

Infant & Child Mortality in Pakistan and its Determinants: A Review

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Abstract

Over the years, several developing countries have been suffering from high infant and child mortality rates, however, according to the recent statistics, Pakistan falls high on the list. Our narrative review of copious research on this topic highlights that several factors, such as complications associated with premature births, high prevalence of birth defects, lack of vaccination, unsafe deliveries, poor breastfeeding practices, complications during delivery, sudden infant death syndrome (SIDS), poor socioeconomic conditions, and a struggling healthcare system, have influenced these rates. Bearing in mind the urgency of addressing the increased infant and child mortality rate in Pakistan, multiple steps must be taken in order to prevent unnecessary deaths. An effective initiative could be spreading awareness and education among women, as a lack of education among women has been indirectly linked to increased child mortality in Pakistan across many researches conducted on the issue. Furthermore, the government should invest in healthcare by hiring more physicians and providing better supplies and improving infrastructure, especially in underdeveloped areas, to decrease child mortality due to lack of clean water and poor hygiene. Lastly, telemedicine should be made common in order to provide easy access to women who cannot visit the hospital.

Keywords

child mortality, infant mortality, SIDS, COVID-19, Pakistan

What do we already know about this topic?

Pakistan falls high on the list of child and infant mortality rates. Several factors have influenced these rates, including complications associated with premature births, high prevalence of birth defects, lack of vaccination, unsafe deliveries, poor breastfeeding practices, complications during delivery, sudden infant death syndrome (SIDS), poor socioeconomic conditions, and a struggling healthcare system.

How does your research contribute to the field?

In this review, we have summarized all authentic facts regarding child and infant mortality rates, along with the strategies that could help lower child and infant mortality rates. The findings of this study will help uncover all critical areas toward improving child and infant health.

What are your research's implications toward theory, practice, or policy?

It is crucial to take numerous steps to reduce child and infant mortality rates in Pakistan, such as stopping the dissemination of false information that affects the rate of EPI vaccination and raising awareness through HCWs and influencers. Moreover, training healthcare staff about proper breastfeeding practices is also necessary so that they can advise mothers about the proper techniques of breastfeeding and also how to prepare formula feeds if needed. In order to address socioeconomic issues, it is necessary that the government invest in the healthcare sector by providing better resources, hiring more physicians, and incentivizing necessary medications and supplements required during pregnancy. Lastly, investing in telemedicine may be beneficial to mothers who are unable to go to hospitals with suitable prenatal care assistance.



Introduction

The United Nations Children's Fund (UNICEF) describes child mortality rate as the likeliness of a child dying between birth to 5 years of age per 1000 livebirths.¹ Infectious diseases comprising of pneumonia, diarrhea, malaria, and several others, still remain a leading cause of child mortality worldwide.^{1,2} According to the Centers for Disease Control and prevention (CDC), a child is referred to as an infant before they turn 12 months of age, and the infant mortality rate (IMR) is the number of infant deaths for every 1000 livebirths.³ The World Health Organization (WHO) reports multiple methods on how the data for the estimation of IMR is retrieved including civil registration, census, and surveys.⁴ Birth defects, pre-term birth, malnutrition, Sudden Infant Death Syndrome (SIDS), and traumatic stress-causing injuries are just a few of the leading causes accounting for the IMR.^{3y}

Pakistan is one of the countries that has the highest mortality rate for children under-five, surpassing the global rate of 37 deaths per 1000 livebirths as of 2020, leading with a child mortality rate of 65.2/1000.^{5,6} Other third-world developing countries with high infant and child mortality rates include Yemen (60/1000), Afghanistan (58/1000), and India (33/1000).⁷⁻⁹ There is a huge gap in between when compared to the developed countries, with numbers on the other end of this scale: the United States of America (USA) (6.3/1000), Australia (3.7/1000), and Japan (2.5/1000).¹⁰⁻¹² Additionally, the rate of Pakistan's infant mortality (a subcategory of child mortality) also substantially surpasses the globally reported IMR of 26.7/1000 livebirths as of 2022, leading with 56.9/1000.^{13,14} After Pakistan, the countries with high rates include Afghanistan (46/1000), Yemen (42.2/1000), and India (27.7/1000).¹⁵⁻¹⁷ The recent 2022 report of IMRs from developed countries such as USA (5.5/1000), Australia (2.8/1000), Japan (1.6/1000), once again highlight the huge gap between the first- and third-world situations.¹⁸⁻²⁰

This review aims to evaluate and discuss the factors which contribute to the high Child and Infant Mortality Rates in Pakistan. Additionally, this review will also provide recommendations which can be implemented in order to control these rates and improve infant and child health.

