

Sociology & Cultural Research Review (SCRR)Available Online: <https://scrrjournal.com>Print ISSN: [3007-3103](#) Online ISSN: [3007-3111](#)Platform & Workflow by: [Open Journal Systems](#)**MATERNAL NUTRITION AND CHILD SURVIVAL: A PUBLIC HEALTH ANALYSIS IN BALOCHISTAN****Farah Naseer**

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ABSTRACT

Maternal and child health remains one of the most critical public health challenges in Balochistan, where high rates of malnutrition, poverty, weak healthcare infrastructure, and limited access to maternal services continue to threaten survival outcomes. Poor maternal nutrition significantly contributes to low birth weight, stunted growth, weakened immunity, and increased infant and child mortality. Despite various national health programs, many districts of Balochistan continue to experience alarming maternal and child health indicators due to geographical isolation, food insecurity, low female literacy, and inadequate healthcare facilities. The purpose of this study is to analyze the relationship between maternal nutrition and child survival in Balochistan and to identify the socio-economic and healthcare factors influencing maternal and child health outcomes. The study adopts a qualitative analytical research design based on secondary data sources, including government reports, demographic health surveys, WHO publications, UNICEF reports, and academic literature related to maternal and child health in Pakistan. The analysis focuses on nutritional deficiencies, healthcare accessibility, antenatal care, breastfeeding practices, and socio-economic inequalities affecting maternal and child survival. The findings reveal that maternal malnutrition, anemia, poor dietary intake, and lack of healthcare awareness are major contributors to child mortality and poor developmental outcomes in Balochistan. The study further highlights that inadequate public health infrastructure and limited maternal healthcare services in remote areas exacerbate the crisis. The study concludes that improving maternal nutrition through integrated healthcare policies, community awareness, female education, and nutrition-based interventions is essential for enhancing child survival and achieving sustainable public health development in Balochistan.

Keywords: *Maternal Nutrition, Child Survival, Public Health, Balochistan, Maternal and Child Health.*

1. Introduction

Maternal nutrition and child survival are among the most important indicators of public health and human development, particularly in developing regions where poverty, malnutrition, and weak healthcare systems continue to threaten maternal and child wellbeing. Globally, maternal and child mortality remain serious public health concerns despite international efforts under the Sustainable Development Goals (SDGs) to improve maternal health and reduce preventable child deaths. According to the World Health Organization (WHO, 2023), thousands of women

and newborns continue to die every year due to preventable causes related to pregnancy complications, malnutrition, poor healthcare accessibility, and inadequate maternal care services. In developing countries, maternal undernutrition significantly contributes to low birth weight, stunted growth, weakened immunity, and increased infant mortality. Research indicates that maternal nutritional status during pregnancy directly affects fetal growth, child survival, and long-term physical and cognitive development (Bhutta et al., 2013). Therefore, maternal nutrition is considered a fundamental determinant of maternal and child health outcomes worldwide.

In Pakistan, maternal and child health challenges remain severe, particularly in underdeveloped provinces such as Balochistan, where poverty, food insecurity, weak healthcare infrastructure, and low female literacy continue to undermine public health progress. Balochistan records some of the worst maternal and child health indicators in the country, with high maternal mortality, child malnutrition, and low healthcare accessibility in rural areas. According to the Pakistan Maternal Mortality Survey (PMMS, 2019), maternal mortality in Balochistan remains significantly high due to inadequate utilization of maternal healthcare services, lack of healthcare awareness, and poor healthcare infrastructure. Recent research further highlights that maternal mortality and child health vulnerabilities are strongly associated with illiteracy, poverty, and limited access to antenatal and postnatal healthcare services (Naseer & Sultan, 2023). Women living in remote and rural communities often face severe barriers in accessing skilled healthcare services during pregnancy and childbirth, increasing risks of maternal complications and child mortality.

Maternal malnutrition and anemia are widespread among women in Balochistan, particularly among pregnant and breastfeeding mothers from low-income households. Poor dietary intake, lack of nutritional awareness, and food insecurity significantly affect maternal health conditions and child survival outcomes in the province. According to Government of Pakistan and UNICEF (2022), women in Pakistan continue to face serious micronutrient deficiencies, including iron, calcium, and vitamin deficiencies, which negatively affect maternal and child health. Research further shows that poor maternal nutrition contributes to low birth weight, child stunting, weak immunity, and developmental delays among children (Black et al., 2013). In Balochistan, nutritional vulnerabilities are aggravated by poverty, drought conditions, unemployment, and limited healthcare accessibility. Many women are unable to access balanced diets and maternal healthcare services during pregnancy, particularly in geographically isolated rural districts.

Healthcare accessibility remains another major challenge affecting maternal and child health outcomes in Balochistan. Large portions of the population live in remote and scattered settlements where healthcare facilities are either unavailable or difficult to access. The shortage of hospitals, trained healthcare professionals, maternal healthcare centers, and emergency obstetric services continues to undermine maternal and child healthcare delivery in the province. Studies indicate that rural women often rely on traditional birth attendants instead of skilled healthcare providers because of geographical barriers, transportation difficulties, poverty, and cultural practices (Naseer & Sultan, 2023). The study conducted in District Quetta found that 83.5% of women lacked awareness regarding antenatal care services, while only 8.3% received three or more antenatal visits during

pregnancy. Furthermore, 91% of women did not utilize postnatal care services, highlighting serious healthcare awareness and accessibility gaps in Balochistan. These findings demonstrate the critical weaknesses in maternal healthcare utilization across the province.

