduly high neonatal deaths and stillbirths in Pakistan.

Dr Sameen Siddiqi
MBBS, FCPS, MSc, Dr Med; FFPH
Professor & Chair Department of
Community Health Sciences

Dr Sarah Saleem
MBBS, DCH, MSc, FCPS
Professor & Head, Population and
Reproductive Health Unit
Department of Community Health
Sciences

Acknowledgments

We express our sincere appreciation to the Ministry of National Health Services, Regulations and Coordination, Islamabad, the Provincial and Regional Health Department's exemplary management, and to the respective MNCH program offices and in-charges facilities that supported the information collection teams. Data collection could not have been performed smoothly without their facilitation.

In addition, we would like to acknowledge the efforts and extend our gratitude for their coordination and support to Dr. Samia Rizwan and the UNICEF Focal Persons.

Our profound appreciation extends to Dr. Saima Hamid, Associate Professor and Registrar, Health Services Academy (HSA) for offering special assistance for hard-to-reach fields of Pakistan during information collection especially for hard-to-reach Pakistan regions. We would also like to express our sincere thanks to Dr. Sajid Soofi and Dr. Shabina Arif of the Department of Paediatrics and Child Health for their assistance at various project execution stages. Special acknowledgment goes to our highly dedicated and committed research team of Dr. Sana Roujani, Dr. Ammarah Ali, Dr. Syed Shujaat Hussain and Mr. Zahid Abbasi, led by Dr. Sumera Aziz Ali and Ms Nousheen Pradhan.

We would like to extend our appreciation to important informants at the district, regional and facility level who gave useful perspectives during important informant interviews on the status of sick newborn and young infants in Pakistan. Sincere thanks and gratitude are extended to the colleagues for the contributions and time both in their individual and institutional capacities towards writing, reviewing and editing this report.

We are grateful for the guidance of Dr. Sarah Saleem and Dr. Sameen Siddiqi, Community Health Sciences Department-AKU, who supported and guided the whole team at various steps of project implementation and report writing.

Dr. Sumera Aziz Ali
MBBS, MSc, FCPS
Assistant Professor and Principal Investigator
Department of Community Health Sciences

Ms. Nousheen Akber Pradhan
BScN, MSc
Senior Instructor and Co-Principal Investigator
Department of Community Health Sciences

Table of Contents

Foreword.....	1
Acknowledgments.....	2
Acronyms	5
Executive Summary.....	7
Chapter One: Introduction & Context	15
Aim of the Study:	15
Chapter Two: Methodology.....	16
Study Sites:.....	16
Data Collection Tools:	17
Methods of Assessment:.....	17
a) Facility Assessment.....	17
b) Key Informant Interviews	17
c) Records Review	17
d) Desk review / Secondary analysis:.....	18
Chapter Three: Newborn and Young Infant Health Related Policies, Strategies & Programmes in Pakistan & Key Stakeholders’ Perspective	19
National & Provincial Key Documents on In-patient Care of Newborn and Young Infant Care:	19
Availability of National and Provincial Policy Documents and Key Stakeholders’ Level of Awareness	20
Challenges in Strengthening NYI Services:.....	21
Gaps Identified	22
Chapter Four: Newborn & Young Infant Care in Pakistan	23
Types of Infant Care Units:.....	23
Availability of Essential Equipment and their Preventive Maintenance and Repair:	24
Staffing Cadre and Training:.....	25
Facility Management Practices:	26

The practice of Case Reviews at the Facilities:	28
Out-referral Practices:.....	28
Protocols, Guidelines, Job Aids:	28
Records Reviews:	30
Health Monitoring and Information Systems	32
Chapter Five: Perceptions & Experiences of Parents/Caregivers Regarding New Born Young Infant Care During Their Stay In The Facility	34
Parents Socio-demographic Characteristics:	34
Reasons for Admission of Sick NYIs cited by Parents or Caregivers:	35
Experiences and Perceptions Regarding Behaviour of Healthcare Providers and Amenities Provided at the Facility:.....	35
Experiences and Perceptions of Parents/ Caregivers’ Regarding Financial Burden During their Stay in the Facility.	37
Financial Burden Associated with Non-Medical Costs- Caregiver’s Perspective.....	37
Financial Burden Associated with Infant Hospitalization- Caregiver’s Perspective	38
Gaps Identified	39
Chapter Six: Stillbirths: An Opportunity to Improve a Neglected Health Issue	40
Objective 1: Identify the rates of stillbirths and neonatal deaths across Pakistan.	40
Objective 2: Determine risk factors and causes associated with stillbirths and neonatal deaths in Pakistan	46
Perceived Causes of Stillbirths: In-depth Interviews with Health Care Professionals.....	51
Factors Contributing to Inadequate Service Availability and Low Utilization of Health Services: ..	51
Perceived causes of Stillbirths and Neonatal Deaths:	54
Chapter Seven: Proposed Recommendations for Actions.....	57

Acronyms

ANC	Antenatal Care
AJK	Azad Jammu & Kashmir
AKU	Aga Khan University
APGAR score	Appearance, Pulse, Grimace, Activity, and Respiration
BEmONC	Basic Emergency Obstetric and Newborn Care
CEmONC	Comprehensive Emergency Obstetric and Newborn Care
CHS	Community Health Sciences
CMW	Community Midwife
CPAP	Continuous Positive Airway Pressure
DG	Director General
DFID	Department for International Development
DHIS	District Health Information System
DHQH	District Head Quarters Hospital
DOH	Department of Health
DRAP	Drug Regulatory Authority of Pakistan
EMEN	Every Mother Every Newborn
ENAP	Every Newborn Action Plan
ENC	Essential Newborn Care
ERC	Ethical Review Committee
GB	Gilgit Baltistan
GFF	Global Financing Facility
HCC	Health Care Commission
HSA	Health Services Academy
ICT	Islamabad Capital Territory
IDI	In-depth Interview
KMC	Kangaroo Mother Care
KP	Khyber Pakhtunkhwa
LBW	Low Birth Weight
LHW	Lady Health Worker
MCSP	Maternal Child Survival Program
MDG	Millennium Development Goals
MISC	Multiple Indicator Cluster Survey
MNCH	Maternal, Newborn and Child Health
MNHSR&C	Ministry of National Health Services Regulation & Co-ordination
MO	Medical Officers
MS	Medical Superintendent
MSF	Medicines Sans Frontiers
NBC	National Bioethics Committee
NICU	Neonatal Intensive Care Unit
NNDs	Neonatal Deaths

NYIs	Newborn and Young Infants
Obs & Gynae	Obstetricians & Gynaecology
PDHS	Pakistan Demographic and Health Survey
PNC	Postnatal Care
PPA	Pakistan Paediatrics Association
PPRA	Public Procurement Regulatory Authority
PPTCT	Prevention of Parent to Child Transmission
MWRA	Married Women of Reproductive Age
RMNCH	Reproductive Maternal Neonatal and Child Health
SARA	Service Availability and Readiness Assessment
SBs	Stillbirths
SDG	Sustainable Developmental Goals
SES	Socio-Economic Status
SNCU	Sick Newborn Care Unit
SOGP	Society of Obstetricians & Gynaecologists of Pakistan
SPA	Service Provision Assessment
TA	Technical Assistance
UNFPA	United Nations Population Fund
UNICEF	United Nations International Children's Emergency Fund
USAID	United States Agency for International Development
WHO	World Health Organization

Executive Summary

Background:

Neonatal health and survival have become a challenge, particularly with low and low middle-income countries [LMICs] including Pakistan. Government of Pakistan has taken many measures to decrease neonatal mortality and morbidity rates with the help of UNICEF, WHO, and other partners, but desirable goals have yet to be achieved. There is broad consensus that, in order to achieve the global targets outlined in Every New born Action Plan (ENAP) for neonatal deaths and stillbirths (< 10/1000 births), the country will need to make significant improvements in inpatient care for New-borns and Young infants (NYI). The first step in the process of improving the in-patient care of NYI is to understand the care landscape by assessing the readiness of services and the quality of care provided in particular in public health facilities across Pakistan. To this end, a situation analysis was performed for NYI in-patient care in Pakistan as part of the UNICEF-led worldwide initiative to comprehend the status of sick NYI in-patient care in LMICs. The objective of this review was to assess the availability of services, the quality and readiness of in-patient care for young and ill infants and to conduct secondary analysis of stillbirth and neonatal deaths in Pakistan.

Methodology:

The Department of Community Health Sciences, Aga Khan University (AKU) carried out this assessment in 23 health care facilities across the four provinces and administrative regions in Pakistan in collaboration with the Health Services Academy and with the support of UNICEF and the Ministry of National Health Services, Regulations & Coordination [MONHSRC]. Data were collected using a mixed-method design. Standard tools for data collection shared by UNICEF were adapted to the local context and administered in the field at the level of health facilities. Key informant interviews were conducted with relevant officials in the MOHSRC, Directors and Deputy Directors of the Maternal & Child Health Program in the respective provincial health departments, Medical Superintendents (MS)/Chief Executive Officers /Health information system in-charges, health care suppliers and in-patient health sick NYI caregivers. On average, 3-4 physicians/nurses and 3-4 caregivers were surveyed at each facility.

For the secondary analysis of stillbirths, a comprehensive literature review was conducted for the hospital and community-based studies reporting stillbirth rates and associated risk factors in Pakistan. Community-based rates were accessible from the Maternal and Newborn Health Registry (MNHR) located in Thatta district of Sindh, backed by the Department of Community Health Sciences, AKU.

Results:

Newborn & Young Infant Care in Pakistan

Based on the evaluation of 23 health centres, infant care units such as NICUs and special care units were geographically accessible to the local population. However, in DHQs, kangaroo mother care units were scarce. In terms of human resource availability in DHQs, apart from paediatricians, there was a shortage of specialist staff (neonatologist, neonatal surgeon, and neonatal nurse specialists). There was also a lack of training of employees to provide in-patient newborn care throughout the nation. The main

equipment required for the care of NYI was available in most of the facilities, but the role of the biomedical department was found to be lacking for their preventive maintenance and repair.

With regard to facility management practices for in-patient neonatal care, very few facilities reported having management and interdisciplinary meetings to address gaps in the readiness and availability of NYI care. With respect to referral processes, NYI out-referrals are universal across the nation, but only a quarter of institutions receive feedback from a facility where the baby has been referred.

Essential interventions for the prevention and treatment of sick NYIs were found to be available across the assessed facilities with substantial variation across provinces. However, interventions such as those related to new born screening for congenital anomalies were available in less than half the facilities. Protocols or guidelines for treating critical neonatal illnesses or for implementing child safety measures were not being used or implemented in almost all assessed facilities.

Review of patient records of the newborn disclosed that most sick NYIs were admitted owing to serious bacterial disease (sepsis and meningitis), respiratory distress, and hyperbilirubinemia in the health facilities surveyed. Information related to newborn evaluation parameters such as reason for admission, birth weight, infant age, temperature, respiratory rate, level of oxygen saturation, were adequately recorded. On the other hand, few of the reviewed records provided adequate information on parameters related to APGAR score, daily weight monitoring, use of the growth chart, information on hazard signs. Documentation on either parent counselling or community-based support accessibility was found to be deficient across all facilities assessed.

The evaluation of facility procedures for compiling and tracking service information showed that routine submission to an internal body of electronic or paper-based HMIS reports is almost universal. Almost all facilities were discovered to have data accessible for neonatal deaths and stillbirths in separate units, but none of the centres had consolidated information. Most of the facilities assessed demonstrated that DHIS or HMIS monitor significant indicators and illnesses such as low birth weight (< 2500gm), premature birth, neonatal sepsis, and asphyxia on a regular basis.

Caregiver's Perspectives on Care Provided to NYIs

The majority of caregivers reported more than 7 days of stay in the facility, and most of the caregivers interviewed reported that their newborn was admitted due to infection and breathing problems. They were mostly satisfied with the behaviour of doctors and nurses, area cleanliness, and the facility's privacy. Approximately 90% of caregivers reported paying for the care and stay at the hospital out of pocket. Other sources of financial support, such as insurance, have occasionally been provided to caretakers in some of the facilities. Major out - of-pocket expenses were incurred for the purchase of diapers and medications, while non-medical costs were transport, food and overnight stays. Most of the caregivers indicated that the cost of treatment and maintenance consumed a large percentage of family income and family income. As far as planning for discharge is concerned, parents or caregivers were not given sufficient advice on home care and identification of danger signs and sources of support after discharge.

Secondary Data Analysis: Stillbirth & Neonatal Deaths in Pakistan

The literature review of the documents shows a high rate of stillbirth of 52.5/1000 births, which has remained almost stagnant over the last 10 years. Maternal factors for stillbirths have been identified as extreme maternal ages, zero or more than 3 parity, poor education and socio-economic status, poor health-seeking behaviour, undernutrition, anaemia, lack of autonomy and inadequate number of ANC visits. Obstetric causes included antepartum haemorrhage, obstructed labour, placental disorders, and pregnancy-induced hypertension as factors leading to stillbirth. The information from community-based Maternal and Newborn Health Registry in Thatta, maintained by the Department of Community Health Sciences, AKU also supported the reviewed literature for high stillbirth rates and associated factors in Pakistan.

Interviews with obstetricians /gynaecologists and paediatricians indicated that most of them were not well versed in the definition and classification of stillbirths (macerated and fresh) and early and late neonatal deaths. These information inconsistencies may result in under-reporting or over-reporting of mortality and early neonatal deaths, blurring Pakistan's real condition. In addition, most paediatricians have indicated that stillbirths do not fall within their domain and obstetricians can better describe the condition of stillbirths in the nation.

Maternal and Newborn Health (MNCH) Policies, Strategies and Programs

A total of 39 policy documents (12 at the national level and 39 at provincial level) were reviewed against eleven international standards of NYI care. The reviewed government documents include policies, protocols, programs, action plans, guidelines, procedures and standards related to Reproductive, Maternal and Neonatal and Child Health. The eleven international standards holistically cover different aspects of strengthening NYI care. This includes, (1) availability of national plans and strategies for inpatient care of NYIs care, (2) staffing, (3) specific strategies for improving inpatient care of NYIs, (4) service standards for in-patient care, (5) prenatal interventions, (6) essential newborn care, (7), newborn assessment, (8) identification of at risk newborn and actions to be taken, (9) promoting beneficial practices, (10) routine monitoring of newborn care and (11) guidelines and protocols specific to NYI conditions.

In general, the desk review highlighted inadequate adherence with the international standards of strengthening NYI care in the existing policy documents. Of all the eleven standards of inpatient NYI care, the standard related to the availability of national plans and strategies for inpatient care of NYIs was found to be incorporated in most of the reviewed documents. None of the national level documents have addressed prenatal interventions, only few of the provincial level guidelines and protocols have incorporated this important standard of care. Furthermore, the desk review also indicated that standards related to routine monitoring of newborn, guidelines & protocols to identify specific NYI conditions and identification of at-risk newborn with actions to be taken has not received adequate attention in the existing documents at national and provincial level.

Key Challenges for Improving Care of NYIs in District and Tertiary Care Hospitals in Pakistan

- Inadequate coordination among federal MOHSR&C and provincial health departments to oversee and monitor care of NYI.
- Insufficient allocation for the care of NYIs in provincial health budgets.
- Need for updating documents related to policies, strategies and protocols to align them with the eleven international standards of intrapartum and essential newborn care.
- Limited capacity of MNCH Units in Provincial Health Departments to plan for and oversee quality of care of NYIs.
- Lack of qualified in neonatology including surgery and nursing staff in DHQ hospitals with variation across provinces.
- Absence of organized pre-service and in-service training program for nurses and physicians in clinical care and communication aspects.
- Weak information system to capture important information on stillbirths and newborn care across DHQs and Tertiary care settings.
- Lack of consensus on the standard definition and classification of stillbirths and neonatal deaths at the national & provincial level and train health care providers.
- Non-functioning referral between primary, secondary and tertiary health facilities to ensure continuity in the care of NYIs.

Proposed Recommendations and Actions to Improve the In-patient Care of Newborn & Young Infants in Pakistan:

1. Strengthen coordination among federal MOHSRC and provincial health departments in the field of MNCH, especially to oversee and monitor care of NYIs.

Proposed actions:

- The federal MOHSRC should establish and or activate the interprovincial coordination group or task force on MNCH and conduct quarterly meetings between federal and provincial health departments on matters pertaining to NYI;
 - Develop and or revise the terms of reference of the group or task force to review strategic aspects of NYI related, among others, to policies and strategies, protocols and guidelines, provincial plans and their implementation progress, scaling up neonatal care in district hospitals across the country.
2. Enhance allocation for the care of NYIs in provincial health budgets by including it in the annual development plans as well as in the regular budget.

Proposed actions:

- Provincial Department of Health should revisit their MNCH PC -1 and review their regular budget to include adequate funding for strengthening of NYI care in district hospitals. This should include resources for:
 - Recruitment of Neonatologists, Neonatal Surgeons, Neonatal Nurses in district hospitals;
 - Specialized trainings of existing Paediatricians and Nurses in district on different aspects of neonatal care;
 - Procurement, repair and maintenance of equipment (incubators, phototherapy lights and radiant warmers) at infant care units;
 - Safety nets for caregivers to cover transportation cost and other expenses incurred by families (in care of NYIs).
3. Update national and or provincial documents related to policies, strategies and protocols to align them with the eleven international standards of intrapartum and essential newborn care.