Methods

This review discusses the relevant literature, including updated studies with respect to the child and infant mortality rates in Pakistan and the strategies to tackle the low infant mortality rates. We performed the literature search using databases such as PubMed and Google Scholar. The search terms used were "Child mortality," "Infant mortality," "SIDS," "COVID-19," and "Pakistan." External sources such as UNICEF, CDC, WHO, JPMA, and UNESCO were also used. Articles were selected on the basis of the inclusion criteria, which included original studies, systematic reviews, case studies, and reports from various organizations published in English. Exclusion criteria includes abstract only articles, editorials and articles published in languages other than English. Researchers cross-checked the data to avoid any discrepancies.

Discussion

Major Determinants of Child Mortality in Pakistan

The prevalence of poverty, coupled with lack of sanitation and health facilities, as well as lower levels of education, particularly among women, have contributed to a higher percentage of child mortality in Pakistan.²¹ Food insecurity, malnutrition, unhygienic living conditions, and a lack of access to health-care facilities are inevitable consequences of poverty.²¹

Neonatal death. The death of an infant within 28 days of birth is known as "neonatal death." Premature birth, low birth weight, and subpar size/height are 3 of the most prevalent causes of neonatal death.²² The term "premature birth" refers to the birth of a baby before 37 weeks of pregnancy.²² A premature baby may develop serious complications that can sometimes lead to death. The complications include: Respiratory Distress Syndrome (RDS), intraventricular hemorrhage (IVH), low birth weight (under 5 pounds, 8 ounces) leading to growth retardation,²³ and Necrotizing enterocolitis (NEC).²² As a result of their weak immune system, premature babies often have difficulty fighting off germs.

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Pneumonia, meningitis and sepsis may all lead to the death of a premature baby.²² Sepsis occurs when bacteria enter the body of an infant and start attacking its organs. The first point of infection in an infant is the newly cut umbilical cord, which is traditionally handled in an unsterilized manner. Additionally, the practice of applying harmful substances, such as surma, cow dung, ghee, and ash, to the umbilical cord of the new born, especially in the rural areas, can further exacerbate sepsis.²⁴

Birth defects. As the name implies, birth defects are structural or functional anomalies occurring during intrauterine life present at or before birth.^{22,25} Heart, lung, and neural tube defects are 3 of the most common severe birth defects.²⁵ There is a small number of birth defects caused by genetic abnormalities, such as chromosomal abnormalities (eg, Down syndrome and trisomy 21) or single gene defects (such as cystic fibrosis). There is also a correlation between advanced maternal age and abnormal intrauterine fetal development.²⁵ Consanguineous marriages are also linked to rare genetic defects, neonatal & childhood deaths, and intellectual disabilities.²⁵ The presence of environmental factors such as maternal infections, radiation, certain pollutants, nutritional deficiencies (insufficient folate and iodine intake), illness (maternal diabetes), or certain drugs (alcohol, phenytoin) can also result in these conditions.²⁵ It has been suggested that low income may be an indirect determinant of birth defects, with high prevalence among resource-constrained families and countries. Low- and middle-income countries account for approximately 94% of severe birth defects, which may be caused by inadequate nutritious foods for pregnant women, infection, alcohol exposure, or poor access to healthcare and screening.²⁵

Lack of vaccination. Around 70% of childhood deaths are due to infectious diseases, which can be attributed to the fact that only 58% of children at risk are vaccinated in Pakistan.²⁶ For decades vaccine hesitancy has been a huge challenge to counter in Pakistan. The EPI was introduced in Pakistan in 1978 to protect children against multiple childhood infections and diseases including TB, poliomyelitis, diphtheria, pertussis, tetanus and measles.²⁷ Despite such efforts, the vaccination rates in Pakistan remain alarmingly low due to misconceptions, traditional beliefs, and violence against vaccine providers.²⁸ Recently, however, good progress has been reported in Pakistan in an attempt to promote polio eradication which provides a hope for a better future for children in Pakistan.²⁸ It is still necessary to keep in mind that a huge chunk of population, especially those residing in the rural areas of Pakistan, does not report the vaccination status of their children, possibly contributing to the discrepancy in the statistics.²⁶

Unsafe deliveries & poor breastfeeding practices. High infant and maternal mortality rate in Pakistan are attributed to unsafe delivery practices, according to the Pakistan Medical