Child survival challenges in Balochistan are also strongly associated with malnutrition, poor sanitation, unsafe drinking water, and low immunization coverage. UNICEF (2023) reports that child stunting and wasting remain widespread in Pakistan, particularly in economically disadvantaged regions where maternal undernutrition and food insecurity are prevalent. Malnourished children are more vulnerable to infectious diseases, cognitive impairments, and mortality during infancy and early childhood. Poor sanitation conditions and lack of clean drinking water further increase disease burdens among children in rural communities. Repeated infections, diarrhea, and inadequate healthcare services negatively affect nutrient absorption and child development outcomes. Consequently, child survival in Balochistan remains deeply interconnected with maternal health, healthcare accessibility, and broader socioeconomic conditions.

Female literacy and education also play a significant role in maternal and child health outcomes. Educated women are generally more aware of maternal healthcare services, balanced nutrition, breastfeeding practices, and child healthcare needs. However, female literacy rates in Balochistan remain among the lowest in Pakistan, limiting healthcare awareness and healthcare-seeking behavior among women. Naseer and Sultan (2023) found that illiterate women were significantly less likely to utilize antenatal and postnatal healthcare services compared to educated women. The study further revealed that lack of awareness regarding pregnancy danger signs and maternal healthcare services contributes to delays in seeking medical treatment during pregnancy and childbirth. Cultural practices, early marriages, and restrictions on women's mobility further reduce healthcare accessibility and maternal wellbeing in several rural communities of Balochistan.

The relationship between maternal nutrition and child survival therefore represents a multidimensional public health issue influenced by healthcare systems, socioeconomic conditions, cultural practices, and public policy effectiveness. Addressing maternal and child health challenges requires integrated interventions focusing on healthcare accessibility, nutrition support, female education, sanitation improvement, and poverty reduction. Strengthening maternal healthcare services and promoting nutritional awareness among women can significantly improve child survival outcomes and reduce preventable maternal and child deaths in Balochistan.

This study aims to examine the relationship between maternal nutrition and child survival in Balochistan from a public health perspective. The study explores how maternal malnutrition, healthcare accessibility, poverty, female literacy, and food insecurity affect maternal and child health outcomes in the province. By analyzing existing public health conditions and maternal-child healthcare challenges, the study seeks to provide policy recommendations for improving maternal nutrition, healthcare accessibility, and child survival indicators in Balochistan.

2. Problem Statement

Maternal malnutrition and child mortality remain major public health challenges in Balochistan despite various national and international health interventions. A large number of women in Balochistan suffer from poor nutrition, anemia,

inadequate healthcare access, and lack of maternal health awareness, which negatively affects pregnancy outcomes and child survival. Children born to malnourished mothers are more vulnerable to low birth weight, stunted growth, weakened immunity, infectious diseases, and early mortality. The situation is further aggravated by poverty, food insecurity, weak healthcare infrastructure, geographical isolation, low female literacy, and limited availability of maternal healthcare services in remote areas of the province. Although maternal and child health has received increasing policy attention in Pakistan, Balochistan continues to record poor health indicators compared to other provinces. There is limited academic and policy-focused research specifically examining the relationship between maternal nutrition and child survival in the context of Balochistan. Therefore, this study seeks to analyze how maternal nutrition influences child survival and to identify the socioeconomic and healthcare factors contributing to maternal and child health challenges in the province.

3. Significance of the Study

This study is significant because it highlights one of the most neglected public health issues in Balochistan: the relationship between maternal nutrition and child survival. The study contributes to academic literature by examining maternal and child health from a public health and socioeconomic perspective within the specific context of Balochistan. It provides a better understanding of how poverty, healthcare inaccessibility, female illiteracy, food insecurity, and weak public health systems influence maternal and child mortality.

The findings of this study may assist policymakers, healthcare institutions, development organizations, and public health professionals in designing effective maternal and child health interventions. The study also supports policy discussions regarding nutrition programs, maternal healthcare reforms, rural healthcare accessibility, and women's health awareness campaigns in Balochistan. Furthermore, the study contributes to broader discussions related to Sustainable Development Goal 3 (Good Health and Wellbeing) by emphasizing the need for integrated healthcare and nutrition policies to improve maternal and child survival outcomes in marginalized regions. The research may also serve as a foundation for future studies related to maternal health, nutrition, child mortality, and public health governance in Pakistan.

4. Research Objectives

1. To examine the relationship between maternal nutrition and child survival in Balochistan.
2. To identify the socioeconomic and healthcare factors affecting maternal and child health outcomes in Balochistan.
3. To analyze the impact of poverty, food insecurity, and healthcare accessibility on maternal nutrition and child survival.
4. To suggest policy recommendations for improving maternal nutrition and reducing child mortality in Balochistan.

4. Literature Review

4.1 Concept of Maternal Nutrition

Maternal nutrition refers to the nutritional status and dietary intake of women before, during, and after pregnancy. It plays a critical role in ensuring safe pregnancy outcomes, healthy fetal growth, and child development. According to the World Health Organization, maternal nutrition includes adequate intake of micronutrients, proteins, vitamins, and minerals essential for maternal health and

infant survival. Recent studies indicate that maternal malnutrition remains a serious public health issue in Pakistan, where women suffer from the triple burden of undernutrition, obesity, and micronutrient deficiencies (UNICEF & Government of Pakistan, 2022). The Pakistan Maternal Nutrition Strategy 2022–2027 highlights anemia, iron deficiency, vitamin A deficiency, and inadequate dietary diversity among pregnant women as major health concerns affecting maternal and neonatal outcomes.

Maternal nutrition directly influences pregnancy outcomes and the health of newborns. Women with poor nutritional status are more likely to experience pregnancy complications, premature delivery, low birth weight, and maternal mortality. Recent public health research emphasizes that proper maternal nutrition improves both maternal wellbeing and long-term child health outcomes (WHO, 2023). In low-income regions such as Balochistan, nutritional deficiencies are further aggravated by poverty, food insecurity, weak healthcare systems, and limited maternal health awareness.