Proposed Actions:

- Engage academic institutions in the country, and where needed international MNCH experts, to develop guidelines and protocols adapted to the international standards related to intrapartum and essential newborn care;
- Develop short training courses to build capacity of staff in district and tertiary hospitals in the use of these protocols and guidelines;

- Engage a team of national experts to widely disseminate the set of adapted guidelines among all the secondary and tertiary hospitals.
4. Strengthen capacity of MNCH Units in Provincial Health Departments to plan for and oversee quality of care of NYI in districts and tehsil hospitals.

Proposed Actions:

- Deploy staff with expertise in planning for neonatal care in MNCH Units of Provincial Department of Health to develop and update action plans and monitor their implementation at the district level;
 - Develop standards, which should be monitored in each DHQ hospital to assess quality of care procedures followed at NICUs, Special Care Units and Kangaroo Mother Care Units;
 - Conduct regular supervisory visits to assess performance and provide hands on supervision in NYI in DHQ and THQ hospitals;
 - Provide guidelines and monitor the rates of nosocomial infection at districts and tehsil hospitals.
5. Enhance capacity of DHQs in all provinces by deploying staff that is specialized in neonatology including surgery and nursing.

Proposed Actions:

- Create positions and recruit neonatologists, neonatal surgeons and neonatal nurses in DHQ hospitals based on the need assessment and resource availability;
 - Deploy neonatal surgeons and neonatal nurses from tertiary care hospitals on rotational basis to district hospitals to enhance access to neonatal care. This is possible in at least the larger provinces;
 - Provide monetary and non-monetary incentives to deploy and retain the staff (where they are critically needed to overcome the staff shortage in care of NYIs). Monetary incentives include hard area allowance, per diem etc. Non-monetary include selection for higher level training programs.
6. Strengthen pre-service and develop an in-service training program for nurses and physicians in clinical care and communication aspects of the NYI.

Proposed Actions:

- Invite leading institutions to develop and offer modules on neonatal care in undergraduate education in medical and nursing schools. Once developed and piloted these need to be endorsed by PMDC and PNC for introduction in the respective curricula;
- Federal MOHSRC should invite College of Physicians and Surgeons and other leading academic institutions to develop advanced courses for paediatricians and paediatric surgeons in neonatology and neonatal surgery respectively;

- Introduce modules on communication skills (with focus on counselling skills) in pre-service training curriculum of medicine;
 - Provide training and development opportunities to nurses and physicians to enhance their knowledge and skills in the care of NYIs through short term training programs at the recognized institutes (such as Aga Khan University), where they can have 4-6 weeks of attachment.
7. Strengthen the information system to capture important information on stillbirths and newborn care across DHQs and Tertiary care settings.

Proposed Actions:

- MNCH interprovincial group, working in consultation with Obstetricians and Gynaecologists should:
 - Revise the existing information system (District Health Management Information System/ Facility-based Health Management Information System) reporting formats to include data on stillbirths and newborn care indicators (birth weight and gestational age).
 - Standardize the reporting formats to capture information on stillbirths and newborn care, such as APGAR score, the daily weight of the small and sick NYIs and a note on danger signs assessment.
8. Develop consensus on the standard definition and classification of stillbirths and neonatal deaths at the national & provincial level and train health care providers

Proposed Actions:

- Assign MNCH technical working group in consultation with Obstetricians and Gynaecologists to use international standards of defining stillbirths (macerated and fresh) and neonatal deaths (early and late) in order to develop a consensus on definitions;
 - Once standardized definitions and classification should be translated into guidelines and disseminated to hospitals across all provinces to train health care providers.
9. Institute the referral mechanism by emphasizing the feedback between primary, secondary and tertiary health facilities to enhance continuity in the care of NYIs.

Proposed Actions:

- Link DHQ and THQ hospitals with higher level tertiary hospitals with good capacity for NYI care and pilot a referral mechanisms that includes two-way referral that relies on electronic communication;
- MNCH Unit in Provincial Department of Health should work to regularize the feedback mechanism between the primary, secondary and tertiary level of care facilities by sharing of HMIS data (manual or electronic).

- Engage a university to assess the functionality of the referral in terms of the volume and appropriateness of referrals and identify gaps before scaling up.

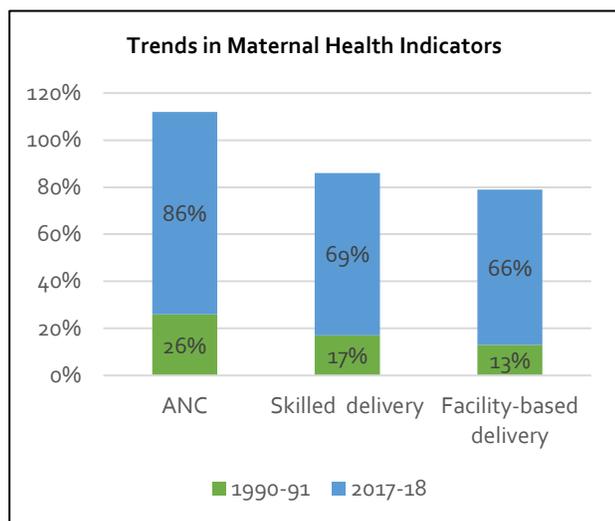
10. Implement discharge education plan at the facility level with regards to in-patient care of newborns and young infants.

Proposed Action:

- MNCH Technical Working Group in collaboration with Neonatologists, Neonatal Nurses, Obstetricians, and Gynaecologists should develop a comprehensive Discharge Education Plan with focus on danger sign assessment by caregivers and essential newborn care.

Chapter One: Introduction & Context

Pakistan is the sixth most populous country (207 million) in the world with an annual growth rate of 2.4%. Children under age 5 account for 13% and adolescents (10-19 years) comprised of 23% of the population. About 4% of the population is of age 65 years and above. The average age of women at their first marriage is 20.4 years according to PDHS 2017-18.



Despite important improvements in ANC attendance, qualified delivery and facilities-based delivery, the country's neonatal mortality rate has not substantially declined between 2012-13 and 2017-18, ranging from 55-42 per 1000 live births. In addition, the country also has the highest rate of stillbirths in the region (43/1000 live births). Major problems that affect the improvement of the NMR stillbirth rates are: 1) lack of information on the level of stillbirths and neonatal deaths and 2) inadequate evidence of information available on stillbirths and neonatal deaths. In the past, the government has made considerable efforts to improve maternal and child health by working on quality health services accessibility, increasing

demand for health services, and strengthening existing district health systems, however, not all of these interventions have been able to achieve the desired health outcomes. UNICEF actively supports the government in its efforts to reduce neonatal mortality from 55/1000 live birth to less than 10/1000 live birth by 2030.

The development of programs and strategies to reduce stillbirths and neonatal mortality has become a national priority. The Department of CHS, AKU carried out the health facility assessment in 23 health care facilities across the four provinces and administrative regions in Pakistan in collaboration with the Health Services Academy and with the support of UNICEF and the MONHSRC.

Aim of the Study:

The study aimed to identify the gaps and challenges that needs to be prioritized and addressed in order to achieve the Sustainable Development Goal 3 by 2030, in particular target 3.2, to reduce the country's stillbirths and neonatal mortality rate below 10/1000 live births.

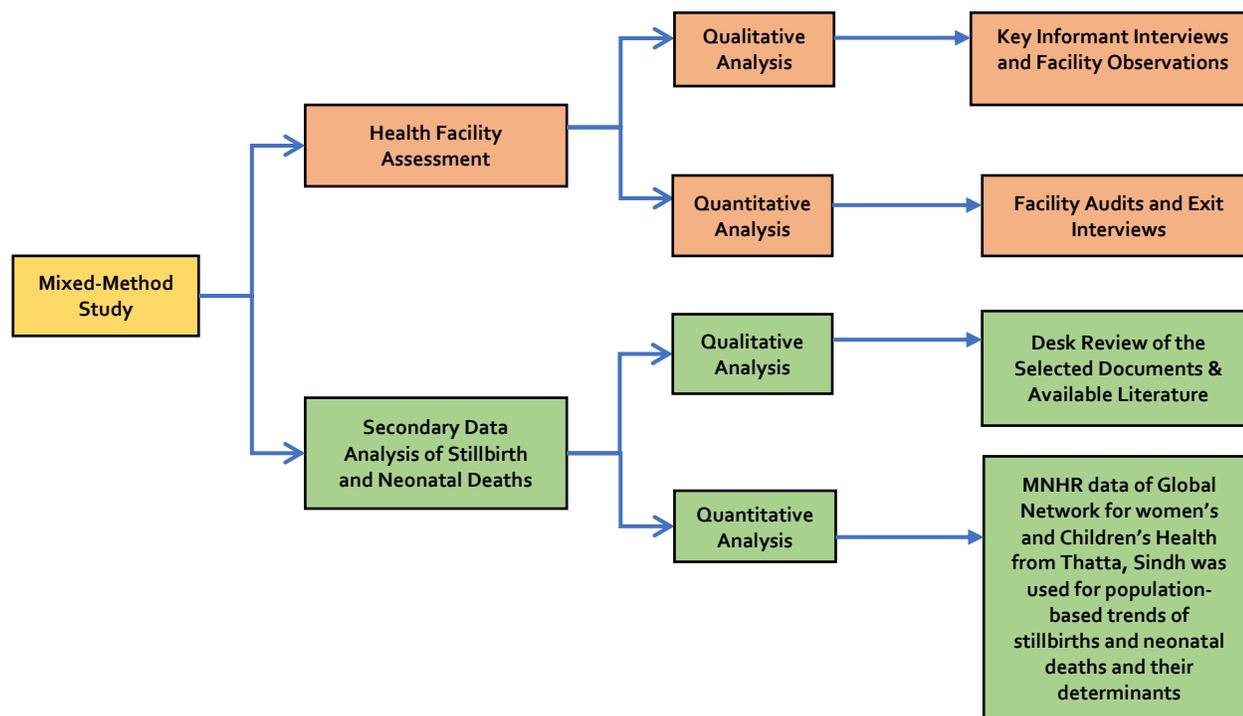
Objectives:

The specific objectives were aimed at:

- i. Assessing the service readiness and quality of care by examining
 - a. Health system structures,
 - b. Facility processes, and
 - c. National programs to seek information regarding the quality and effectiveness of in-patient care of small and sick newborns in selected districts of Pakistan.
- ii. Conducting secondary analysis of stillbirths and neonatal deaths in Pakistan based on published and grey literature.

Chapter Two: Methodology

Using cross sectional study design, mixed-methods (qualitative and quantitative) data collection approaches were used. A comprehensive evaluation framework was developed to answer research questions as shown in the figure below:



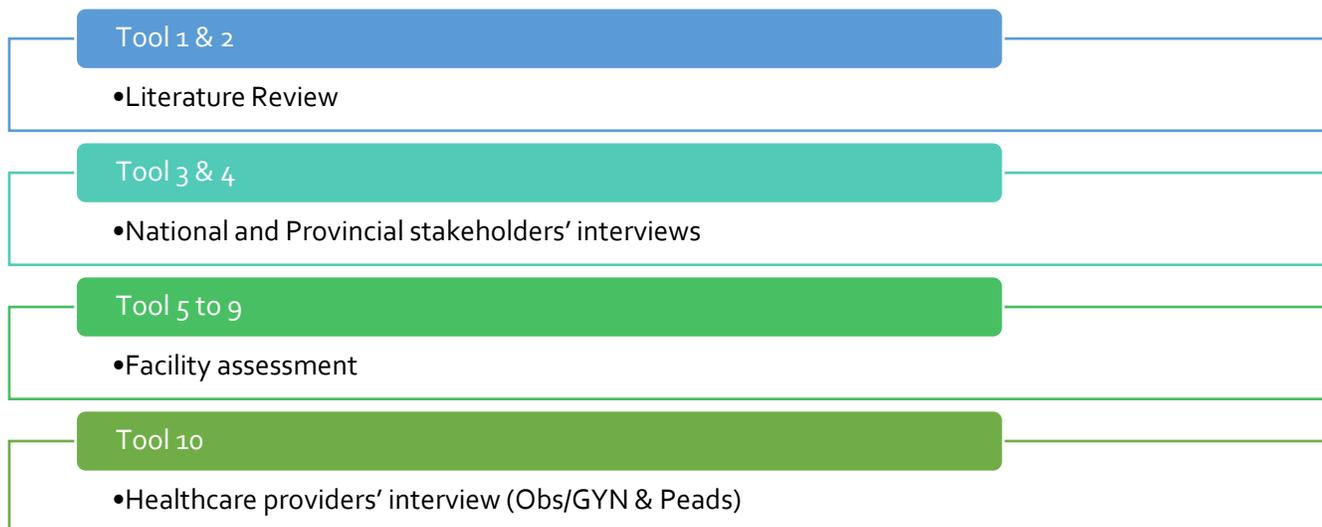
Study Sites:

Twenty-three health facilities across all four provinces (Sindh, Khyber Pakhtunkhwa, Baluchistan, and Punjab) and the two administrative areas AJK and GB of Pakistan were assessed for in-patient care of NYIs. These included one national referral hospital, 6 provincial referral hospitals, 14 district headquarters hospitals, and 2 tertiary care hospitals. These facilities were selected from the following districts.

Study Sites	
Regions	Selected Districts
Baluchistan	Quetta, Sibi and Jaffarabad
Khyber Pakhtunkhwa	Peshawar, Swat, Dera Ismail Khan, Lower Dir and Bajour
Sindh	Karachi, Larkana, Khairpur and Jacobabad
Punjab	Lahore, Vehari, Bahawalnagar, Chakwal, Hafizabad and Mianwali
Azad Jammu & Kashmir	Poonch and Bagh
Gilgit Baltistan	Gilgit
Islamabad Capital territory	Islamabad

Data Collection Tools:

A total of ten data collection instruments were used. Tools 1-9 (quantitative checklists) were shared by UNICEF. Tool 10 (in-depth guide) was developed keeping in view the country's context. All tools are presented below;



Methods of Assessment:

a) Facility Assessment

Facility visits were carried out to observe the quality of in-patient care to provide services for NYIs, assess the availability of medicines, supplies, equipment for neonatal care across secondary and tertiary care hospitals (n=23) in Pakistan. Health facilities were assessed using a checklist.

b) Key Informant Interviews

Interviews were carried out with key stakeholders to gather insights into NYI care at the national (n=2) and provincial (n=18) level. Information was collected around existing policies and on-going programs, the funding available for NYI health, availability of service providers, technical assistance, equipment maintenance and commodities, monitoring of NYIs indicators and emergency transportation.

In the selected health care facilities, the service providers including physicians, nurses, midwives, paediatricians (n=83) responsible for NYI care were also interviewed regarding their qualifications, training, experiences, and issues related to NYI. Parents/caregivers (n=77) of the in-patient NYIs were also interviewed about their experiences regarding payments and support provided for the cost of the services and the available amenities in the facilities.

In-depth interviews were also conducted from the senior government officials; policy makers and managers of the federal and provincial health departments, paediatricians and gynaecologists (n=43) across all regions of Pakistan. For the purpose of interviews, an in-depth interview guide was used.

c) Record Review

Health facility records of in-patient NYI 0-59 days (n=79) were reviewed to determine the pattern and quality of routine monitoring of the newborns at birth. This includes, history and physical examination on admission and records of in-patient NYI 3-59 days (n=105) were reviewed to determine routine patient monitoring and information important for planning discharge. Data were also collected about the primary and secondary diagnosis of NYIs.

HMIS reports and records related to the number of live births, perinatal deaths, neonatal deaths and average occupancy for in-patient infants were reviewed to gather statistics of the past three months. Data on other indicators relevant to the monitoring of the infant care was also collected.

d) Desk review / Secondary analysis:

Published Literature:

Electronic bibliographic databases were used such as Medline PubMed through the National Centre for Biotechnology Information (NCBI), EMBASE, Web of Science, Google Scholar and PakMediNet.

A combination of keywords was used (“stillbirth”, “neonatal death” “fetal death”, intrauterine death”, “frequency”, “prevalence”, “hospital”, “community”, “perinatal mortality”, “Pakistan”, “District of Pakistan’s name”) to search relevant articles that appeared in abstracts or titles.

Grey Literature:

Reports at the district level on the websites of the DHIS, technical reports and surveys conducted by private or non-governmental organizations on MNH were reviewed. The reports were also obtained from the Pakistan Bureau of Statistics, and policies about LHW Program, service delivery as well as recommended interventions regarding prevention of stillbirths by the Government of Pakistan were also retrieved.

Chapter Three: Newborn and Young Infant Health Related Policies, Strategies & Programmes in Pakistan & Key Stakeholders' Perspective

This section presents the analysis and focus of existing policies, guidelines, and protocols related to maternal, neonatal and child health in Pakistan. It also summarizes the national and regional stakeholders' views about planning and available resources to strengthen the in-patient care and existing challenges faced in providing quality of care to sick and young infants.

National & Provincial Key Documents on In-patient Care of Newborn and Young Infant Care:

A total of 39 policy documents (12 at the national level and 27 at provincial level) were reviewed against eleven international standards of NYI care. The reviewed government documents include policies, protocols, programs, action plans, guidelines, procedures and standards related to Reproductive, Maternal and Neonatal and Child Health. The eleven international standards holistically cover different aspects of strengthening NYI care. This includes, (1) availability of national plans and strategies for inpatient care of NYIs care, (2) staffing, (3) specific strategies for improving inpatient care of NYIs, (4) service standards for in-patient care, (5) prenatal interventions, (6) essential newborn care, (7), newborn assessment, (8) identification of at risk newborn and actions to be taken, (9) promoting beneficial practices, (10) routine monitoring of newborn care and (11) guidelines and protocols specific to NYI conditions.