Association.²⁴ In rural areas where unhygienic practices and inexperienced midwives make non-hospital deliveries a danger, it can become a hazard to both the mother and the child.²⁴ Nearly half of all births are home-deliveries, and 72% of those are attended by untrained midwives or relatives.²⁴ It is unlikely that they will take any preventative measures to ensure that the baby survives because they lack the training and expertise of top pediatricians. Poor neonatal care, discarding of colostrum, failing to initiate breastfeeding, and failing to keep the baby warm are among the most common harmful homecare practices.²⁴ Childhood obesity and chronic diseases, both of which are associated with higher mortality rates in children, can be reduced through optimal and early initiation of breast feeding (BF).²⁹ Approximately 1.4 million child deaths and 44 million disability-adjusted life years are attributed to suboptimal breast milk intake.³⁰ Using data from the Pakistan Demographic and Health Survey 2017-2018, a recent cross-sectional study analyzed the association between BF and neonatal mortality (NM), infant mortality (IM), and under-5 mortality (U5M).³⁰ Based on the results of the study, it was found that BF was associated with a nearly 98% lower risk of NM, 96% lower risk of IM, and 94% lower risk of U5M.³⁰

Stillbirth and associated factors. Despite having implemented numerous programs in Pakistan to reduce the stillbirth rate, Pakistan was reported as having the highest rate of stillbirths among 186 countries by the end of 2015.³¹ Those at risk are uneducated women, people falling in the lowest wealth quintiles, those who are old, and those living in rural areas.³² Several causes of stillbirth have been identified by national surveys, including multiparity, preterm labor, antepartum hemorrhage (most significant risk factor), hypertensive disorders during pregnancy (preeclampsia and eclampsia), congenital malformations, prolonged ruptures of membranes, mismanagement of labor, and medical conditions like diabetes and heart diseases.^{33,34} There is a greater risk of neonatal death for infants with mothers who had complications during delivery, such as vaginal bleeding, fever, or convulsions.²⁴ A few studies have also linked male gender to neonatal mortality in Pakistan.³⁵ Biologically male children likely have a greater risk of infectious diseases because of immune deficiency, respiratory illness, and congenital malformations of the urogenital system that are caused by late maturation, resulting in a higher neonatal mortality rate.³⁶

Sudden infant death syndrome. A major cause of neonatal death is SIDS which is characterized by a number of disorders in the respiratory and cardiovascular systems, as well as abnormalities in the part of the brain controlling breathing and arousal.³⁷ There is a high incidence of SIDS among infants under the age of 1 year, and most of the events occur within the first 6 months of life. The risk of SIDS is influenced by both modifiable and non-modifiable factors. Male sex, sleep apnea, cardiovascular disease, respiratory disease,

and any abnormality in the brain stem come under non-modifiable risk factors.³⁸ A variety of cultural practices and variations are under the influence of modifiable risk factors for SIDS in developing countries such as Pakistan. These include: prone positioning, alcohol consumption, prematurity, being underweight, and the sharing of a bed with an adult.³⁹ There is also a significant association between SIDS risk and maternal factors, such as age below 20 years and smoking more than 10 cigarettes per day during pregnancy.⁴⁰ There is evidence that the human head is an important source of heat removal, and a high number of deaths in SIDS can be attributed to the covering of the head.⁴¹ Other related causes of SIDS, including poverty, inadequate knowledge about safety measures for infants, and traditional sleeping sets that do not meet international standards, have also been reported.³⁷

Other Factors

The issue of child mortality is also rooted in an interplay of socioeconomic factors as well as the state of available healthcare.

Several studies indicate that the likelihood of child mortality increases with a decrease in the level of education and empowerment of women, as well as their exposure to mass media.²¹ A well-educated woman is more likely to work actively, has a lower fertility rate secondary to contraceptive use, and has healthy and well-nourished children. Hygiene practices and preventive healthcare are expected to be better understood by them. Furthermore, they can take better care for themselves and their children ante- and post-partem.⁴² As a result of exposure to mass media, women are able to gain necessary and useful information regarding child vaccinations as well as adequate health facilities that children must have access to. This awareness helps mothers take good care of their children, which reduces the risk of child mortality.²¹

The level of education of the husband has an inverse relationship with the risk of child mortality. It is also important to note that educated fathers play a significant role in maintaining the health of their child due to awareness and ability to bear expenses of adequate childcare due to the greater likelihood of attaining a sustainable means of income. Similarly, even though the involvement of father in their child's daily care can lower mortality rates, many fathers may not participate much.⁴³