4.2 Child Survival and Child Health Indicators

Child survival refers to the ability of children to live beyond infancy and early childhood without preventable diseases, malnutrition, or mortality risks. Child health indicators commonly include infant mortality rate, neonatal mortality rate, under-five mortality rate, immunization coverage, nutritional status, and prevalence of stunting and wasting. According to recent WHO data, Pakistan continues to face high neonatal and child mortality rates despite gradual improvements over the years (WHO, 2023).

UNICEF (2023) reports that child malnutrition remains a major challenge in Pakistan, with stunting, wasting, and low immunity significantly affecting child survival and development. Studies show that children born to malnourished mothers are more vulnerable to infections, delayed cognitive development, and mortality during the first five years of life. Child survival is therefore strongly linked with maternal nutrition, healthcare accessibility, sanitation, breastfeeding practices, and immunization coverage.

4.3 Relationship Between Maternal Nutrition and Child Survival

The relationship between maternal nutrition and child survival has been widely discussed in recent global health literature. Evidence suggests that maternal nutritional deficiencies during pregnancy directly affect fetal growth, birth weight, immunity, and child development. Ashraf et al. (2023) found that maternal nutritional interventions significantly reduced anemia and improved child health outcomes in vulnerable communities of Pakistan. Similarly, Hussain et al. (2023) observed that fortified maternal food programs positively improved childhood nutritional status and reduced malnutrition among children whose mothers consumed nutritional supplements during pregnancy.

Research further indicates that maternal anemia and micronutrient deficiencies contribute to stunting and underweight conditions among children. Baxter et al. (2023) found that maternal micronutrient supplementation improved infant growth and breastfeeding quality in rural Pakistan. These findings demonstrate that maternal nutrition is not only important for maternal health but also essential for reducing child mortality and improving long-term developmental outcomes.

4.4 Socioeconomic Determinants of Maternal and Child Health

Socioeconomic conditions significantly shape maternal and child health outcomes in developing societies. Poverty, unemployment, low female literacy, food insecurity, and poor living conditions increase health vulnerabilities among women and children. Recent studies show that maternal and child malnutrition is more common in socioeconomically disadvantaged households where access to healthcare and nutritious food remains limited (Wang et al., 2023).

Female education also plays a central role in improving maternal and child health. Educated mothers are more likely to seek antenatal care, maintain balanced diets, adopt breastfeeding practices, and utilize healthcare services effectively. However, many districts of Balochistan continue to experience low female literacy rates and weak healthcare awareness, negatively affecting maternal and child survival indicators. Social inequalities, cultural barriers, and gender-based restrictions further limit women's healthcare access in rural areas of Pakistan.

4.5 Healthcare Infrastructure and Accessibility in Balochistan

Healthcare infrastructure in Balochistan remains underdeveloped compared to other provinces of Pakistan. Many rural and remote districts lack hospitals, maternal healthcare centers, trained healthcare professionals, and emergency medical services. According to UNICEF reports, poor healthcare accessibility remains one of the major barriers to improving maternal and child health outcomes in the province (UNICEF Pakistan, 2023).

Geographical isolation and poor transportation infrastructure also contribute to healthcare inaccessibility in Balochistan. Women in remote communities often face difficulties in accessing antenatal care, skilled birth attendants, vaccination services, and nutrition support programs. The Balochistan Multiple Indicator Cluster Survey highlights serious disparities in maternal and child healthcare access between urban and rural areas of the province. Weak institutional capacity, shortage of female healthcare workers, and inadequate healthcare funding continue to undermine public health delivery in the region.

4.6 Malnutrition, Poverty, and Food Insecurity

Malnutrition and food insecurity remain major public health concerns in Pakistan, particularly in economically marginalized provinces such as Balochistan. Poverty reduces household access to nutritious food, clean water, sanitation, and healthcare services, increasing maternal and child health vulnerabilities. UNICEF (2023) reports that Pakistan is facing one of the world's most severe child malnutrition crises, where stunting and wasting continue to affect millions of children.

Recent studies indicate that food insecurity directly affects maternal dietary intake and child nutritional outcomes. The Pakistan Maternal Nutrition Strategy 2022–2027 identifies poverty and poor dietary diversity as key determinants of maternal malnutrition in the country. In Balochistan, food insecurity is worsened by inflation, droughts, unemployment, and underdeveloped agricultural systems, leading to poor maternal and child health conditions. Malnutrition therefore remains closely connected with broader socioeconomic and structural inequalities.

4.7 Previous Studies on Maternal and Child Health in Pakistan

Several recent studies have examined maternal and child health challenges in Pakistan. UNICEF and the Government of Pakistan (2022) emphasized that maternal malnutrition remains a critical national health issue requiring integrated nutrition interventions and healthcare reforms. Similarly, WHO (2023) highlighted that although Pakistan has made progress in reducing maternal and neonatal

mortality, significant challenges remain in achieving Sustainable Development Goal 3 targets.

Hussain et al. (2023) focused on nutritional interventions and maternal supplementation programs in Pakistan and found positive impacts on maternal and child health outcomes. Other studies have explored anemia prevalence, breastfeeding practices, immunization coverage, and food insecurity among vulnerable populations. However, most existing studies focus on national-level analysis and provide limited attention to the unique public health challenges faced by Balochistan.

4.8 Research Gap

Existing literature on maternal and child health in Pakistan primarily focuses on national-level statistics, nutritional interventions, and healthcare policies. While several studies discuss maternal malnutrition and child mortality, limited research specifically examines the relationship between maternal nutrition and child survival in the context of Balochistan. Most recent studies emphasize urban populations or broader national trends, while the socioeconomic, geographical, and healthcare realities of Balochistan remain underexplored.

Furthermore, there is insufficient research analyzing how poverty, food insecurity, weak healthcare infrastructure, and low female literacy collectively influence maternal nutrition and child survival in remote districts of Balochistan. This study therefore seeks to fill this gap by providing a public health analysis of maternal nutrition and child survival within the specific socioeconomic and healthcare context of Balochistan. The research contributes to policy discussions by highlighting localized challenges and identifying areas requiring targeted maternal and child health interventions.