The national & provincial planning and policy/guideline documents sporadically adhered with the eleven standards of NYI care. Standard 1- availability of national plans and strategies for inpatient care of NYIs care was the only standard which was generally incorporated in most of the reviewed documents. None of the national level policy documents have addressed the standard of prenatal interventions.

On the other hand, majority of the provincial documents were found to have content specific to the eleven standards. Among the reviewed documents, content related to routine monitoring of newborns were found to be absent in Sindh, KP, Baluchistan, and AJK. Similarly, the items specific to standard 8 "identification of at-risk newborn and action to be taken" were not found in Sindh, Punjab, and AJK regions. Table below illustrates the list of reviewed policy documents at the national and regional level.

Reviewed Policy Documents at National & Provincial Level (n=39)	
National	Planning documents
	<ol style="list-style-type: none"> 1. Maternal and Neonatal Child Health (MNCH) PC-1 2005 2. National vision Reproductive Maternal and Child Adolescent Health 2016-2020 3. National Integrated Reproductive Maternal and Child Adolescent Health & Nutrition Strategy (2016-2020) 4. Strategic framework for the prevention of parent to child transmission (PPTCT) of HIV 2017 5. Standard Specifications of Equipment, medicines, and supplies for National MNCH program: Vol. 1: Situation Analysis Report Jan-2011 6. Development of standard specification of medical equipment, drug/medicines and general goods for provincial and special areas health department vol. 1 Situation Analysis Report Nov-2011 7. Standard Specification of Medical Equipment, Drug/Medicines and General Goods for The Provincial and Special Areas Health Department Volume-II: Detailed Standard Specifications May 2012 8. Pakistan: Human Resources for Health Vision (2018-30) 9. Reproductive, Maternal, Neonatal, Child and Adolescent Health and Nutrition Costed Action Plan 2016-2020
	Guidelines/protocols
	<ol style="list-style-type: none"> 10. Integrated Management of Neonatal and Childhood Illnesses (IMCI) - Guide for clinical practice in in-patients ward- 2001 (Adopted by Pakistan) 11. Integrated Management of Neonatal and Childhood Illnesses (IMCI)– Management chart-2011 (Adopted by Pakistan) 12. Community midwife curriculum-2012
Sindh	<ol style="list-style-type: none"> 1. Health Sector Strategy Sindh 2012-2020 2. Sindh Service Delivery Standards for Clinics & Primary Healthcare Facilities 3. Sindh Service Delivery Standards for Hospitals 4. MNCH Report (21st May 2010) 5. Strengthening of maternal, neonatal and child health program in Sindh 6. Reproductive, maternal, neonatal, child & adolescent health & Nutrition strategic costed action plan 2016-2020
	Guidelines/protocols
	<ol style="list-style-type: none"> 7. An informative booklet for Public Health Specialists & Social Organizers Nation Maternal Neonatal & Child Health Program Sindh
KP	Planning documents
	<ol style="list-style-type: none"> 1. Khyber Pakhtunkhwa Health Sector Strategy 2. MNCH Very Essential Medicines List 3. Secondary Level Minimum Service Delivery Package for Secondary Care (MHSOP) 4. Reference Manual for Implementing Primary Healthcare Standards in NWFP (Vol: 02 Standards for Service Provision) 5. Reproductive, Maternal, Neonatal, Child & Adolescent Health & Nutrition Strategic Costed Action Plan 2016-2020 6. Khyber Pakhtunkhwa – Every Newborn Survival Strategy and Action Plan 2018-22
	Guidelines/protocols
	<ol style="list-style-type: none"> 8. Infection Control Management Project Vol: 06 Infection control in Nursery/NICU
	Planning documents

Punjab	<ol style="list-style-type: none"> 1. Punjab Integrated Reproductive Maternal Newborn & Child Health (IRMNCH) & Nutrition Program Pc-1 2. Punjab Every Newborn Strategic Framework & Costed Plan 2017-2020. 3. Essential Package of Health Services for Primary Health Care in Punjab 4. Minimum Service Delivery Standards for Primary and Secondary Health Care in Punjab 5. Reproductive, Maternal, Neonatal, Child & Adolescent Health & Nutrition Strategic Costed Action Plan 2016-2020
	Guidelines/protocols
	<ol style="list-style-type: none"> 6. DHQ Hospital Layyah District 7. Standard Operating Procedures Paediatric Department Primary & Secondary Health Care Department.
Baluchistan	Planning Documents
	<ol style="list-style-type: none"> 1. Baluchistan MNCH Strategy 2016-2020 2. Newborn Survival Strategy for Baluchistan 2015 3. Reproductive, Maternal, Neonatal, Child & Adolescent Health & Nutrition strategic costed action plan 2016-2020
AJK	Planning documents
	<ol style="list-style-type: none"> 1. Strategy 2013–2018 AJK Health Sector November 2012 2. Minimum Health Services Delivery Package (MHSDP) For Primary Health Care Facilities In AJ&K 3. Costing of RMNCAH Action Plan Azad Jammu And Kashmir 2016-2020 4. Reproductive, Maternal, Neonatal, Child & Adolescent Health & Nutrition Strategic Costed Action Plan 2016-2020

Availability of National and Provincial Policy Documents and Key Stakeholders' Level of Awareness

The presence of a national strategic plan related to the improvement of infant and sick newborn health in the form of three policy documents was affirmed through the document review. During visit to the Provincial Department of Health across all regions, it was found that none of the provinces possessed all of these national policy documents.

A total of 20 stakeholders at national (n=2) and provincial level (n=18) were interviewed. The provincial stakeholders were not well acquainted with the three main strategic planning documents as shown in the adjacent box. Inconsistencies also surfaced among national level respondents regarding the availability of policy documents on strengthening NYI care in the country.

The key stakeholders at Provincial level were not well acquainted with the three main National Strategic Planning documents:

- 1- Maternal and Neonatal Child Health (MNCH) PC-1 2005
- 2-National Vision Reproductive Maternal and Child Adolescent Health 2016-2020
- 3-National Integrated Reproductive Maternal and Child Adolescent Health & Nutrition Strategy (2016-2020)

Challenges in Strengthening NYI Services:

Inadequate focus on the in-patient care of NYI and lack of knowledge about the policy documents has resulted in the compromised quality of NYI care across the provinces. The national and regional stakeholders greatly differed in their opinions regarding the political will and

commitment to strengthen NYI care. The federal government was perceived responsible for low budgetary allocation and poor coordination regarding up-keeping the provinces with the new/revised policies related to MNCH.

Key issues related towards strengthening the care of NYI were: availability of financial resources, shortage of health care providers, inadequate skills of the existing workforce, drugs and equipment procurement and lack of oxygen policy. Regarding barriers to care that were related to costs to the families for the care of NYIs, it was found that the community faces huge financial barriers to overcome the cost of transportation, medicines, and accommodation. Another important aspect that surfaced during the interviews was the absence of an emergency transportation plan, with exceptions in AJK and Punjab.

Gaps Identified

Policies:

1. The inadequate focus of policy documents on the eleven international standards of NYI.
2. Lack of awareness of key stakeholders (National & Provincial) about policy documents related to in-patient newborn care.
3. Absence of policy-related to Oxygen and Emergency Transportation Plan.

Management Practices & Resources:

1. Lack of communication and coordination between the provincial health departments and the MONHSR&C.
2. Shortage of health care providers, inadequate skills of the existing workforce, shortage of supplies, delay in procurement of drugs and equipment emerged as a barrier in the care of NYIs.
3. Inadequate mechanisms at various level (facility, district and province) to cover out-of-pocket expenditure and cost associated with NYI care.

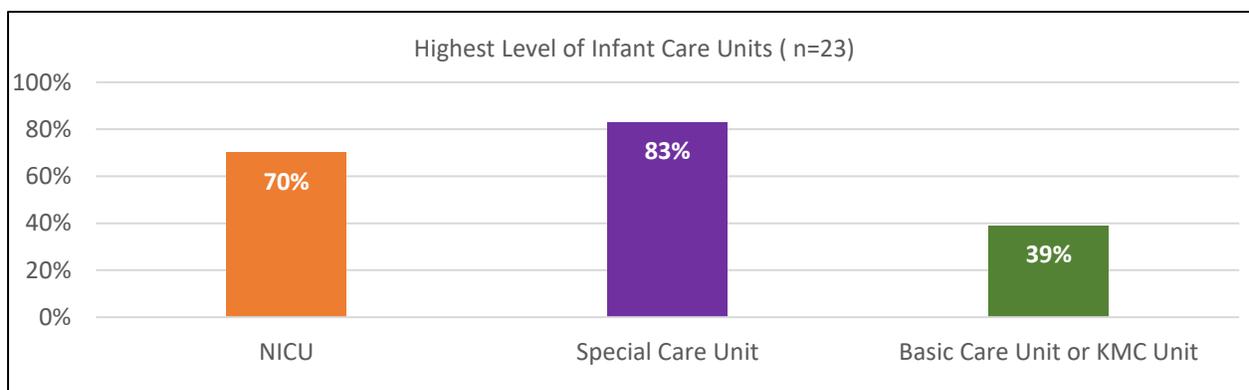
Chapter Four: Newborn & Young Infant Care in Pakistan

This section highlights the current situation of in-patient care of the sick NYI care in Pakistan. It presents major findings related to the service quality, service availability and in-service readiness regarding newborn care in the surveyed health care facilities. Furthermore, it also identifies the barriers, gaps, and facilitators of care and treatment of sick and small newborn young infants in Pakistan.



Types of Infant Care Units:

The type of infant care unit was accepted as defined by the facility at the time of data collection. Majority (83%) of the facilities reported to have special care units, followed by 70% of facilities with NICUs as the highest levels of infant care units. KMC units were reported in only 39% of the surveyed facilities. Refer to the graph below

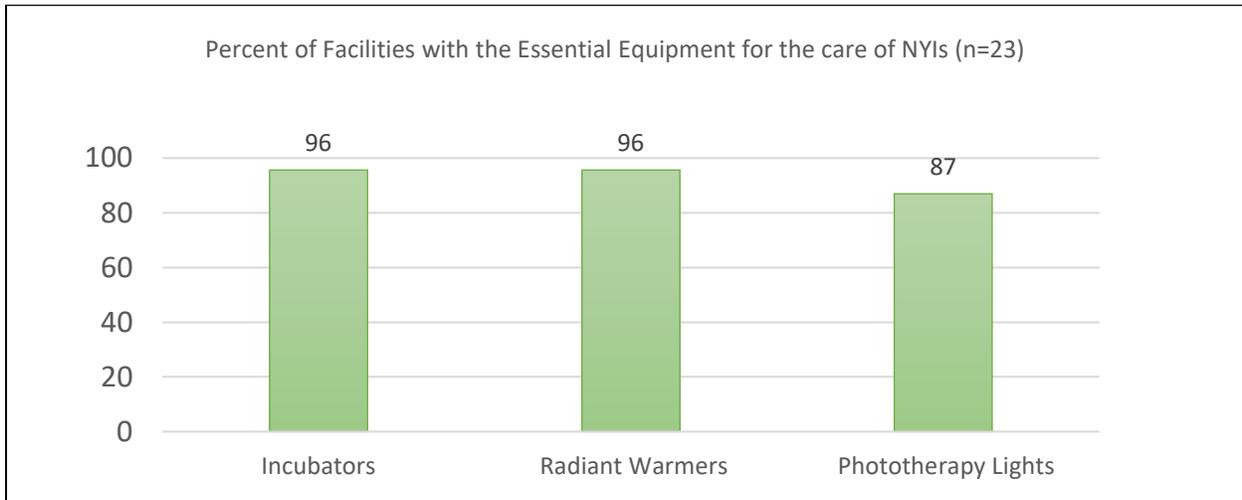


The table below depicts the number of facilities in the provinces and regions with the highest level of infant care units (n=23). None of the surveyed facilities in KP, Gilgit Baltistan and Azad Jammu and Kashmir had KMC units or Basic Care Units.

Level of Infant Care Unit in the Surveyed Facilities (n=23)							
Level of Infant Care	Punjab (n=6)	ICT (n=1)	AJK (n=2)	GB (n=1)	KP (n=5)	Baluchistan (n=4)	Sindh (n=4)
NICU	6	1	2	0	3	2	2
Special Care Unit	4	1	2	1	4	4	3
Basic Care Unit/Kangaroo Mother Care	5	1	0	0	0	2	1

Availability of Essential Equipment and their Preventive Maintenance and Repair:

In the majority of the surveyed facilities, essential equipment required for the in-patient care of NYI was available. Incubators and radiant warmers were available in 96% of the surveyed facilities, whereas, phototherapy lights were reported to be available in 87% of the facilities.



Generally, equipment maintenance across all hospitals was found to be poor. Of the 23 facilities surveyed, 43% reported carrying out preventive and corrective maintenance for any equipment. 18% of the facilities reported routine maintenance for the incubators, 9% reported routine maintenance for radiant warmers and 30% reported about their routine maintenance activities related to these equipment.



In GB and Sindh regions, preventive maintenance and repair practices were reported to be absent for incubators, radiant warmers, and phototherapy lights.

Practices for Preventive Maintenance (n=23)						
Name of Provinces	Percentage of facilities reporting routine maintenance for the following equipment					
	Routine maintenance of Incubators	Number of facilities with incubators	Routine maintenance of Radiant warmers	Number of facilities with radiant warmers	Routine maintenance of Phototherapy lights	Number of facilities with phototherapy lights
AJK	1	2	1	2	1	2
Baluchistan	1	4	0	4	0	2
GB	0	1	0	1	0	1
ICT	0	1	0	1	1	1
KP	0	5	0	5	3	5
Punjab	2	6	1	5	1	5
Sindh	0	3	0	4	0	4

Staffing Cadre and Training:

Availability of specialist cadres related to the care of NYI in the surveyed facilities is presented in the table below. All of the 23 facilities had paediatrician, whereas neonatologists and neonatal nurse specialists were present in only 13% of the facilities. In addition, only few (9%) of the facilities were staffed with neonatal surgeon. Tables below highlights the availability of specialist cadres across different regions.

Availability of Specialist Cadres Related to the Care of NYIs (n=23)		
S. No	Specialists	Percentage
1	Neonatologists	13%
2	Paediatricians	100%
3	Neonatal Surgeons	9%
4	Neonatal Nurses	13%

Region wise Availability of Specialist Cadres Related to the Care of NYIs (n=23)							
Specialist Cadres	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Neonatologist	0	0	0	1	1	0	1
Paediatrician	2	4	1	1	5	6	4
Neonatal surgeon	0	1	0	0	0	0	1
Neonatal nurse specialist	2	0	0	0	1	0	0

Overall, 61% of the facilities were involved in capacity building activities of their staff in neonatal resuscitation. Less than half (43) of the facilities reported training or certification of their staff in advanced care for small and sick newborns for the providers. Furthermore, only 13% of the facilities has built the capacity of their staff in parental counselling on infant death.

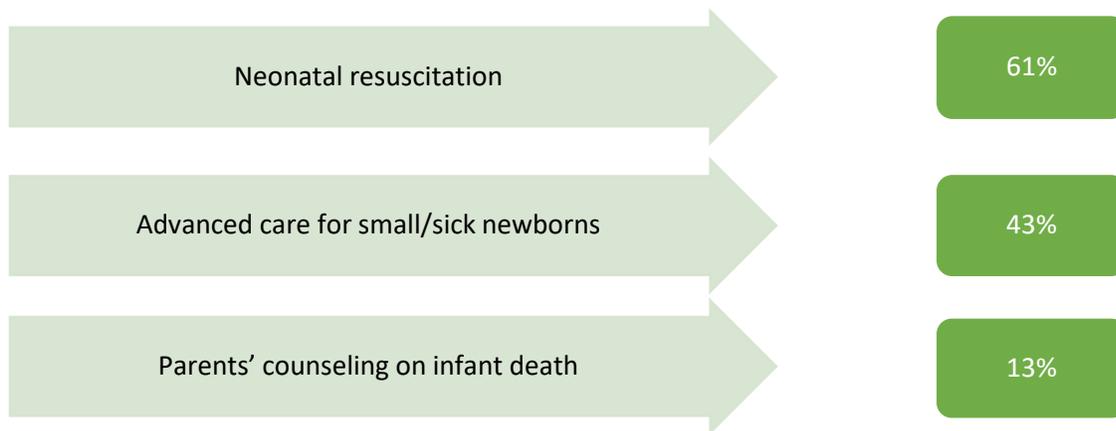


Table below illustrates regional variations with regards to the availability of skilled care providers for NYI care.

Availability of Skilled Care Providers for NYI care (n=23)							
Training Component	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Neonatal resuscitation	1	1	0	1	3	6	2
Advanced care for small/sick newborns	0	1	1	1	0	6	1
Counselling parents on infant death	0	0	0	1	0	2	0

Facility Management Practices:

The aspects included in facility management practices included external supervision, management team meetings, interdisciplinary team meetings and authority over budget-related to NYI care.

Regarding various levels of supervision and management for the provision of quality of care, only 39% of facilities had external supervision for different units of care and health service providers in the past 3 months. Overall, 17% of the facilities reported holding management team meetings in the past three months. The practise of inter-disciplinary team meetings was reported by only few (13%). Considering authority over any aspect of the budget, the assessment shows that majority (57%) of the facilities reported control over budgetary matters. Of these, three were

provincial referral hospitals, eight district headquarter hospitals and remaining two were tertiary care hospitals.