The household wealth index, in addition, has a negative correlation with child mortality. Households with higher incomes have better living standards and access to better healthcare, thus reducing the likelihood of child mortality. In contrast, low-income households are less likely to have access to health facilities and sanitation, hygienic toilets, and clean water than higher-income households.²¹

Poverty is a leading cause of many adversities in people's lives such as food insecurity, poor sanitation, lack of education and inaccessibility of healthcare that can cause complications for both the mother and the child.⁴⁴ The unaffordability

of various micronutrient supplements for expecting mothers not only puts them at risk of complications such as preeclampsia/eclampsia or pre-term labor, but can also lead to faulty organogenesis and various malformations such as neural tube defects due to folate and vitamin B12 deficiency.⁴⁵ Furthermore, inadequate nutrition in young children, associated with wasting and its associated effects on immunity, can make them susceptible to diseases such as diarrheal disease or pneumonia, which are leading causes of child mortality.^{46,47} High rates of child mortality have been associated with inadequate housing and poor sanitation. Children born into overcrowded homes with poor lavatory facilities and contaminated water supplies had a significantly higher mortality rate than those with better facilities owing to the greater risk of transmission of disease.⁴⁸ According to a study, 80% of the houses in rural areas had no pipe-borne water, of which 72% households had children suffering from diarrhea, many of whom did not receive appropriate advice or treatment.⁴⁴

Notably, Pakistan has struggled with developing its healthcare system to keep it afoot with the growing population. Even though expenditure on healthcare has increased over the years,⁴⁹ there are only 731 maternal and child health units, nearly 1201 hospitals, approximately 683 basic health units and a total bed capacity of only slightly above 123 000, as of 2017.⁵⁰ Pediatric Intensive Care Units (PICU) have always been scarce in number and understaffed, and there is also a lack of facilities such as thermal care or a proper referral system for sick infants. Unfortunately, plenty of these facilities are at inconvenient distances, which is also a contributor to child mortality rates.⁵¹ The number of midwives and nurses was 0.5/1000 individuals while there were only 1.1 physicians per 1000 individuals in 2019.⁵² The scarcity of above-mentioned resources as well as the lack of proper governance, ineffective policy making, and its poor implementation have prevented any development in the healthcare sector in Pakistan.^{53,54} Additionally, the lack of training results in the failure of healthcare providers to not only manage but also counsel mothers regarding maternal health risks,⁵⁵ neonatal risks and aspects of neonatal care such as vaccination, complementary feed and breastfeeding, all of which are often overlooked due to unawareness.⁵⁶ The Integrated Management of Newborn and Child Illness (IMNCI) issued by WHO to manage common conditions associated with child mortality in underprivileged areas also cannot be used due to the unawareness of HCWs.⁵⁷

The COVID-19 pandemic also introduced maternal and infant complications as a result of infection. In mothers with COVID-19, the incidence of complications such as preeclampsia, hypertension and infections were much higher which jeopardized their ability to take care of their child. Maternal deaths were also recorded in the same study, which meant children were deprived of maternal care and protection afforded by breastmilk. Similarly, infants born to COVID-19 positive mothers were at higher risk of greater severe perinatal morbidity and mortality index (SPMMI) and

a stay in NICU for 7 days or longer.⁵⁸ The pandemic has also increased the burden on the already inadequate healthcare facilities and workers, deprioritizing routine check-ups. There was increased hesitancy to prenatal and postnatal hospital visits due to increased anxiety brought on by fear of infection, financial constraints, and uncertainty revolving availability of obstetric care.⁵⁹ Unsurprisingly, a 23% reduction in PICU admissions was seen in 2020 as compared to 2018, and 44% reduction compared to 2019.⁶⁰

Another influence on child mortality are the societal norms surrounding stereotypical gender roles, where women are unable to seek help for themselves and their children due to being restricted to their household, as well as their lack of autonomy in terms of childbearing or their child's health.^{61,62}

The Gray Area

Owing to the poor record keeping system in Pakistan, inaccuracies and unavailability of data has been a sustained problem in the healthcare sector. This has resulted in several complications going undocumented.⁶³ A significant number of infant deaths are also undocumented, which means that official statistics are merely underestimates.^{64,65} Furthermore, the inadequate surveillance infrastructure has led to ineffective monitoring, and therefore management, of outbreaks of infectious diseases.⁶⁶ With a background of an already dire healthcare state, which enhances the risk of high child mortality.