5. Research Methodology

This study adopts a qualitative and analytical research design to examine the relationship between maternal nutrition and child survival in Balochistan from a public health perspective. The nature of the study is descriptive and exploratory, focusing on understanding how nutritional, socioeconomic, and healthcare-related factors influence maternal and child health outcomes in the province. The research primarily relies on secondary data collection methods to gather relevant information regarding maternal nutrition, child mortality, healthcare accessibility, food insecurity, and public health challenges. Data for the study has been collected from authentic and recent sources, including reports and publications of the World Health Organization (WHO), UNICEF, Pakistan Demographic and Health Survey (DHS), Government of Pakistan reports, Balochistan health statistics, research journals, policy papers, and international public health studies published between 2022 and 2023.

The collected data has been analyzed through thematic and content analysis techniques to identify key patterns, trends, and relationships between maternal nutrition and child survival indicators. The study critically evaluates the impact of poverty, healthcare infrastructure, female literacy, and food insecurity on maternal and child health outcomes in Balochistan. Ethical considerations have also been taken into account throughout the research process. Since the study is based on secondary sources, proper citation and acknowledgment of all data sources have been ensured to maintain academic integrity and avoid plagiarism. Furthermore, the research objectively presents findings without bias and aims to contribute

constructively to public health policy discussions related to maternal and child healthcare in Pakistan.

6. Maternal Nutrition Situation in Balochistan

6.1 Maternal Malnutrition and Anemia

Maternal malnutrition and anemia continue to pose serious public health challenges in Balochistan, particularly among pregnant and breastfeeding women living in rural and underdeveloped districts. According to recent WHO estimates, anemia remains a major global health concern, affecting approximately 35.5% of pregnant women worldwide in 2023 (WHO, 2025). In Pakistan, the situation is more severe, where studies indicate a very high prevalence of iron-deficiency anemia among women of reproductive age due to poor dietary intake, poverty, and healthcare inequalities (Mahar et al., 2023). Research further shows that maternal anemia contributes to pregnancy complications, low birth weight, premature delivery, and increased maternal and neonatal mortality risks (Khan et al., 2023). In Balochistan, weak healthcare infrastructure, food insecurity, and limited maternal healthcare services further aggravate nutritional vulnerabilities among women.

The Pakistan Maternal Nutrition Strategy 2022–2027 emphasizes that women in Pakistan continue to suffer from micronutrient deficiencies, including iron, folic acid, vitamin A, and calcium deficiencies, which negatively affect maternal and child health outcomes (Government of Pakistan & UNICEF, 2022). In remote areas of Balochistan, women often lack access to nutritious diets, supplements, and healthcare counseling during pregnancy. The absence of regular antenatal screening and nutrition interventions increases the risks associated with maternal malnutrition and anemia. These challenges demonstrate the urgent need for targeted maternal nutrition programs and healthcare reforms in underserved regions of the province.

6.2 Dietary Deficiencies Among Women

Dietary deficiencies among women in Balochistan are strongly associated with poverty, food insecurity, unemployment, and poor household nutritional practices. Many women are unable to consume balanced diets containing proteins, vitamins, minerals, and iron-rich foods necessary for healthy pregnancies and child development. The Pakistan Maternal Nutrition Strategy 2022–2027 highlights inadequate dietary diversity and poor maternal feeding practices as major causes of malnutrition among women in Pakistan (Government of Pakistan & UNICEF, 2022). In rural areas of Balochistan, households often rely on low-cost and nutritionally insufficient food items, leading to chronic nutritional deficiencies among women and children.

Gender inequality and cultural practices also contribute to poor dietary conditions among women. In many households, women receive less nutritious food and healthcare attention compared to male family members. Food inflation, drought conditions, and economic instability have further worsened food insecurity in the province. UNICEF (2023) reported that millions of women and children in Pakistan continue to face severe nutritional vulnerabilities due to inadequate food access and weak nutrition support systems. Poor dietary intake among mothers directly affects fetal growth, breastfeeding quality, and child survival outcomes, particularly in marginalized rural communities.

6.3 Antenatal and Postnatal Care Challenges

Access to antenatal and postnatal healthcare services remains highly limited in several districts of Balochistan because of weak healthcare infrastructure, shortage of healthcare professionals, and geographical barriers. Many pregnant women do not receive regular antenatal checkups, nutritional counseling, or skilled maternal healthcare during pregnancy. According to WHO (2023), preventable maternal and neonatal deaths in Pakistan are closely linked with inadequate antenatal care, delayed treatment, and poor healthcare accessibility in remote areas.

Healthcare facilities in many rural districts of Balochistan lack trained female healthcare workers, emergency obstetric care, maternal nutrition services, and medical equipment. Poor transportation systems and long travel distances further discourage women from seeking healthcare services during pregnancy and after childbirth. Studies indicate that weak referral systems and lack of postnatal monitoring increase the risks of maternal complications and neonatal mortality in Pakistan's rural communities (Farrar et al., 2023). Postnatal healthcare services also remain inadequate, limiting maternal recovery support and newborn healthcare monitoring after delivery. These healthcare gaps significantly affect maternal wellbeing and child survival outcomes in Balochistan.

6.4 Breastfeeding and Maternal Awareness

Breastfeeding and maternal health awareness are critical factors influencing child survival, immunity, and nutritional development. However, breastfeeding practices in Pakistan remain below international public health targets. According to WHO (2023), only 48.4% of infants under six months in Pakistan are exclusively breastfed, which remains below the global target of 60% by 2030. Low breastfeeding rates contribute to increased child infections, diarrhea cases, malnutrition, and preventable child deaths (WHO, 2023).