Quality Assurance Activities Related to Newborn & Young Infants:

Overall, 70% of the facilities reported monitoring of quality indicators for performance measurement. Around 57% of the facilities reported having any quality assurance or quality improvement activities, while 26% of the facilities reported participating in any accreditation or certification program.

Quality Assurance Activities Across Different Regions (n=23)								
Parameters	Total %	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Monitoring of indicators of service quality	70	1	3	1	1	3	6	1
Nosocomial infection rates are monitored	35	2	0	0	1	2	3	0
Quality assurance/ Quality improvement activities	57	2	2	0	1	1	5	2
Accreditation/certification program	27	1	1	0	0	0	3	1
Baby-friendly designated facility	39	0	3	0	1	0	2	3

The practice of Case Reviews at the Facilities:

A case review is a formal meeting (not daily rounds) where information about a current or discharged patient is presented, usually by the primary physician for that patient, and issues related to diagnosing, treatment, and strategies to improve the outcomes are discussed.

Out of 23 facilities, 70% reported carrying case reviews routinely for NYI patients. Near miss newborns that almost died at birth- 39% of the facilities reported conducting reviews of near missed cases on a routine basis. Whereas, 43% of the facilities reported conducting perinatal or neonatal death reviews routinely as shown in the figure below.



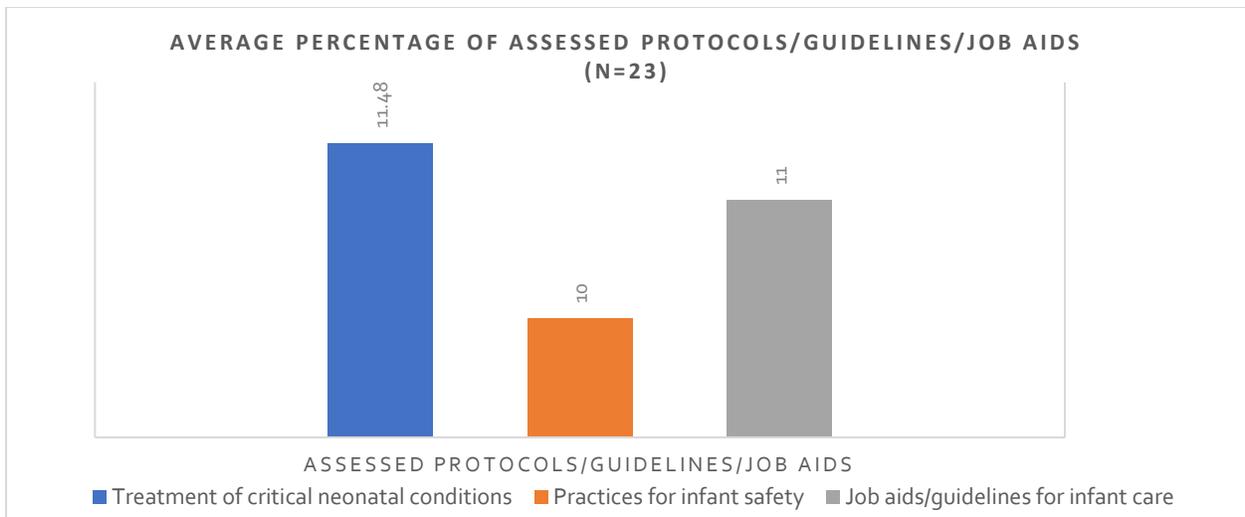
Out-referral Practices:

Referring out practices of sick NYIs to other facilities are illustrated in the figure below. Majority of the (96%) of the facilities reported referring sick newborns and young infants out to other facilities. Of these facilities, 65% manually record referrals, 74% use a printed referral form that specifies the information about the sick baby and 22% reported receiving feedback on out-referrals.



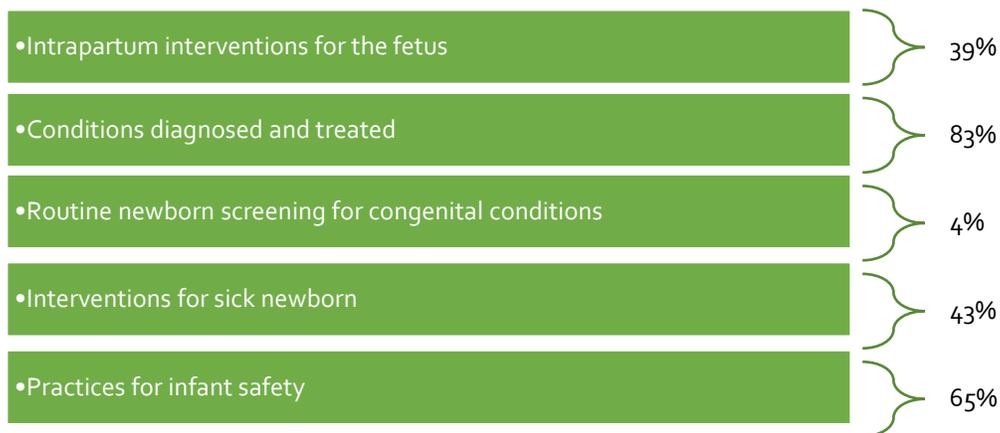
Protocols, Guidelines & Job Aids:

Protocols/guidelines/job aids for treatment were available for 11% of identified critical neonatal conditions. On an average, guidelines or written policies concerning minimizing harmful practices for the NYIs were available for only 10% of the identified areas for infant safety and 11% of the parameters for infant care in the form of protocols/guidelines/job aids.



Availability of Newborn & Young Infant Services & Interventions:

Services for diagnosis and treatment for severe neonatal illnesses were available in most (83%) of the surveyed facilities, whereas antepartum/intrapartum interventions were reported to be available in more than one third (39%) of the facilities. Basic interventions for sick NYI care and practices for infant safety were reported in 43% and 65% of the facilities respectively. Services to diagnose congenital birth defects/disorders were offered in only 4% of the facilities total surveyed facilities.



Infection Control Items in the Service Area:

Different resources and supplies, which can be easily used by health service providers for infant care, were used for infection control practices. Majority (74%) of the surveyed facilities reported using basic hand washing supplies such as, soap and running water from an improved water source, or alcohol-based hand disinfectant. Availability of waste containers for contaminated waste was observed in 61% of the facilities, with 65% reported using sharp container for safe disposal of used needles or other sharp items. In addition, 52% of the facilities reported using an environmental disinfectants such as chlorohexidine and 61% of the facilities reported using latex gloves.

Refer below table for the availability of infection control supplies across the regions.

Availability of Infection Control Supplies Across the Regions (n=23)							
List of Supplies	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Hand washing materials	✓	++		✓	++++	✓	+++
Waste container for contaminated waste	+	++		✓	++	✓	++
Sharps container	✓	++		✓	++	✓	++
Environmental disinfectant	✓	+		✓	+	✓	++
Latex gloves	✓	✓		✓	+	✓	+
✓ = All facilities have the indicated parameters + = Number of facilities with the indicated parameter Empty Box = No facilities in the region have the parameter							

Review of Newborn and Young Infants' Record

Newborn assessment

Altogether, 79 records (patient files) were reviewed for the newborn assessment at the NICUs of 23 surveyed facilities across Pakistan. On an average, 74% of reviewed records had information on the birth weight, 45% of reviewed records had information on the gestational age and 43% of reviewed records had information on the temperature and respiratory rate each. However, only 19% of the reviewed records had information on the assessment of congenital anomalies and 42% of the reviewed records had noted the information on danger signs.

Availability of Newborn Assessment Parameters Across Different Regions (n=23)								
Parameters	Total %	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Birth weight	74%	60%	100%	67%	100%	30%	80%	100%
Gestational age	45%	0%	93%	33%	100%	40%	30%	50%
Temperature	43%	0%	67%	0%	100%	5%	63%	50%
Respiratory rate	43%	0%	67%	0%	100%	5%	57%	67%
Assess congenital abnormalities	19%	10%	33%	0%	100%	5%	23%	0%
Note on danger signs	42%	10%	33%	67%	100%	15%	50%	67%

Assessment for physical examination

A total of 105 records of young and newborn infants, (of 3-59 days old), admitted in in patient care facilities were reviewed for documentation related to physical examination at the time of admission. Overall, 96% of reviewed records had documented the information on infants' age, 70% on temperature and 61% had noted the information on respiratory rate. The record of danger signs was recorded in only 17% of reviewed records. Half (50%) of reviewed records had noted the information on heart rate, 34% for muscle tone, 37% for skin colour, 38% for breathing and 34% of the reviewed records had noted the information on responsiveness.

Utilization of Physical Examination Parameters for NYIs of 3-59 days (n=105)								
Parameters	Total %	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Infant age	96%	100%	100%	1	100%	92%	97%	93%
Temperature	70%	70%	67%	0	100%	52%	83%	93%
Respiratory rate	61%	50%	67%	0	100%	20%	80%	100%
Note on danger signs	17%	70%	0%	0	100%	12%	0%	20%
Heart rate	50%	50%	67%	0	100%	20%	43%	100%
Muscle tone	34%	20%	67%	0	100%	20%	46%	0%
Colour	37%	40%	67%	0	100%	24%	22%	47%
Breathing	38%	40%	33%	0	0%	40%	19%	100%
Responsiveness	34%	30%	67%	0	100%	20%	19%	47%

Regarding documentation of admission history, it was found that overall 60% of reviewed records had noted the information on transfer/referral note from the referring unit at the time of admission. Majority, (89%) of reviewed records had information about the reasons for admission. Likewise, 66% of reviewed records had noted information about the patient's history and 46% of

reviewed records had information about pregnancy history, while 69% of reviewed records had noted information about the mode of delivery.

Practice of Documentation Parameters Related To Admission History of NYIs (n=105)								
Parameters	Total %	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Transfer/referral note	60%	30%	20%	100%	100%	50%	67%	100%
Admission diagnosis/symptom	89%	100%	100%	40%	100%	90%	86%	87%
Patient history	66%	30%	100%	0%	100%	48%	78%	73%
Maternal pregnancy history	46%	90%	67%	0%	100%	32%	17%	73%
Mode of delivery	69%	80%	67%	0%	100%	60%	77%	73%

Health Monitoring and Information System

An assessment of facility practices for compiling and monitoring service information revealed that 83% of the surveyed facilities used to routinely submit electronic or paper-based HMIS reports to an external body, such as the MoH or a regional technical department. Only few (9%) of the surveyed facilities reported compiling the reports without submitting these reports externally. On the other hand, 87% of the surveyed facilities reported submitting birth information to the National Vital Statistics. With regards to newborn health monitoring, 78% of the facilities reported monitoring any newborn/ neonatal indicators. The table below presents health monitoring and information system parameters according to provinces and regions.

Parameters Related to Health Monitoring and Information Systems (n=23)								
Parameters	Total %	AJK (n=2)	Baluchistan (n=4)	GB (n=1)	ICT (n=1)	KP (n=5)	Punjab (n=6)	Sindh (n=4)
Reports routinely submitted outside	83%	100%	50%	100%	100%	60%	100%	75%
Reports compiled but not submitted externally	9%	0%	0%	0%	0%	40%	0%	25%
The facility submits births to national vital statistics	87%	100%	75%	100%	100%	60%	100%	100%
The facility monitors any newborn / neonatal indicators	78%	50%	50%	100%	100%	80%	100%	75%

Identified Gaps from Facility Assessment of Newborns & Young Infant Care in Pakistan

Infant Care Units

- Most of the facilities lacked Kangaroo Mother Care.

Staffing

- Neonatologists, Neonatal Surgeons and Neonatal Nurses were reported to be unavailable in most of the facilities.

Capacity building

- None of the facilities had all the staff trained in neonatal resuscitation and counseling of parents and advanced care for small and young infants.

Out-referral feedback

- Most (77%) of the facilities don't receive feedback on out-referrals.

Record reviews

- None of the facilities undertakes the complete newborn assessment.
 - Note on danger signs found in 42% records

Monitoring of Service Quality

- Majority of the surveyed facilities are not designed as "baby-friendly".
- Most of the facilities don't monitor nosocomial infection rates.

Facility Management Practices

- Approximately 40% of the facilities lack authority over budget.
- None of the facilities conducts inter-disciplinary team meetings and management team meetings were also not commonly held.

Patients record reviews

- None of the facilities record all essential aspects in newborn assessment and admission history.
- Perinatal and neonatal death reviews is not a common practice across the facilities.

HMIS

- None of the facilities had compiled the information on neonatal deaths and stillbirths.
- Recording of very low birth weight is missing in most of the facilities.

Preventive Maintenance of Equipment

- Most of the facilities do not routinely undertake maintenance of incubators, radiant warmers, and phototherapy lights.

Chapter Five: Perceptions & Experiences of Parents/Caregivers Regarding New Born Young Infant Care During Their Stay In The Facility

Parents/ caretakers are an important stakeholders to provide care to NYIs. Towards providing quality NYI care, parental involvement in decisions pertaining to the care of their infants while receiving care at the facility is of utmost significance. This involvement in care can improve the ability of parent/ caregivers to provide care for the infant upon discharge. Thus, this will contribute to improve or sustain health status of NYI.



In this chapter, we have described the findings of exit interviews carried out with parents or caregivers (n=77) to glean information about the client's experiences at a given health facility. A structured questionnaire tool was administered to the parents/caregivers to better understand their thoughts about the care and treatment of infants and the way parents and patients are being treated at the facilities. This section highlights areas where facilities performed better versus areas where they need improvement.

Parents Socio-demographic Characteristics:

Findings from the health facility assessment indicated that 40% of the parents / caregivers interviewed had no formal education. The remaining 30 % of the caregivers reported being educated for four to six years. In Lower Dir, Peshawar, and Larkana, uneducated caregivers were mostly found compared to Hafizabad, Gilgit, and Quetta.

The socio-economic status of parents / caregivers was evaluated by assessing family resources, such as, electricity; this was reported to be widely accessible in 92% of homes, concrete roof and running water were available for 66% and 65% of the households respectively. Upon enquiring access of any form of media, most of caretakers had televisions, while only 26% of the parents reported to use radio. The main earning member of the family were the parent (58%). It was also reported that few (3%) of the interviewed caregivers didn't have any source of income.



40% had no formal education



58% of the males were providers of household income



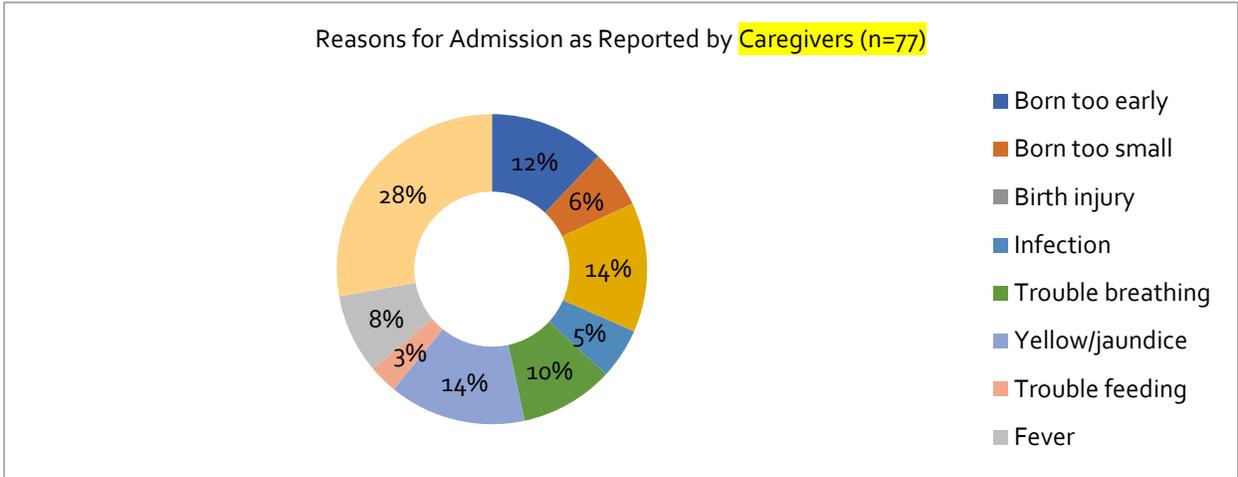
65% had running water



92% had electricity

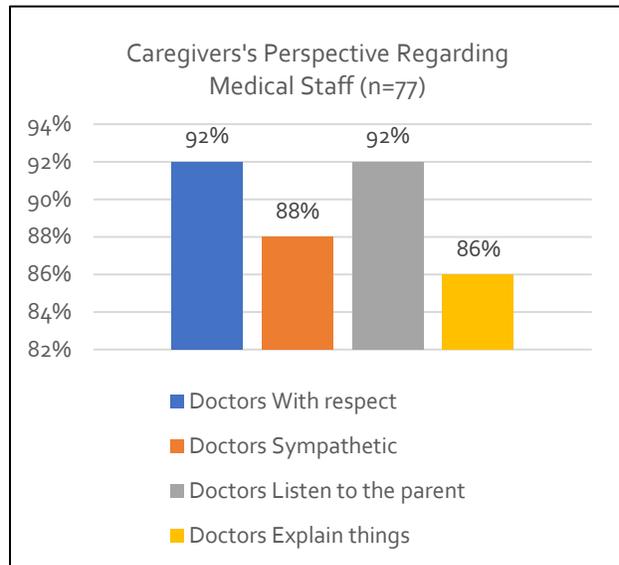
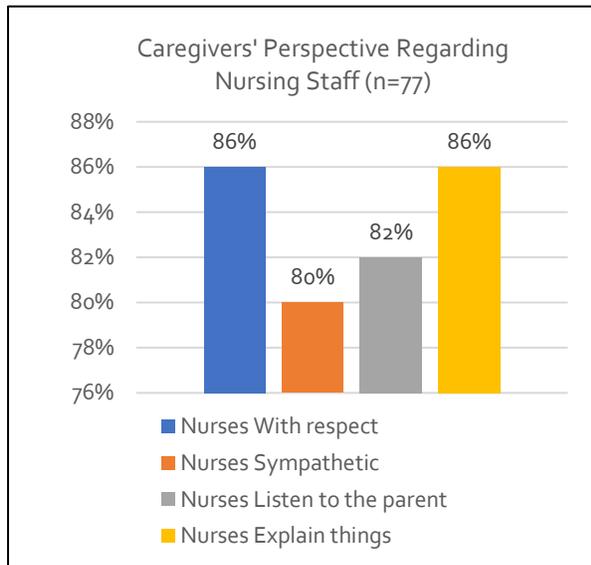
Reasons for Admission of Sick NYIs cited by Parents or Caregivers:

The majority of the caregivers reported a child being admitted in the NICU and other units including rooming-in and mixed infant care units. The most common reasons for admission of infants, according to the parents/caregivers immediately after birth were trouble breathing (14%), jaundice (14%) and pre-term births (12%).