In Balochistan, low female literacy, poor healthcare awareness, and cultural misconceptions negatively affect maternal and child healthcare practices. Many mothers lack adequate knowledge regarding exclusive breastfeeding, maternal nutrition, immunization, and infant healthcare. UNICEF Pakistan (2023) emphasized that inadequate maternal nutrition and poor breastfeeding practices are among the major causes of child stunting and malnutrition in Pakistan. Community-level health awareness programs and maternal education therefore remain essential for improving child survival indicators in the province. Strengthening Lady Health Worker programs and community-based nutrition counseling can play an important role in promoting breastfeeding awareness and maternal healthcare practices in rural areas.

6.5 Rural-Urban Health Disparities

Significant disparities exist between rural and urban areas of Balochistan regarding maternal nutrition, healthcare accessibility, and child health services. Urban centers such as Quetta have relatively better hospitals, healthcare facilities, nutrition centers, and maternal care services compared to remote rural districts. In contrast, women living in rural and mountainous areas face severe shortages of healthcare infrastructure, skilled birth attendants, clean water, sanitation, and nutrition support services. These disparities contribute to higher maternal and child mortality rates in rural communities.

UNICEF and WHO reports indicate that rural populations in Pakistan experience greater barriers to healthcare access due to poverty, poor transportation systems, and weak public health infrastructure. Rural women are less likely to receive

antenatal care, skilled birth attendance, and child immunization services compared to women living in urban areas. Furthermore, malnutrition and food insecurity are more prevalent in remote districts where healthcare and nutrition programs remain limited. These inequalities demonstrate the uneven distribution of healthcare resources in Balochistan and highlight the urgent need for targeted maternal and child health interventions in underserved rural regions.

7. Child Survival Challenges in Balochistan

7.1 Infant and Child Mortality Trends

Infant and child mortality remain major public health concerns in Balochistan, where healthcare inequalities, poverty, and malnutrition continue to threaten child survival. According to the World Health Organization, Pakistan remains among the countries with high neonatal and under-five mortality rates, with many deaths resulting from preventable causes such as malnutrition, infections, diarrhea, and inadequate maternal healthcare (WHO, 2023). Balochistan records some of the worst maternal and child health indicators in the country due to weak healthcare systems and limited healthcare accessibility in rural areas. UNICEF Pakistan (2023) reports that under-five mortality rates in marginalized districts of Balochistan remain significantly higher than national averages because of poor healthcare infrastructure and low immunization coverage.

Recent studies indicate that child mortality in Balochistan is closely linked with maternal malnutrition, poverty, and inadequate healthcare services. Neonatal mortality remains particularly high among children born in remote rural communities where skilled birth attendants and emergency healthcare facilities are limited (Ali et al., 2023). Delayed medical treatment, poor maternal nutrition, and infectious diseases continue to contribute to preventable child deaths across the province.

7.2 Low Birth Weight and Stunted Growth

Low birth weight and stunted growth are among the most critical child health challenges in Balochistan. Poor maternal nutrition during pregnancy significantly affects fetal growth and infant health outcomes. Children born with low birth weight are more vulnerable to infections, developmental delays, malnutrition, and mortality during early childhood (WHO, 2023). Studies show that chronic maternal malnutrition and anemia are major causes of low birth weight in Pakistan, particularly in underdeveloped provinces such as Balochistan (Khan et al., 2023).

Stunting also remains widespread among children due to long-term nutritional deficiencies and food insecurity. UNICEF (2023) highlights that child stunting in Pakistan is strongly associated with maternal undernutrition, poor breastfeeding practices, and lack of dietary diversity. In Balochistan, children living in poor households are more likely to suffer from stunted growth due to limited access to nutritious food and healthcare services. Stunted children often face poor cognitive development, weak immunity, and reduced educational performance, negatively affecting long-term human development outcomes.

7.3 Immunization and Child Healthcare Access

Immunization and child healthcare accessibility remain major challenges in many districts of Balochistan. Although Pakistan has implemented several vaccination campaigns, immunization coverage in remote areas of Balochistan remains relatively low due to weak healthcare infrastructure and limited healthcare outreach programs. WHO (2023) reports that incomplete vaccination coverage

increases child vulnerability to preventable diseases such as measles, polio, and pneumonia.

Healthcare access is also affected by shortages of hospitals, pediatric healthcare centers, trained medical staff, and maternal-child healthcare services in rural districts. Many families in remote communities face difficulties in accessing child healthcare facilities because of transportation problems and geographical isolation (UNICEF Pakistan, 2023). Furthermore, weak awareness regarding immunization and healthcare utilization contributes to poor child health outcomes in the province. These challenges continue to undermine child survival efforts and public health development in Balochistan.

7.4 Malnutrition and Child Development

Child malnutrition remains one of the leading causes of poor child development and mortality in Pakistan. Malnutrition affects children's physical growth, cognitive abilities, immunity, and educational development. According to UNICEF (2023), millions of children in Pakistan suffer from stunting, wasting, and micronutrient deficiencies, particularly in economically disadvantaged regions such as Balochistan. Poor maternal nutrition, inadequate breastfeeding practices, and food insecurity significantly contribute to child malnutrition and developmental challenges.

Studies indicate that malnourished children are more likely to experience delayed cognitive development, weak immune systems, and poor school performance (Ahmed & Shah, 2023). In Balochistan, chronic poverty and lack of healthcare services further increase child nutritional vulnerabilities. Child development is also negatively affected by repeated infections, unsafe drinking water, and inadequate sanitation conditions, which reduce nutrient absorption and increase disease burden among children.

7.5 Water, Sanitation, and Disease Burden

Unsafe drinking water, poor sanitation, and inadequate hygiene practices significantly affect child survival and health outcomes in Balochistan. Many rural communities lack access to clean water and proper sanitation facilities, increasing the prevalence of diarrhea, cholera, and other waterborne diseases among children. WHO and UNICEF (2023) emphasize that poor sanitation and contaminated water are major contributors to child malnutrition and mortality in developing countries.