Experiences and Perceptions Regarding Behaviour of Healthcare Providers and Amenities Provided at the Facility:

Most of the caregivers were satisfied with doctors' and nurses' behaviour. More than 80% of the caregivers mentioned that both doctors and nurses treated them with respect. And they also reported that health care providers were sympathetic towards them, listened to them and explained everything to them. Graphs below shows the experiences of the caregivers at the facilities.

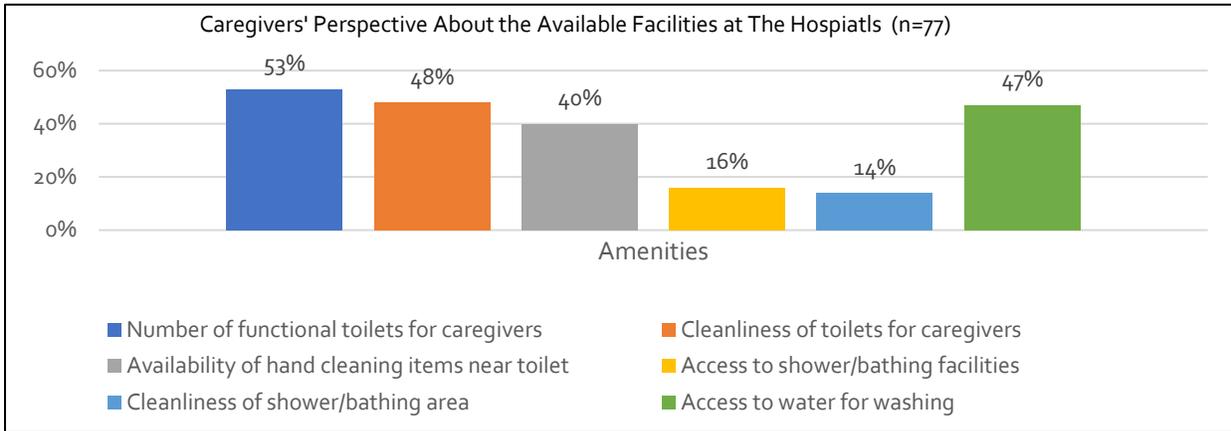


Regarding staff communication, about 49% of the caregivers stated that the staff has informed them about infant treatment, 33% caregivers mentioned that staff has also explained possible problems of sick NYIs, alongside current treatment. In addition, majority (97%) of the caregivers were of the opinion that staff was approachable during the day time, while for 40% of the parents, staff was perceived to be available at night time as well. None of the caregivers positively responded when enquired regarding the health/counselling sessions provided during their stay in the facility. Overall, most of the respondents, due to their low expectations and courteous attitude felt satisfied with the staff communication. However, caregivers were generally of the opinion that there is a room for improvement in staff communication.

Facility Staff	
Explain about infant treatment	
Explain possible problems with any treatment	
Encourage parents to ask questions	
Availability of staff to talk to during the day time	
Availability of staff to talk to during the night time	
 Good >50%  Satisfactory (40-20%)  Poor (<20%)	

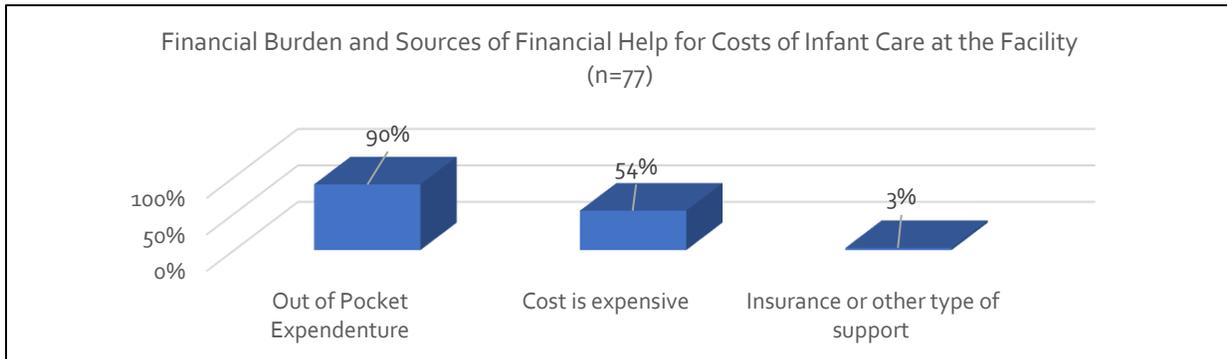
Regarding the experiences of the parents/caregivers in the infant care area about the cleanliness and privacy, around 80% of the caregivers stated that the infant care area was clean, and noiseless, and approximately 72% of the caregivers responded that there was sufficient privacy for the mothers for breast feeding.

The graph above shows the percentage of caregivers reporting about amenities being provided at the facility. Around 45% of the respondents were happy with the overall amenities that are provided by the facility. Slightly more than half (53%) of the parents have experienced clean and functional toilets, 40% of the caregivers mentioned that hand cleaning items were available in toilets. With regards to the availability of drinking water, more than half of the respondents (58%) replied positively. Refer below chart.



Experiences and Perceptions of Parents/ Caregivers’ Regarding Financial Burden During their Stay in the Facility.

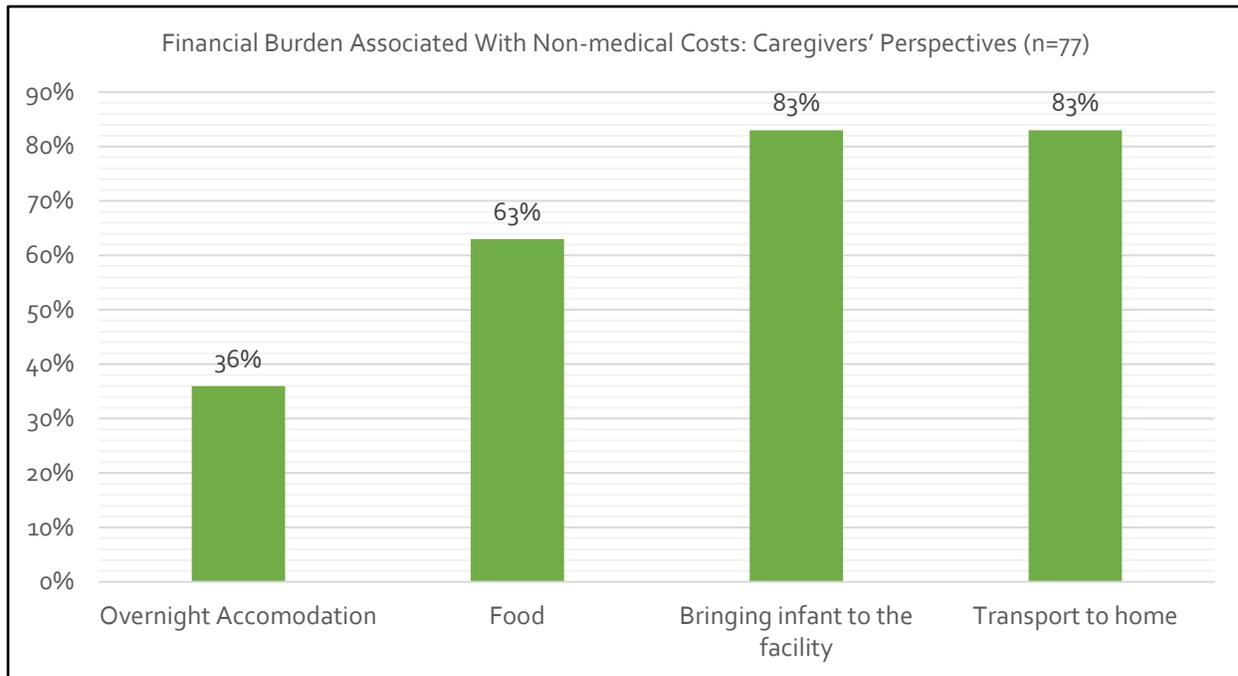
The graph below presents the financial burden and sources of financial help for the cost of infant care in the facility. Majority (90%) of the caregivers mentioned that they had to make out-of-pocket payments to manage expenses for infant care during their stay in the facility. Of those, 54% considered out-of-pocket payment expensive. Beside this, respondents also reported that there is a meagre contribution for caregivers from insurance or other types of external



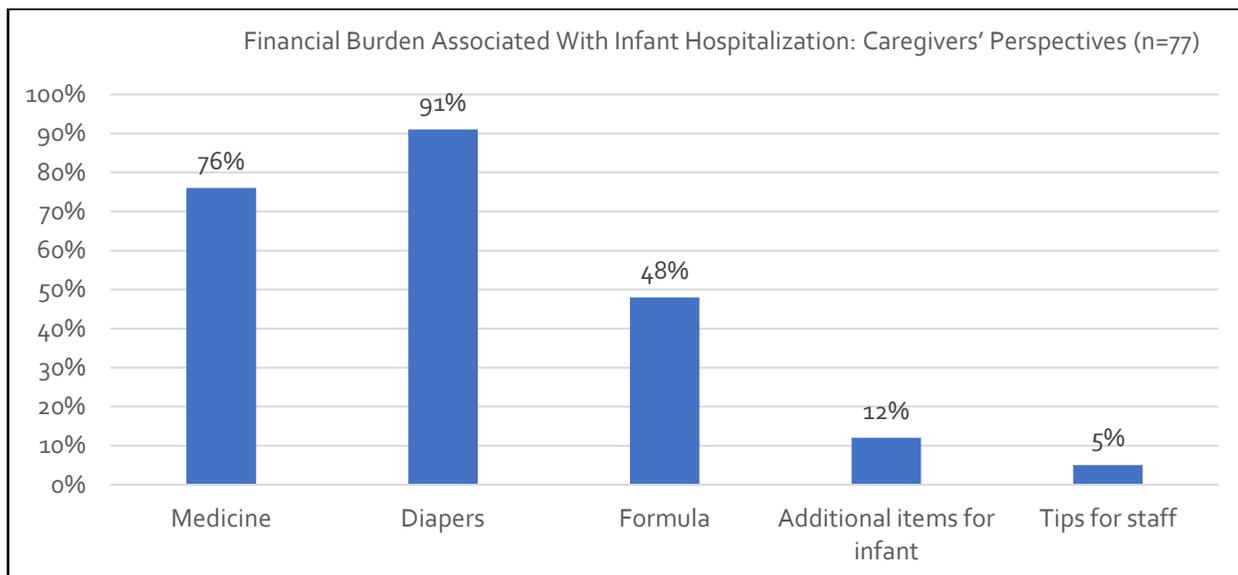
contributions (3%) to manage the financial expenses for NYI.

Financial Burden Associated with Non-Medical Costs- Caregiver’s Perspective

The parents/ caregiver's perceptions about the financial burden associated with non-medical costs are depicted in the graph below. Majority (83%) of the respondents shared that they made out-of-pocket payments for bringing an infant to the facility and for transportation costs each. In addition, 63% of the respondents expressed concerns regarding the amount spent on food items, with more than one third (36%) of the care givers spent their resources on overnight accommodation.



Financial Burden Associated with Infant Hospitalization- Caregiver's Perspective



The graph above shows information on the financial burden associated with infant hospitalization. The majority of the respondents mentioned that they have to spent money to buy diapers (91%) and medicines (76%). About 61% of them mentioned that their spending on diapers was significantly high; while 51% considered high spending on medicines. Close to 50%

of the respondents mentioned that they have to spend money on formula milk, and 36% considered this expense as significantly huge.

Gaps Identified

- i. Absence of financial security net as there was no support for costs related to purchasing of diapers and medicines and also for the non-medical expenses such as transportation, food and over-night stay resulting in high out of the pocket expenditure.
- ii. Due to poor checks and balances on support staff, they ask for perks or tips, which results in an additional cost to the parents.
- iii. Although the parents are satisfied with medical and nursing staff still there is a communication gap between staff and caregivers.
- iv. No counseling /health sessions on; identifying danger signs of illness, on exclusive breastfeeding and possible sources of help in the facility and the community, are given to the parents/ caregivers during their stay at the facility.

Chapter Six: Stillbirths: An Opportunity to Improve a Neglected Health Issue

Secondary data analysis on stillbirths and neonatal deaths in Pakistan was conducted with following objectives:

- i. To identify the rates of stillbirths and neonatal deaths across Pakistan and;
- ii. To determine the risk factors and causes that are associated with stillbirths and neonatal deaths in the country.

Pakistan reports the highest Stillbirths (43.1/1000 births and neonatal death rates (42/1000 live births)

Sources of data:

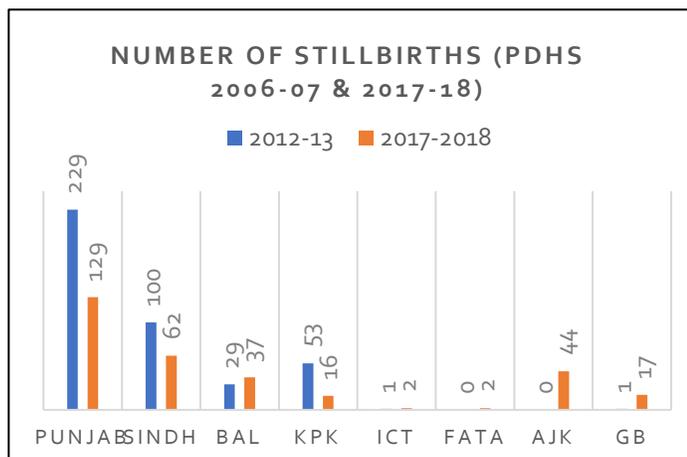
<p>i. Data from surveyed health care facilities</p> <p>Twenty-three facilities across Pakistan</p>
<p>ii. Published literature</p> <p>Past 10 years</p>
<p>iii. Surveys, Grey literature and Reports</p> <p>Pakistan Demographic Health Survey 2007-08,2012-13 &2017-18, WHO and UNICEF reports</p>
<p>iv. Maternal and Newborn Health Registry (MNHR) in Thatta</p> <p>In Pakistan, MNHR has been established in nine union councils of District Thatta in Sindh province (approximately 2 lakhs population) which documents birth outcomes and provides population-based rates of stillbirth, neonatal and maternal deaths.</p>

Objective 1: Identify the rates of stillbirths and neonatal deaths across Pakistan.

The burden of Neonatal deaths and Stillbirths in Pakistan

Findings based on a review of PDHS surveys

It is estimated that globally more than two and a half million babies are stillborn, with majority (98 percent) of them are from low-and middle-income nations^{1,2}. Unfortunately, Pakistan with 43.1 stillbirths per 1000

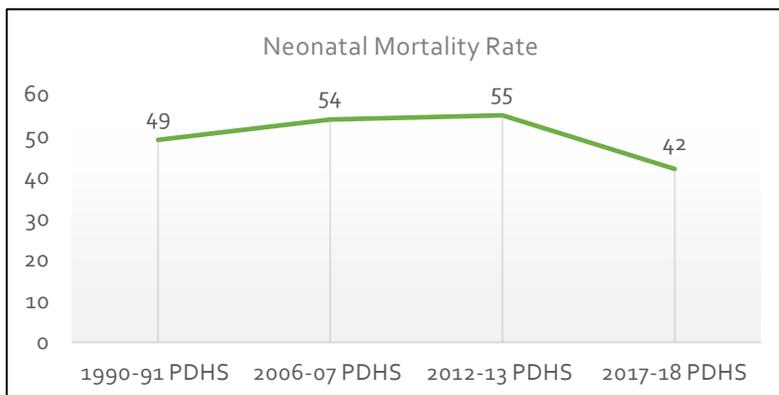


¹ Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013.

² Underreporting of stillbirths in Pakistan: perspectives of the parents, community and healthcare providers.)

births³, has the highest mortality rate. However, it has remained an unrecognized health issue despite the high number of stillbirths.

During our literature review, we found that high perinatal mortality of 57/1000 total births have been recorded in Pakistan according to Pakistan Demographic Health Survey (PDHS) 2017-18¹¹. Besides this, we found out that PDHS has not recorded stillbirth rates in Pakistan; instead it has only reported the number of stillbirths in the country. The PDHS also shows a variation in the number of reported stillbirths across the provinces and regions. Punjab has reported the highest number of stillbirths (129) followed by Sindh (62) and KP (37). The lowest number of stillbirths was reported from ICT (2)¹¹. There seems to be underreporting of stillbirths in Pakistan.