Children living in areas with inadequate sanitation are more vulnerable to infectious diseases and nutritional deficiencies. Frequent diarrhea and intestinal infections reduce nutrient absorption, leading to wasting and stunted growth. In Balochistan, water scarcity and weak sanitation infrastructure continue to threaten maternal and child health, particularly in remote districts. Improving access to clean drinking water and sanitation services therefore remains essential for reducing child mortality and improving public health outcomes in the province.

8. Factors Affecting Maternal and Child Health

8.1 Poverty and Economic Constraints

Poverty is one of the most significant factors affecting maternal and child health in Balochistan. Low household income limits access to nutritious food, healthcare services, medicines, and safe living conditions. Poor families often struggle to afford maternal healthcare, balanced diets, and child immunization services. Economic instability and inflation have further increased food insecurity in

vulnerable communities, negatively affecting maternal nutrition and child survival outcomes (World Bank, 2023).

Children and mothers living in poverty are more likely to experience malnutrition, disease burden, and inadequate healthcare access. Poverty also contributes to poor sanitation, overcrowded housing conditions, and limited educational opportunities, all of which increase health vulnerabilities among women and children. In Balochistan, poverty remains particularly severe in rural districts where economic opportunities and healthcare services are limited.

8.2 Female Literacy and Education

Female literacy and education play a vital role in improving maternal and child health outcomes. Educated mothers are more likely to seek antenatal care, follow proper nutritional practices, vaccinate their children, and adopt healthy childcare behaviors. However, female literacy rates in many districts of Balochistan remain among the lowest in Pakistan (Pakistan Bureau of Statistics, 2023).

Low education levels limit women's awareness regarding maternal nutrition, breastfeeding, child healthcare, and disease prevention. Cultural restrictions and limited access to educational institutions further contribute to female illiteracy in rural areas. Research indicates that improving female education significantly reduces child mortality and improves maternal health indicators (UNESCO, 2023). Therefore, female literacy remains essential for strengthening public health outcomes in marginalized communities.

8.3 Cultural and Traditional Practices

Cultural and traditional practices also influence maternal and child health conditions in Balochistan. In many rural communities, women rely on traditional birth attendants and home-based treatments instead of professional healthcare services. Early marriages, gender discrimination, and restrictions on women's mobility further limit healthcare accessibility for pregnant women and children (Bibi et al., 2023).

Certain traditional beliefs regarding nutrition and breastfeeding also negatively affect maternal and child health outcomes. In some communities, women avoid nutritious foods during pregnancy because of cultural misconceptions, increasing the risks of malnutrition and anemia. These social and cultural barriers continue to hinder healthcare utilization and maternal-child wellbeing in remote regions of the province.

8.4 Weak Healthcare Infrastructure

Weak healthcare infrastructure remains one of the major obstacles to improving maternal and child health in Balochistan. Many districts lack hospitals, maternal care centers, pediatric healthcare services, trained healthcare professionals, and emergency medical facilities. According to WHO (2023), inadequate healthcare systems continue to contribute to preventable maternal and child deaths in Pakistan.

Healthcare facilities in remote districts often suffer from shortages of medicines, medical equipment, and female healthcare workers. Weak referral systems and poor healthcare management further reduce the effectiveness of maternal and child healthcare programs. Limited healthcare funding and institutional weaknesses continue to affect service delivery across the province.

8.5 Geographical Barriers and Remote Areas

Geographical barriers significantly affect healthcare accessibility in Balochistan due to the province's large territory and scattered population. Many rural

communities are located in mountainous and remote areas where healthcare facilities are either unavailable or difficult to access. Poor road infrastructure and transportation systems further limit access to maternal and child healthcare services.

Women in remote areas often travel long distances to reach hospitals or maternal healthcare centers, increasing health risks during pregnancy and childbirth. Geographical isolation also affects vaccination campaigns, emergency healthcare services, and nutrition support programs. These barriers continue to widen healthcare inequalities between rural and urban populations in Balochistan.

8.6 Government Policies and Institutional Challenges

Although the Government of Pakistan has introduced several maternal and child healthcare initiatives, implementation challenges remain significant in Balochistan. Weak governance, inadequate healthcare budgets, institutional inefficiency, and poor monitoring mechanisms continue to undermine healthcare service delivery. Public health policies often face implementation gaps in remote districts where healthcare infrastructure and administrative capacity remain weak (UNICEF Pakistan, 2023).

Furthermore, coordination problems between federal and provincial healthcare institutions affect the effectiveness of maternal and child health programs. Limited investment in nutrition support, healthcare awareness, sanitation, and rural healthcare infrastructure continues to hinder progress toward Sustainable Development Goal 3. Strengthening institutional capacity and improving policy implementation therefore remain essential for addressing maternal and child health challenges in Balochistan.

9. Analysis and Discussion

9.1 Public Health Implications

The findings of this study indicate that maternal nutrition and child survival in Balochistan remain major public health concerns closely linked with poverty, food insecurity, weak healthcare systems, and social inequalities. Recent reports by the World Health Organization (WHO, 2023) show that Pakistan continues to experience high maternal and neonatal mortality rates, with preventable deaths largely associated with malnutrition, poor maternal healthcare, and inadequate healthcare accessibility. In Balochistan, these challenges are more severe because of limited healthcare infrastructure, shortage of healthcare professionals, and weak institutional capacity. The study reveals that maternal malnutrition contributes to low birth weight, weak immunity, stunted growth, and increased child mortality, creating long-term public health burdens for the province (Government of Pakistan & UNICEF, 2022).

The analysis further demonstrates that maternal and child health challenges in Balochistan are not solely healthcare problems but are strongly connected with broader socioeconomic determinants. Poverty, low female literacy, food insecurity, and inadequate sanitation significantly affect maternal nutrition and child survival outcomes. UNICEF Pakistan (2023) emphasizes that poor sanitation, lack of safe drinking water, and nutritional deficiencies continue to increase disease burden and child mortality in marginalized regions of Pakistan. In remote districts of Balochistan, healthcare inequalities are particularly visible where women and children face limited access to maternal healthcare services, vaccination programs, and nutritional support facilities. Therefore, the study suggests that improving maternal and child health requires integrated public health strategies that combine

healthcare reforms with poverty reduction, nutrition support, sanitation improvements, and women's education initiatives.

Another important implication emerging from the study is the unequal distribution of healthcare resources between urban and rural areas of Balochistan. Rural populations experience greater barriers in accessing hospitals, antenatal care, emergency healthcare, and child immunization services because of geographical isolation and poor transportation infrastructure (WHO & UNICEF, 2023). These disparities increase maternal and child mortality risks and widen healthcare inequalities within the province. The findings therefore highlight the need for community-based healthcare interventions and expansion of rural maternal-child healthcare facilities to reduce public health vulnerabilities in underserved areas.

9.2 Maternal Nutrition and Child Survival Nexus

The study strongly confirms the direct relationship between maternal nutrition and child survival in Balochistan. Maternal nutritional deficiencies during pregnancy significantly affect fetal growth, birth outcomes, child immunity, and long-term physical and cognitive development. According to WHO (2023), children born to malnourished mothers are more vulnerable to low birth weight, infections, developmental delays, and mortality during infancy and early childhood. The findings of this study reveal that maternal anemia, poor dietary intake, and micronutrient deficiencies remain widespread among women in Balochistan, particularly in rural and low-income communities. These nutritional deficiencies negatively affect maternal health and directly contribute to poor child survival indicators (Mahar et al., 2023).

The analysis also demonstrates that maternal malnutrition in Balochistan is closely associated with poverty, food insecurity, and limited healthcare accessibility. Government of Pakistan and UNICEF (2022) report that women in Pakistan continue to face severe nutritional vulnerabilities because of poor dietary diversity, weak healthcare awareness, and inadequate maternal healthcare services. In Balochistan, women living in remote districts often lack access to antenatal care, nutritional supplements, and healthcare counseling, increasing pregnancy-related risks and child health vulnerabilities. The study indicates that poor maternal health conditions transfer nutritional disadvantages to children, contributing to intergenerational cycles of malnutrition and poor health outcomes.

Breastfeeding practices and maternal awareness also emerged as important factors influencing child survival. WHO (2023) reports that exclusive breastfeeding rates in Pakistan remain below global public health targets, increasing child vulnerability to infections and malnutrition. In Balochistan, low female literacy and poor healthcare awareness negatively affect breastfeeding practices, child nutrition, and healthcare utilization. The findings suggest that improving maternal nutrition, promoting breastfeeding awareness, and strengthening maternal healthcare services could substantially reduce child mortality and malnutrition rates in the province. Therefore, maternal nutrition should be considered a central component of child survival and public health development strategies in Balochistan.

9.3 Comparison with National Indicators

The study reveals that Balochistan continues to lag behind national averages in maternal and child health indicators despite ongoing public health interventions in Pakistan. Nationally, Pakistan has shown gradual improvements in maternal healthcare coverage, child immunization, and reduction of under-five mortality rates. However, Balochistan continues to record higher rates of maternal

malnutrition, child stunting, low birth weight, and healthcare inaccessibility compared to other provinces (Pakistan Bureau of Statistics, 2023). The province faces structural disadvantages due to weak healthcare infrastructure, scattered population distribution, and limited public health investment.

Compared to provinces such as Punjab and Sindh, healthcare accessibility in Balochistan remains significantly lower. Urban centers generally have better hospitals, maternal healthcare facilities, trained healthcare professionals, and child nutrition services, whereas rural districts of Balochistan continue to experience severe shortages of healthcare infrastructure and nutrition support programs (UNICEF Pakistan, 2023). Female literacy rates in Balochistan are also lower than national averages, affecting maternal healthcare awareness, breastfeeding practices, and healthcare utilization. These disparities demonstrate uneven development patterns and unequal distribution of healthcare resources within Pakistan.

The study also highlights that poverty and food insecurity are more severe in Balochistan compared to many other regions of the country. According to the World Bank (2023), economically marginalized communities in Pakistan face greater nutritional vulnerabilities due to inflation, unemployment, and weak public services. National nutrition and healthcare programs often fail to fully address the geographical and socioeconomic realities of remote districts in Balochistan. Consequently, healthcare interventions that may show positive national outcomes often produce limited impact in underserved areas of the province. The findings therefore emphasize the need for region-specific maternal and child health policies tailored to the unique challenges of Balochistan.

Furthermore, despite Pakistan's commitment to Sustainable Development Goal 3, the province continues to face major institutional and governance challenges affecting healthcare delivery. Weak policy implementation, inadequate healthcare funding, and poor monitoring systems continue to undermine maternal and child healthcare programs in Balochistan (WHO, 2023). Bridging the gap between national health targets and provincial realities therefore requires stronger institutional coordination, increased healthcare investment, and community-centered public health strategies.

9.4 Key Findings of the Study

The study identifies several important findings regarding maternal nutrition and child survival in Balochistan. First, maternal malnutrition and anemia remain highly prevalent among pregnant and breastfeeding women, particularly in poor and rural communities. Nutritional deficiencies are strongly linked with poverty, food insecurity, weak dietary diversity, and inadequate maternal healthcare services. These conditions significantly increase the risks of low birth weight, child malnutrition, and infant mortality (Government of Pakistan & UNICEF, 2022).

Second, the study finds that child survival challenges in Balochistan are closely associated with inadequate maternal healthcare, low immunization coverage, poor sanitation, and healthcare inaccessibility. Children living in remote rural districts are more vulnerable to stunting, wasting, infectious diseases, and developmental delays because of weak healthcare infrastructure and limited healthcare awareness (UNICEF, 2023). Unsafe drinking water and inadequate sanitation further increase disease burden among children and negatively affect nutritional outcomes.