In addition, Pakistan accounts for 7% of global neonatal deaths with a neonatal mortality rate of 42/1000 live births. These rates imply that nearly 1 out of 16 children die before reaching their first birthday and 1 out of 14 dies before they reach their fifth birthday.

When do newborns die?

Nearly three-quarters (74 percentage) of neonates in Pakistan die within the first week of life¹⁰, among them 57 percent of all neonatal deaths occur within the first 72 hours after birth, and most of them are within the first 24 hours after delivery⁷.

Where do Neonatal and Stillbirths happen: Pattern in residences and regions?

According to the trend analysis of neonatal deaths and stillbirths in Pakistan; neonatal deaths and stillbirths are more likely to occur in rural areas as compared to the urban regions. The PDHS report (2017-18) signposts that the neonatal mortality rate (NMR) in the urban areas is 37/1000 live births, as compared to 45/1000 live births in rural areas. Neonatal mortality rate also varies across provinces and administrative regions with the highest NMR recorded from Punjab and the lowest recorded from FATA¹¹.

Regarding the age of the mother; it was observed that the neonatal mortality rate is high (66 deaths per 1,000 live births) for children whose mothers were under 20 years of age compared with the NMR of (44 deaths per 1,000 live births) for children whose mothers were between 20-29 years of age. In addition, children of mothers with delivery complications were at a higher risk

³ National, regional, and worldwide estimates of stillbirth rates in 2015, with trends from 2000: a systematic analysis.

The Neonatal Mortality Rate and stillbirths vary according to the Age and Educational status of the mother.

of neonatal deaths or stillbirths. Moreover, mothers belonging to the poorest households were more likely to have stillbirths or neonatal deaths.

In 2017, an estimated 240,808 neonates died across the country⁴. A high proportion of under-five mortality is associated to deaths occurring in the neonatal period. Neonatal deaths accounted for about half (47%) of under-five deaths in 2010¹⁰ and the percentage of newborns in under-five deaths

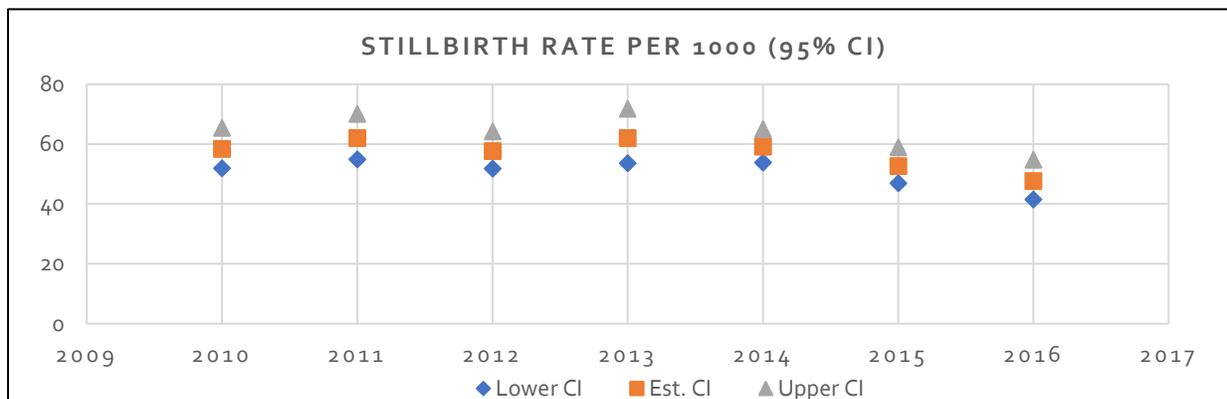
increased to 57% in 2015⁷, showing an increase in the proportion of newborn and neonatal deaths in under-five mortality.

Outcome and Findings from Maternal and Newborn Health Registry (MNHR), Thatta:

The MNHR at Thatta has been maintained for last 10 years by the Department of CHS, AKU. The registered population in Maternal and Newborn Health Registry (Thatta) clusters is described in the table 1 below:

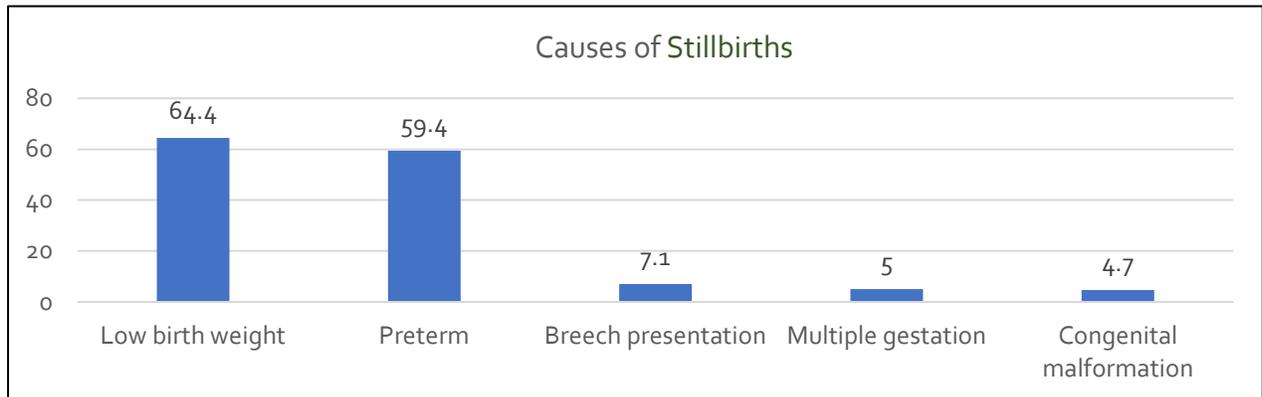
Maternal and Newborn Health registry (Thatta) cluster	
Number of Households	30,000
Population	180901
Gender	
Male	51.6%
Female	48.4%
Male: Female	1.07
MWRA	16.3%

Across Global Network sites, the cumulative stillbirth rates in different years were significantly higher in Pakistan. The percentage of fresh stillbirths in Pakistan is 63.6% and the graph below shows the trends of stillbirths over the past five years. In 2013, the stillbirth rate was 58.4/1000 births and in 2018 it was around 41.5/1000 births. There was an average annual decline of 6.4% in stillbirth rate (SBR). The conditions and average annual reduction rates have not significantly changed in Pakistan since 2009.

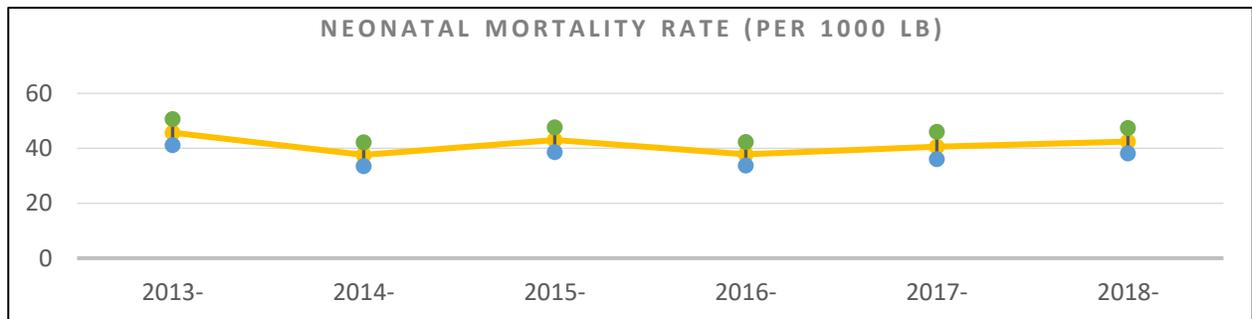


⁴ Our World in Data; Oxford University Press

According to the MNHR, the causes of stillbirths are shown in the graph below. Low birth weight is the most prevalent cause of stillbirths followed by preterm, breech, multiple gestations, and congenital malformations.



According to the MNHR, trends of neonatal mortality in the past five years have remained unchanged. The graph below shows trends ranging from 45.7/1000 live births to 42.5/1000 live births, making the average annual reduction rate around 1.2%. Conferring to the current situation, it will take around **58 years** to bring the neonatal mortality rate down to 12/1000 births, the goal set by Every Newborn Action Plan (ENAP) to reduce the neonatal mortality rate by 2030.



The causes of neonatal mortality cited in the MNHR are shown in the table below. The most common cause of neonatal mortality is infection followed by prematurity and birth asphyxia.

Major Causes of Neonatal Deaths (%)	
Infections	33.1
Prematurity	30.8
Birth Asphyxia	21.2
Congenital Abnormalities	9.5

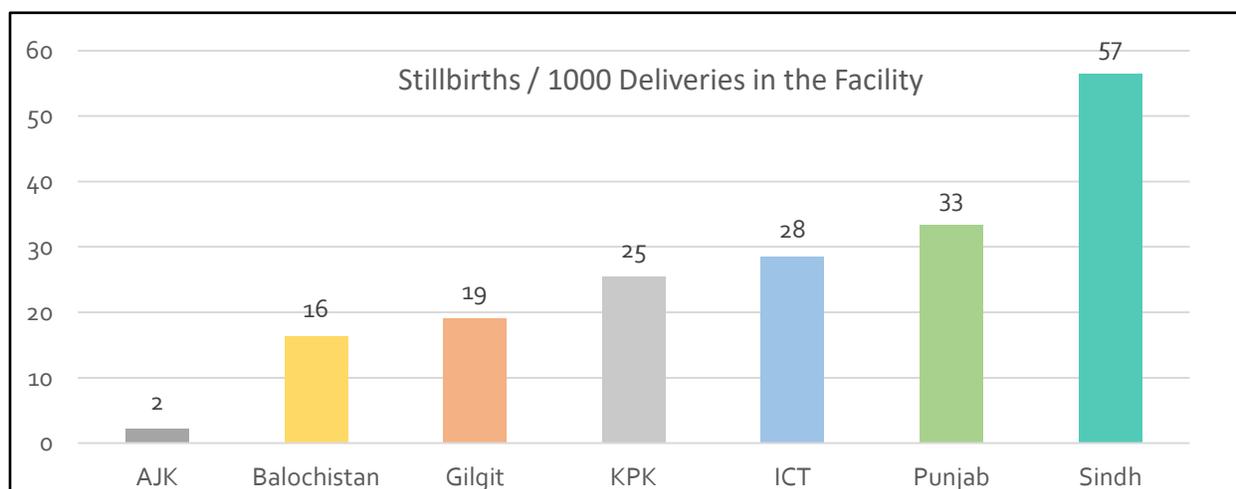
The Proportion of Stillbirths and Neonatal deaths in surveyed facilities across Pakistan:

Number of Stillbirths in the facilities surveyed* (n=23)	
Regions	Number of stillbirths
Punjab	290
Gilgit Baltistan	39
Sindh	330
Azad Jammu & Kashmir	2
Islamabad	68
Khyber Pakhtunkhwa	483
Baluchistan	12
Total Stillbirths	1224
* Facility Data for Previous Three Months	

Data on stillbirths and newborn deaths have been collected from 23 facilities across Pakistan. Information on stillbirths was collected from the DHIS reports and the reports which were available from the Gynaecology and Paediatrics units of the respective facilities on the number of deliveries, stillbirths and early neonatal deaths in last three months.

The information was used to calculate the proportion of stillbirth and neonatal deaths in relation to the

number of institutional deliveries in respective province and administrative area.

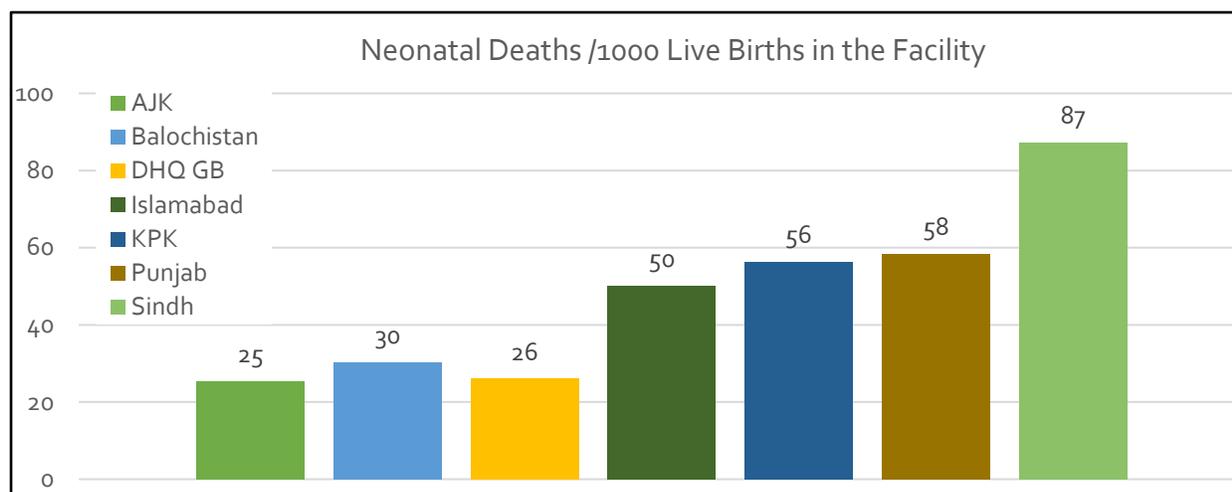


The number of stillbirths was 31 per 1000 institutional deliveries in the surveyed facilities in Pakistan. Among the provinces, the highest proportion of stillbirths was reported in Sindh (57) followed by Punjab (33) and Islamabad (28). The lowest stillbirth was recorded in AJK (2).

Similarly, the information regarding the number of neonatal deaths within the facilities was also obtained from the same data sources (HMIS, DHIS and available records). Discrepancies were found in the number of neonatal deaths in DHIS/HMIS with available records. Some of the surveyed facilities has not properly compiled and submitted the data to the DHIS. When cross-checked from the available records, there was a huge discrepancy in the number of neonatal deaths. As a result, those documents were regarded in that facility. The number of neonatal deaths reported across the provinces and administrative territories is displayed in the table below:

Number of Neonatal Deaths	
<i>Regions</i>	<i>Number of neonatal deaths</i>
Azad Jammu & Kashmir	56
Baluchistan	21
Gilgit Baltistan	33
Islamabad	195
Khyber Pakhtunkhwa	973
Punjab	494
Sindh	509
Total	2281

The number of neonatal deaths was 58 per 1000 live births in the surveyed facilities and the highest proportion of deaths was reported in Sindh (87) followed by Punjab (58), KP (56) and Islamabad (50). The lowest neonatal mortality was recorded in AJK (25).



Objective 2: Determine risk factors and causes associated with stillbirths and neonatal deaths in Pakistan

Secondary Data Analysis to Determine the Rate and Causes:

Published studies and unpublished literature (grey literature) were evaluated for secondary analysis and information was gathered in a data extraction form. This review included research papers published in English, which reported rates of stillbirth and neonatal deaths over the past 10 years in Pakistan.

Findings from the Published Literature:

Desk research identified, 42 studies with stillbirth rates and associated risk factors in Pakistan. Of these, twenty-four were hospital-based and eighteen were community-based. With regard to the design of the research, four were cross-sectional studies, thirty were cohort and seven were case-control studies.

Stillbirth Rates:

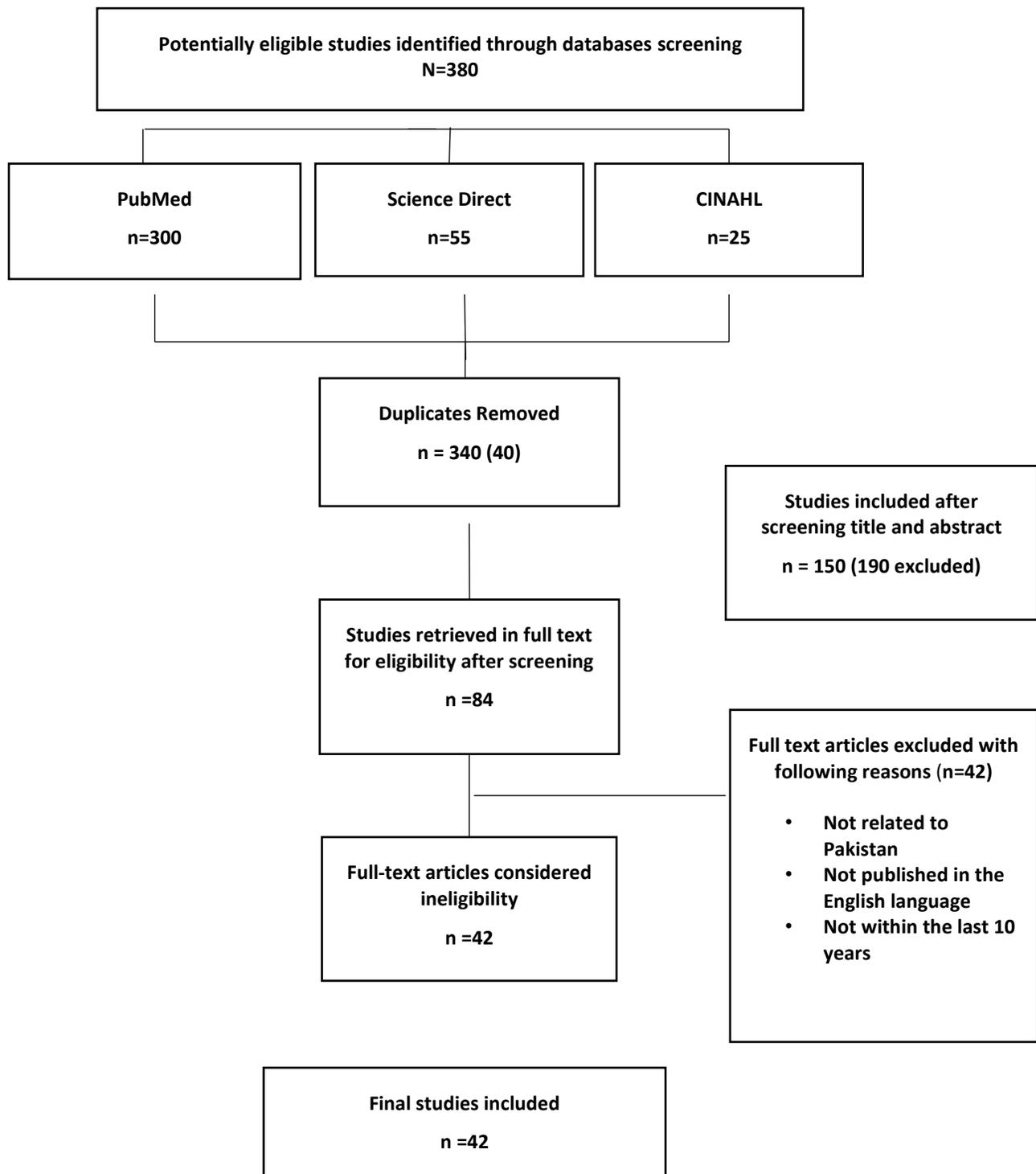
Out of the forty-two studies, fifteen studies have measured the rate of stillbirth per 1000 births. The average rate of stillbirths was estimated to be 52.5 /1000 births and ranged between 18⁵ to 98⁶ per 1000 live births. Table below shows the published articles indicating stillbirth rates:

Total Number of Published Literature Documenting Stillbirth Rates			
S. No	Authors	Year	Stillbirth rate per 1000 births
1	Nisar M, Ilyas M, Naeem K, Fatima U, Shafiq Y, Jehan F.	2017	31
2	Saha SK, Schrag SJ, El Arifeen S, Mullany LC, Shahidul Islam M, Shang N, et al.	2018	39
3	McClure EM, Garces A, Saleem S, Moore JL, Bose CL, Esamai F, et al.	2018	44
4	Qadir M, Amir S, Jadoon S, Marwat M.	2018	51
5	Saleem S, Tikmani SS, McClure EM, Moore JL, Azam SI, Dhaded SM, et al.	2018	57
6	Mustufa MA, Kulsoom S, Sameen I, Moorani KN, Memon AA, Korejo R.	2016	18
7	McClure EM, Saleem S, Goudar SS, Moore JL, Garces A, Esamai F, et al.	2015	57
8	Iqbal M, Majid A, Khan HA, Muhammad Z.	2014	54
9	Saleem S, McClure EM, Goudar SS, Patel A, Esamai F, Garces A, et al.	2014	56
10	McClure EM, Pasha O, Goudar SS, Chomba E, Garces A, Tshetu A, et al.	2011	32
11	Jehan I, Harris H, Salat S, Zeb A, Mobeem N, Pasha O, et al.	2009	34
12	Ghazi A, Ali T, Jabbar S, Siddiq NM, Lata S, Noren S, et al.	2009	93
13	Hossain N, Khan N, Khan NH.	2009	98
14	Yousfani S, Bibi S, Mumtaz F, Memon A, Khushk IA, Saeed F, et al.	2008	88
15	Jehan I, McClure EM, Salat S, Rizvi S, Pasha O, Harris H, et al.	2007	34

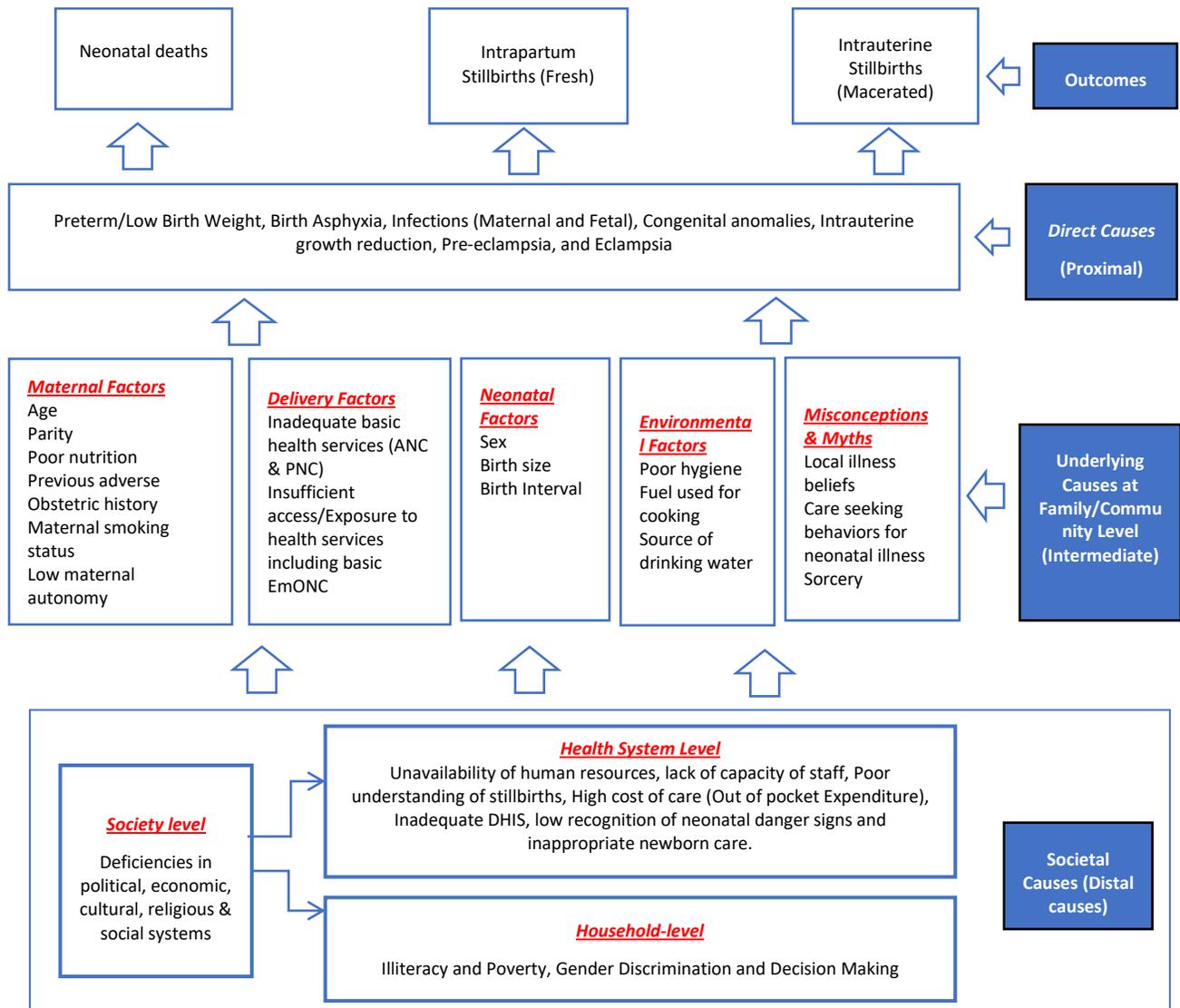
⁵ Frequency of stillbirths in a tertiary care hospital, Karachi.

⁶ Obstetric causes of stillbirth at low socioeconomic settings

Consort diagram for Published literature:



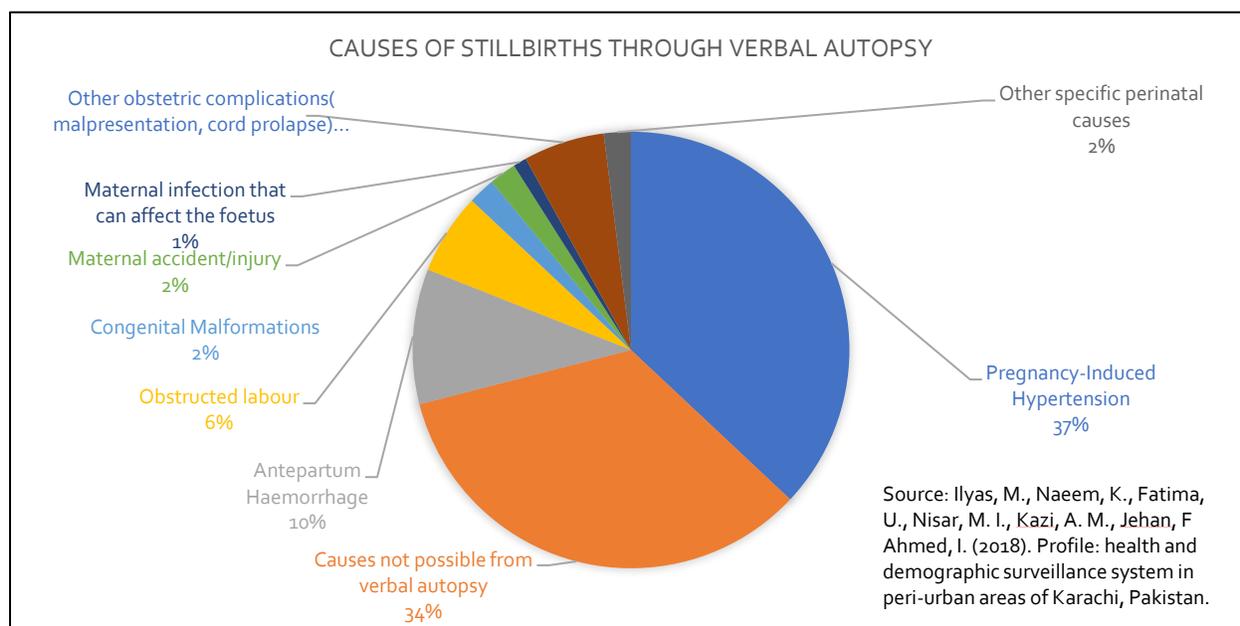
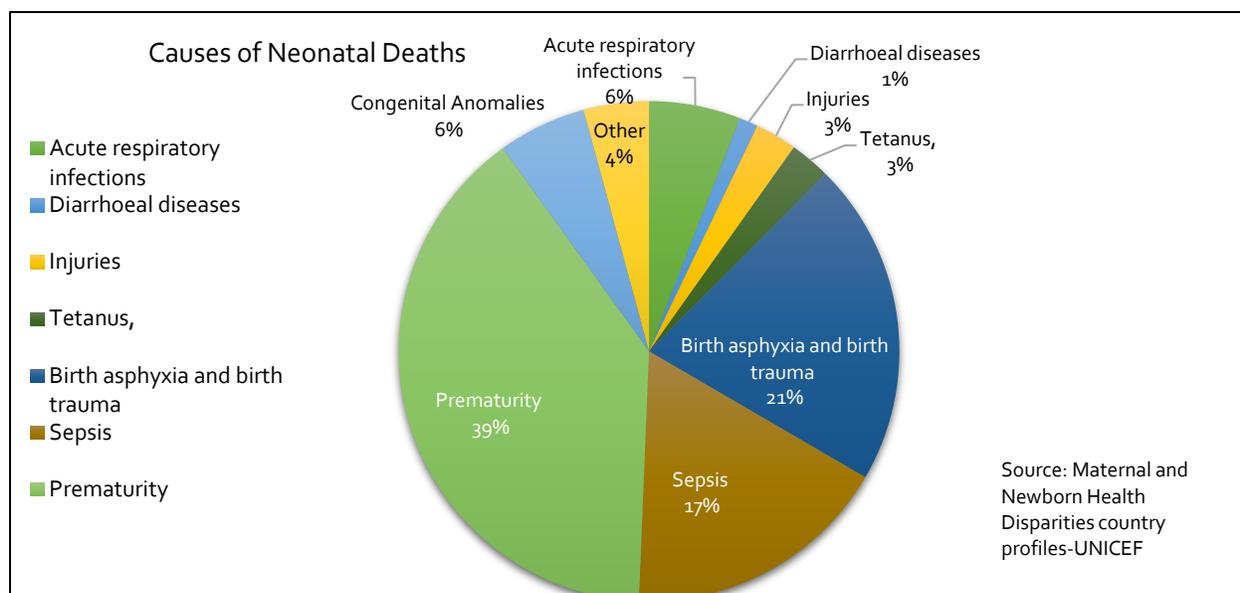
The conceptual framework given below was used to identify risk factors and causes of stillbirths and neonatal deaths in Pakistan.



Risk factors and causes of stillbirth and neonatal deaths		
Determinants at Societal level (Distal Factors):	Determinants at Family-Community (Intermediate Factors):	Direct Causes (Proximal)
<ul style="list-style-type: none"> i. Poverty ii. Illiteracy iii. Unregulated private maternity hospitals iv. Poor Quality of care v. Poor access to care vi. Lack of ANC visits and follow-up vii. Inadequate routine monitoring 	<ul style="list-style-type: none"> i. Extremes of maternal age and parity ii. Poor decision making iii. Anaemia iv. Tobacco use v. Intimate Partner Violence vi. Indoor Air Pollution vii. Consanguinity viii. Poor Health Seeking Behaviour 	<ul style="list-style-type: none"> i. Poor obstetric history ii. Antepartum haemorrhage iii. Placental conditions iv. Pre-eclampsia and eclampsia v. Obstructed labour vi. Pregnancy-induced hypertension & Diabetes vii. Intrauterine growth restriction (IUGR) viii. Asphyxia and infection ix. Congenital Anomalies x. Preterm birth & LBW xi. Fetal distress & RDS xii. Birth asphyxia

Causes Associated with Neonatal Deaths and Stillbirth:

In Pakistan, the commonly reported factors associated with neonatal mortality are prematurity (39%), birth asphyxia (21%) and sepsis (17%)⁷. Commonly reported factors associated with stillbirth are maternal age, gestational age at birth, parity, lack of or inadequate antenatal care, fetal sex, birth weight, multiple gestation and maternal morbidity⁸ and the major causes of stillbirth are: maternal associated factors of pregnancy induced hypertension (37%), antepartum haemorrhage (10%) and obstructed labour (6%)⁹.



⁷ Maternal and Newborn Health Disparities-Pakistan. UNICEF. 2017

⁸ Causes of and factors associated with stillbirth in low-and middle-income countries: a systematic literature review.

⁹ Rates and causes of stillbirth in a demographic surveillance site in Karachi, Pakistan

Preterm and LBW

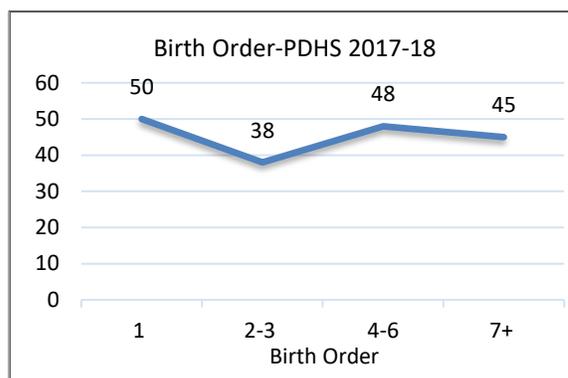
Pakistan ranks among the top three countries globally with the highest percentage of babies born with low birth weight (32%)¹⁰. The preterm birth rate in Pakistan is reported to be 16 per 100 live births¹¹. According to PDHS 2018-17, Neonatal and Infant mortality are higher for small or very small infants (59 deaths/1000 live births and 87/1000 live births, respectively) than for average or larger children (39 deaths /1000 live births and 57, per 100 live births respectively)¹¹.

Sex of the Newborn Baby

Globally, girls have lower mortality than boys in societies where equal care is offered to both sexes. In Pakistan, neonatal mortality is 1.6 times higher among male babies as compared to females.

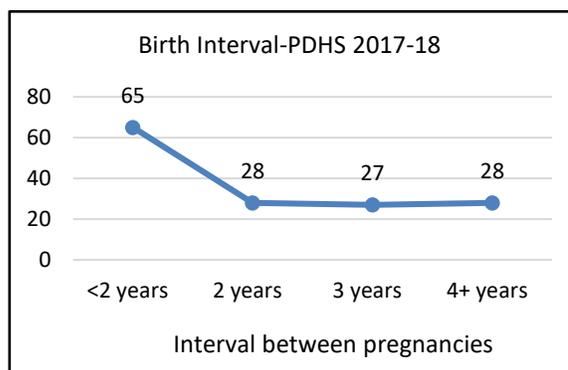
Birth Order

The birth order affects the child's chances of survival mostly during infancy. According to the PDHS 2017-18, the NMR is highest among first births (50 deaths per 1,000 live births) compared to other births with mortality rates around 45 per 1,000 live births¹¹. Another study in Pakistan found that the first rank baby is 1.59 times more at risk of dying as compared to other births¹².



Birth Intervals

The mortality rates were higher among children born fewer than 2 years after a previous birth than among children born 2 or more years after a previous birth¹¹.



Hypothermia

Hypothermia is significantly higher in low birth weight and preterm babies. These babies need extra care to be kept warm and dry.

Maternal Factors

The NMR and stillbirths differ in comparison to the age and educational status of the mother. Mortality rates are declining evenly as mothers' education increases. According to PDHS 2017-18, the mortality rate for children whose mothers were under the age of 20 when they were born was 66 deaths per 1,000 live births compared to children with 44 deaths per 1,000 live births for children whose mothers were in the age bracket of 20-29¹¹. Mothers with delivery complications

¹⁰ Newborn survival in Pakistan: a decade of change and future implications. Health policy and planning.