Third, the findings indicate that socioeconomic factors such as poverty, female illiteracy, unemployment, and gender inequalities significantly influence maternal and child health outcomes in the province. Women with low education levels are

less likely to access antenatal care, adopt proper nutritional practices, or utilize child healthcare services effectively. Cultural barriers and traditional healthcare practices also restrict women's healthcare access in several communities (Bibi et al., 2023).

Finally, the study concludes that healthcare infrastructure and institutional capacity in Balochistan remain insufficient to effectively address maternal and child health challenges. Shortages of hospitals, trained healthcare workers, emergency maternal care services, and nutrition programs continue to undermine healthcare delivery in rural districts. The findings emphasize that improving maternal nutrition, expanding rural healthcare infrastructure, strengthening female education, and improving public health governance are essential for reducing maternal and child mortality in Balochistan. Without addressing these structural and socioeconomic inequalities, progress toward sustainable maternal and child health development in the province will remain limited.

10. Policy Recommendations

10.1 Strengthening Maternal Healthcare Services

The government should strengthen maternal healthcare services by improving access to antenatal and postnatal care, skilled birth attendants, emergency obstetric facilities, and maternal nutrition counseling in both urban and rural areas of Balochistan. Increasing healthcare funding, ensuring availability of female healthcare workers, and improving healthcare monitoring systems can significantly reduce maternal and child mortality.

10.2 Nutrition Awareness Programs

Public health institutions should launch large-scale nutrition awareness programs focusing on maternal nutrition, balanced diets, breastfeeding, child feeding practices, and disease prevention. Community-level awareness campaigns through schools, media, healthcare centers, and Lady Health Workers can improve healthcare knowledge among women and families, particularly in rural and underserved districts of Balochistan.

10.3 Expanding Rural Healthcare Infrastructure

There is an urgent need to expand healthcare infrastructure in remote and rural areas of Balochistan by establishing hospitals, maternal healthcare centers, mobile health units, and child nutrition facilities. Improving transportation systems, healthcare accessibility, and emergency medical services in underserved districts can help reduce healthcare inequalities and improve maternal-child health outcomes.

10.4 Women Education and Empowerment

Improving female literacy and women's empowerment is essential for strengthening maternal and child health outcomes. Educated women are more likely to adopt healthy nutritional practices, seek maternal healthcare services, and ensure child immunization and healthcare utilization. Expanding girls' education, vocational opportunities, and women's decision-making roles can contribute significantly to long-term public health improvement.

10.5 Community-Based Nutrition Interventions

Community-based nutrition interventions should be introduced to address malnutrition among women and children in vulnerable communities. Local healthcare workers, nutrition specialists, and community organizations can provide nutritional supplements, maternal counseling, growth monitoring, and healthcare education programs. Such interventions can improve maternal

nutrition, reduce child malnutrition, and strengthen healthcare awareness at the grassroots level.

10.6 Improving Government Health Policies

The government should improve maternal and child health policies by increasing healthcare budgets, strengthening institutional coordination, and ensuring effective implementation of nutrition and healthcare programs. Public health policies should prioritize underserved regions of Balochistan and focus on reducing healthcare inequalities, food insecurity, and maternal-child mortality through sustainable and inclusive healthcare reforms.

11. Conclusion

Maternal nutrition and child survival remain among the most serious public health challenges in Balochistan, where poverty, malnutrition, weak healthcare systems, and social inequalities continue to threaten the wellbeing of women and children. The study demonstrates that maternal malnutrition, anemia, poor dietary intake, and limited healthcare accessibility significantly contribute to low birth weight, child malnutrition, stunted growth, and increased infant and child mortality. These health challenges are particularly severe in rural and underserved districts where healthcare facilities and nutrition support services remain limited.

The findings further reveal that maternal and child health outcomes in Balochistan are strongly shaped by broader socioeconomic determinants such as poverty, food insecurity, female illiteracy, unemployment, and poor sanitation. Women with limited education and healthcare awareness are less likely to access maternal healthcare services, follow balanced nutritional practices, or adopt proper child healthcare behaviors. Cultural and traditional barriers also continue to restrict women's healthcare accessibility in several communities, increasing maternal and child health vulnerabilities across the province.

The study also highlights the significant relationship between maternal nutrition and child survival. Poor maternal health conditions directly affect fetal growth, child immunity, cognitive development, and long-term wellbeing. Children born to malnourished mothers are more vulnerable to infections, developmental delays, and mortality during early childhood. The research therefore emphasizes that improving child survival requires greater attention to maternal healthcare, nutritional supplementation, breastfeeding awareness, and antenatal care services. Strengthening maternal nutrition can play a critical role in breaking intergenerational cycles of malnutrition and poor health outcomes in Balochistan.

Another important conclusion emerging from the study is the presence of major healthcare inequalities between rural and urban areas of the province. Rural populations face severe shortages of hospitals, trained healthcare workers, emergency maternal healthcare facilities, vaccination services, and clean drinking water. Weak healthcare infrastructure, geographical barriers, and poor policy implementation continue to undermine public health service delivery in remote districts. These disparities demonstrate the urgent need for region-specific healthcare policies and community-based interventions focusing on maternal and child health improvement in underserved areas.

In conclusion, improving maternal nutrition and child survival in Balochistan requires comprehensive and integrated policy responses addressing both healthcare and socioeconomic challenges. Expanding rural healthcare infrastructure, strengthening maternal healthcare services, improving female education, increasing nutrition awareness, and reducing poverty are essential for improving

maternal and child health outcomes. The study concludes that sustainable progress in maternal and child health can only be achieved through effective public health governance, targeted healthcare investments, and inclusive development strategies that prioritize vulnerable women and children across Balochistan.

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