¹¹ PDHS Pakistan Demographic Health Survey 2017-18

¹² Determinants of neonatal mortality in Pakistan: secondary analysis of Pakistan Demographic and Health Survey 2006-07. Nisar Yasir Bin, Dibley Michael J

were more at risk of experiencing neonatal death or stillbirth. Mothers belonging to the poorest wealth index quintile were more likely to have a stillbirth or neonatal deaths¹².

Perceived Causes of Stillbirths: In-depth Interviews with Health Care Professionals

Number of In-depth interviews with Respect to Regions (n=43)	
Regions	Number of Respondents
Punjab	9
Islamabad Capital Territory	4
Sindh	8
Azad Jammu & Kashmir	1
Gilgit Baltistan	2
Baluchistan	13
Khyber Pakhtunkhwa	6

Around 43 key informants including pediatricians, gynecologists, MNCH managers, and senior officials from the health department were interviewed using an in-depth interview guide (Tool 10). The total numbers of respondents from each region are mentioned in the table below:

Thematic analysis was done; manifest and latent content were studied to make codes, categories, and themes. Two themes emerged including factors

affecting stillbirths and quality of maternal and neonatal health services and perceived causes of stillbirths and neonatal deaths.

Factors Contributing to Inadequate Service Availability and Low Utilization of Health Services:

a) Physical and Financial Barriers to Accessing Healthcare Services:

Most of the participants pointed out that individuals in distant regions are suffering more, as mothers have to travel long distances to get proper ANC and deliver a baby. Furthermore, geographical landscape, lack of transport, high costs and extreme weather conditions discourage families from travelling long distances to access maternal and neonatal healthcare services.

“For most of the population that lives in mountainous regions, access is an issue. There is only one DHQ hospital in entire Hunza district, so people prefer to go only at the time of delivery not for ANC visits.”

(A Gynecologist- Gilgit Baltistan)

b) The Mere Existence of Healthcare Facilities Doesn't Signify Their Functionality:

The mere existence of healthcare facilities does not signify their functionality. One of the major concerns shared by many respondents was regarding the functionality of the primary and secondary health care facilities across Pakistan. The basic facilities such as neonatal care units, ANC, PNC, BEmONC, CEmONC, ultrasound, and blood bank were reported to be deficient. Services-specific to NYI were also highlighted to be lacking at all of the three tiers of the health system. Especially, the absence of nurseries and services (equipment/ supplies/ incubators/ cots) for neonatal intensive care were emphasized. Moreover, there are no standards or protocols for newborn care in the majority of the facilities. Due to the scarcity of basic maternal and neonatal care services at primary and secondary healthcare facilities, the patient has no other option but to seek services from the tertiary care hospital. This not only puts a burden on health care

providers but also impacts their performance. Thus, the quality of care is compromised due to the overflow of the patients.

“Despite being the busiest hospital in the province, we don’t have the facility of NICU in our pediatric department.”
(Consultant GYN-KP)

c) Challenges Related to Health Work Force Resulting in Compromised MNH Services:

Several issues regarding the health workforce were identified including a significant dearth of the health workforce, specific to MNH care, was reported to be present across the country. It was also highlighted that besides doctors, facilities were understaffed not only with respect to nurses, and paramedics but also with the specialists (paediatricians, neonatologists).

Moreover, the lack of communication and coordination between gynaecologists and paediatricians also emerged as a concern. Paediatricians mentioned that stillbirths are not their domain and obstetricians should work on stillbirths. Inconsistencies in the definitions and classification of stillbirths (macerated and unmacerated), perinatal and neonatal deaths (early and late neonatal deaths) were present due to a lack of harmonization between the departments. One of the LHWs defined stillbirth as the death which occurs within a day or the baby is born dead. According to this, she considered perinatal death as stillbirth.

Healthcare providers also perceived to be incompetent in handling cases. Their lack of capacity in providing neonatal resuscitation was also reported, which is a major contributing factor towards neonatal deaths. HCP also reported not being able to work efficiently due to demotivation. The reasons highlighted were a lack of appreciation of the staff, no pay for performance and no increment in salary. This affects the quality of care, as doctors do not follow the protocols and guidelines.

“One of the issues and problem here is that we do not have a single neonatologist in the entire province. Pediatricians deal with the neonates. And even you cannot find pediatricians everywhere.”

(A doctor- Baluchistan)

d) Deficient Reporting Mechanism

It was highlighted that Pakistan has deficiencies in the reporting system with issues in the validity of data. Health care providers report maternal and neonatal deaths, but they do not report stillbirths, which is important to identify the causes. It was also stated that verbal autopsies are only limited to maternal and neonatal deaths and no verbal autopsy is done for stillbirths.

“We don’t have a proper system of collecting and entering data. And so far, no survey has been carried out which calculated the maternal mortality.”
(Consultant GYN-Punjab)

e) Poor Referral System

Majority of the respondents believed that there is no proper functional referral system across Pakistan. The delay in referral was highlighted because of many reasons including a shortage of fuel, lack of transportation and lack of communication between facilities. Moreover, there is no gatekeeping mechanism and no connection between primary, secondary and tertiary level health care facilities.

"It is very confusing to define stillbirth, but I know one thing that stillbirth and neonatal death are almost the same, so we can report it any way we want."

(LHW- FGD participant)

f) Governance and Leadership:

The respondents, at higher authorities, perceived that maternal and child health is not a priority for the government in their region. Furthermore, monitoring and evaluation are absent at the government level. There are no checks and balances or surveillance to monitor the provision of services such as supplies and equipment. The government has a well-placed infrastructure in the peripheries, but services like water, electricity, education, and security for the service providers are not available. One of the respondents from the rural areas verbalized that despite high pay scale to work in peripheries, many seats are vacant due to the poor infrastructure of the facilities in the periphery.

"I have seen in my practice, only 50% of drugs are utilized by children and mothers, more than 50% of the drugs are stolen or misused. There is an administrative gap."

(EMS-Sindh)

"There is no security, residence for doctors or education facilities for their children. There is no focus on basic facilities where doctors are posted, such as water, sewerage system, and electricity. Things cannot be corrected unless doctors get proper places to live."

(Doctor-Baluchistan)

g) Community-level Challenges in Accessing & Utilizing MNH services

The majority of respondents stated that one of the biggest challenges in the utilization of MNH services is the community's preference to visit TBAs. In rural areas, 99% of the deliveries are conducted by LHVs and midwives who lack knowledge about ANC, delivery care and PNC. They do not use proper sterilization techniques, which can cause severe infections and deaths. The majority of the respondents highlighted that no awareness sessions are conducted regarding stillbirths and neonatal deaths at the community level. Many of the respondents verbalized that the role of LHWs is not well defined. Their main job was to educate mothers regarding antenatal care, postnatal care, nutrition, and family planning but they have been diverted to polio campaigns and other tasks. Therefore, LHWs do not prioritize MNH services.

"Due to the non-welcoming attitude by the doctor's hospital, rural people prefer getting delivered by TBAs in the rural areas."

(Facility in charge-ICT)

h) Sociocultural Determinants and Health-seeking Behavior of the Community

The factors which influence the health-seeking behavior of the community included socio-cultural determinants such as low socioeconomic status, lack of education and lack of autonomy for women. The behaviour of parents and caregivers was cited as an important factor causing poor maternal and neonatal conditions of Pakistan. The mother visits the facility at the time of delivery with severe complications without any history of ANC visits. A similar situation was reported for utilization of post-natal care services. After counseling, patients do come for ANC visits but after delivery, they do not report back except in case of complications.

"Family planning services are available, but women don't utilize it. They think it is a conspiracy of English men to control the population of Muslims".

(Doctor-GB)

Perceived Causes of Stillbirths and Neonatal Deaths:

a) Societal Causes (Distal causes):

Society Level

The role of TBAs in society was highlighted by the respondents. The untrained TBAs conduct deliveries in peripheries and give patients oxytocin to get the delivery done quickly, which causes intrauterine death. In addition to giving oxytocin, the TBAs also complicate cases by conducting deliveries in unhygienic conditions.

Household Level

Illiteracy and lack of education were one of the important contributing factors of SBs and NNDs. Moreover, due to the prevalence of gender preferences, women get pregnant multiple times to give birth to a son. Consanguineous marriages were also highlighted as a contributing factor as it leads to congenital anomalies and genetic disorders. Moreover, families have traditions and household practices of delivering at home. Lack of ANC visits and follow-ups along with poor antenatal care guidance was also reported to be prevalent due to illiteracy and lack of awareness.

"Mother-in-law never, during the pregnancy, let them have hot, fresh food. They believe that hot food causes the baby to die in the womb".

(GYN-Sindh)

Health System Level

Respondents stated that unregulated private maternity hospitals are present in the communities, which are operated by untrained LHVs and doctors. Due to poor handling of the patient they refer them to tertiary care in an emergency. The outcome of such handling is either SB or vesicovaginal fistula. The respondents also highlighted that inadequate routine monitoring of the mother and fetus and injecting high doses or wrong medications affect the pregnancy outcome.

Moreover, the poor hygiene of incubator and cots were cited as the leading cause of sepsis among neonates which leads to complications and death.

a) Underlying Causes at Family-Community level (Intermediate):

Medical and Obstetric causes:

Majority of the respondents identified causes such as infections and chronic medical conditions including uncontrolled diabetes and hypertension as causes for stillbirths. The main causes of intrauterine death were reported to be hypertension, diabetes and antepartum hemorrhage. It was also stated that the mothers with poor obstetric history and previous stillbirths are more likely to experience stillbirths and therefore should be considered as high-risk pregnancy case. Obstructed labor was reported to cause birth asphyxia as well as hypoxic-ischemic encephalopathy in the babies. Babies born to mother with cephalopelvic disproportion are more prone to get hypoxic-ischemic encephalopathy due to which they may die. Extremes of maternal age (below 18 and above 35) and parity (nulliparous and multiparous) were also reported as a contributing factor to SBs and NNDs.

Placental conditions were also stated as a cause of SBs and NND. Premature rupture of membrane and placental pathologies (abruption placenta and placenta previa) were identified as common causes of Fresh IUDs.

Pre-eclampsia and eclampsia were also reported as common factors causing SBs. Besides, intrauterine growth restriction (IUGR), sepsis, asphyxia, fetal distress & RDS were also identified as causative factors of NNDs by the majority of the respondents.

"Grand multigravida does not have enough reserves for baby. She becomes anemic and becomes hypertensive along with her progressing age thus her chances of producing SB and NNDs increase."

"Similarly, CPD also leads to stillbirth. Obstructed Labour leads to HIE (hypoxic-ischemic encephalopathy) and ultimately death of the baby."

(Gynecologist Punjab)

Misconceptions & Myths:

Misconceptions and myths in the communities lead to malpractices in the care of NYI. Application of onions, garlic, and oil on the cord of the newborn was reported to be practiced even by educated mothers. Furthermore, it was reported that newborns are not given mothers milk for three days, as it is believed that it will cause infection.

Neonatal Factors:

Some of the causes such as low birth weight, preterm/prematurity, hypothermia, and congenital anomalies also lead to NNDs.

Gaps Identified:

- Inconsistencies in the definition and classification (macerated and unmacerated) of stillbirths and neonatal deaths (early and late neonatal deaths).
- Lack of uniformity and coordination between the government and facilities and between the departments (Pediatrics & Obs/Gynae).
- Underreporting of stillbirths due to inconsistencies in the definition.
- Lack of staff capacity to diagnose stillbirths
- Inadequate ANC leads to poor maternal health condition leading to stillbirth.
- Lack of gateway mechanism leads to a high influx of cases (high & low) at tertiary care hospitals.

Chapter Seven: Proposed Recommendations for Actions

Proposed Recommendations and Actions to Improve the In-patient Care of Newborn & Young Infants in Pakistan:

1. Strengthen coordination among federal MOHSRC and provincial health departments in the field of MNCH, especially to oversee and monitor care of NYI.

Proposed actions:

- The federal MOHSRC should establish and or activate the interprovincial coordination group or task force on MNCH and conduct quarterly meetings between federal and provincial health departments on matters pertaining to NYI;
 - Develop and or revise the terms of reference of the group or task force to review strategic aspects of NYI related, among others, to policies and strategies, protocols and guidelines, provincial plans and their implementation progress, scaling up neonatal care in district hospitals across the country.
2. Enhance allocation for the care of NYIs in provincial health budgets by including it in the annual development plans as well as in the regular budget.

Proposed actions:

- Provincial Department of Health should revisit their MNCH PC -1 and review their regular budget to include adequate funding for strengthening of NYI care in district hospitals. This should include resources for:
 - Recruitment of neonatologists, neonatal surgeons, neonatal nurses in district hospitals;
 - Specialized trainings of existing paediatricians and nurses in district on different aspects of neonatal care;
 - Procurement, repair and maintenance of equipment (incubators, phototherapy lights and radiant warmers) at infant care units;
 - Safety nets for caregivers to cover transportation cost and other expenses incurred by families (in care of NYIs).
3. Update national and or provincial documents related to policies, strategies and protocols to align them with the eleven international standards of intrapartum and essential newborn care.

Proposed Actions:

- Engage academic institutions in the country, and where needed international MNCH experts, to develop guidelines and protocols adapted to the international standards related to intrapartum and essential newborn care;

- Develop short training courses to build capacity of staff in district and tertiary hospitals in the use of these protocols and guidelines;
 - Engage a team of national experts to widely disseminate the set of adapted guidelines among all the secondary and tertiary hospitals.
4. Strengthen capacity of MNCH Units in Provincial Health Departments to plan for and oversee quality of care of NYI in districts and tehsil hospitals.

Proposed Actions:

- Deploy staff with expertise in planning for neonatal care in MNCH Units of Provincial Department of Health to develop and update action plans and monitor their implementation at the district level;
 - Develop standards, which should be monitored in each DHQ hospital to assess quality of care procedures followed at NICUs, Special Care Units and Kangaroo Mother Care Units;
 - Conduct regular supervisory visits to assess performance and provide hands on supervision in NYI in DHQ and THQ hospitals;
 - Provide guidelines and monitor the rates of nosocomial infection at districts and tehsil hospitals.
5. Enhance capacity of DHQs in all provinces by deploying staff that is specialized in neonatology including surgery and nursing.

Proposed Actions:

- Create positions and recruit neonatologists, neonatal surgeons and neonatal nurses in DHQ hospitals based on the need assessment and resource availability;
 - Deploy neonatal surgeons and neonatal nurses from tertiary care hospitals on rotational basis to district hospitals to enhance access to neonatal care. This is possible in at least the larger provinces;
 - Provide monetary and non-monetary incentives to deploy and retain the staff (where they are critically needed to overcome the staff shortage in care of NYIs). Monetary incentives include hard area allowance, per diem etc. Non-monetary include selection for higher level training programs.
6. Strengthen pre-service and develop an in-service training program for nurses and physicians in clinical care and communication aspects of the NYI.

Proposed Actions:

- Invite leading institutions to develop and offer modules on neonatal care in undergraduate education in medical and nursing schools. Once developed and piloted these need to be endorsed by PMDC and PNC for introduction in the respective curricula;

- Federal MOHSRC should invite College of Physicians and Surgeons and other leading academic institutions to develop advanced courses for paediatricians and paediatric surgeons in neonatology and neonatal surgery respectively;
 - Introduce modules on communication skills (with focus on counselling skills) in pre-service training curriculum of medicine;
 - Provide training and development opportunities to nurses and physicians to enhance their knowledge and skills in the care of NYIs through short term training programs at the recognized institutes (such as Aga Khan University), where they can have 4-6 weeks of attachment.
7. Strengthen the information system to capture important information on stillbirths and newborn care across DHQs and Tertiary care settings.

Proposed Actions:

- MNCH interprovincial group, working in consultation with Obstetricians and Gynaecologists should:
 - Revise the existing information system (District Health Management Information System/ Facility-based Health Management Information System) reporting formats to include data on stillbirths and newborn care indicators (birth weight and gestational age).
 - Standardize the reporting formats to capture information on stillbirths and newborn care, such as APGAR score, the daily weight of the small and sick NYIs and a note on danger signs assessment.
8. Develop consensus on the standard definition and classification of stillbirths and neonatal deaths at the national & provincial level and train health care providers

Proposed Actions:

- Assign MNCH technical working group in consultation with Obstetricians and Gynaecologists to use international standards of defining stillbirths (macerated and fresh) and neonatal deaths (early and late) in order to develop a consensus on definitions;
 - Once standardized definitions and classification should be translated into guidelines and disseminated to hospitals across all provinces to train health care providers.
9. Institute the referral mechanism by emphasizing the feedback between primary, secondary and tertiary health facilities to enhance continuity in the care of NYIs.

Proposed Actions:

- Link DHQ and THQ hospitals with higher level tertiary hospitals with good capacity for NYI care and pilot a referral mechanisms that includes two-way referral that relies on electronic communication;

- MNCH Unit in Provincial Department of Health should work to regularize the feedback mechanism between the primary, secondary and tertiary level of care facilities by sharing of HMIS data (manual or electronic).
- Engage a university to assess the functionality of the referral in terms of the volume and appropriateness of referrals and identify gaps before scaling up.

10. Implement discharge education plan at the facility level with regards to in-patient care of newborns and young infants.

Proposed Action:

- MNCH Technical Working Group in collaboration with neonatologists, neonatal Nurses, obstetricians, and gynaecologists should develop a comprehensive Discharge Education Plan with focus on danger sign assessment by caregivers and essential newborn care.