A weak research system due to lack of experts, funding and attention has led to scarce literature on the root causes of issues such as child and maternal morbidity and mortality.⁶⁷ A major contributor to the lack of proper research is the attitude of doctors and other postgraduate personnel toward research, in Pakistan, as it may be considered tedious and there is inadequate training to help them achieve better progress.⁶⁸

The recent burden of COVID-19 also had a significant impact on infectious disease surveillance since it shifted the focus away from other prevalent diseases, which is detrimental in terms of predicting and limiting outbreaks, management, and therefore minimizing complications and mortality,⁶⁹ which may have exacerbated the gaps in child mortality reports.

Recommendations

The high child and infant mortality rates in Pakistan are a cause of concern and the issue needs to be dealt swiftly and effectively. The Pakistani Government, hospitals, and educational institutions all must play an important role in reducing child mortality.

As discussed above, the low vaccination rates of the country are a major reason for the high child mortality statistics and WHO estimates 1.5 million deaths occurring in children younger than 5 could be avoided through immunization.²⁶ Conspiracy theories and widespread misinformation along

with low literacy rates have led to the population being extremely hesitant if not hostile toward vaccination. Pakistan Electronic Media Regulatory Authority (PEMRA) has the authority to regulate and, if need be, even cancel media outlets licenses,⁷⁰ thus, PEMRA should warn media outlets on spreading false narratives and impose fines when they do so. This will lead to increased fact-checking and could help slow down the spread of false claims such as "Polio vaccines are a western plot."⁷¹ Additionally, hospitals, physicians and educational institutions should help raise awareness regarding the benefits of vaccination. Hospitals could incentivize parents by offering some deduction on the overall bill on their next visit to a pediatrician, this would raise immunization rates while encouraging regular checkups for infants and newborns. Moreover, physicians could raise awareness about the importance of vaccination among their own relatives which could be impactful as people are more likely to follow advice from trusted family members. Private schools could change their policies to only admit students who have been completely vaccinated, and issue warnings to parents of unvaccinated children. Countries like Italy enforced these laws in 2019, and children under 6 months were not allowed in schools while parents of older children had to pay fines if their child remained unvaccinated.⁷² This would cause more parents to get their children vaccinated while simultaneously reducing the risk of transmission as children in kindergarten and nurseries would be surrounded by other vaccinated children. Furthermore, at a local level influencers and religious leaders could also help by raising awareness on social media platforms about the benefits of vaccination and help combat the stigma surrounding them. Influencers have a huge following on social media and could reach a great number of people in a short time. In rural areas, religious leaders hold major influence and could encourage more people to vaccinate their children. These efforts are necessary because childhood vaccination rates are extremely low in Pakistan and the country has the third highest number of unvaccinated children, despite essential vaccines being free.⁷³

Breastfeeding reduces stunting in children and leads to overall healthier children, as established above, and studies estimate it could reduce the global healthcare burden by 300 billion USD.^{74,75} Despite the widespread benefits of breastfeeding, less than 50% of all babies are put on exclusive breastfeed.⁷⁵ Hospitals must educate their staff and must ensure physicians to promote breastfeeding over formula milk and only recommend formula milk if medical reasons warrant it. When formula milk is recommended, they must ensure that parents understand how to prepare it correctly and do not use unclean water which could make the baby sick. During routine checkups, pregnant women should be informed about the importance of colostrum, which is the mothers first milk and contains vital antibodies that protect newborns from many diseases.⁷⁴ Mothers should be taught about effective techniques to help them breastfeed like the cross-cradle position.⁷⁶ Governments should ensure

that private companies are giving female employees paid maternity leaves, have flexible hours, and have private rooms where mothers can comfortably breastfeed their babies.⁷⁵ Public campaigns targeting mothers and elderly family members are a must, who are more likely to conform to traditional beliefs, such as ghee and honey are better for newborn babies than the mother's own milk.⁷⁴

Infant mortality rates are notably higher when the mother is uneducated.⁷⁷ This correlation could stem from the fact that educated mother are more likely to ensure timely immunization, prefer breastfeeding rather than formula milk and are more likely to avoid harmful substances during their pregnancies. The country's socioeconomic status and certain cultural attitudes are a huge barrier to improving women literacy. The government could initiate programs like Take Home Rations (THR), which is dependent on conditions like parents sending their daughters to school and ensuring they are properly immunized.⁷⁸ THR would incentivize poor families who usually send their daughters to work as domestic helpers (cleaning and cooking for other people) to increase the family income. Furthermore, establishing more girls' only schools and hiring more female teachers could also improve female literacy rates, especially in rural areas. In regions where girls face security issues or long commuting times, online platforms like Zoom or Google Classrooms could be used to make education more accessible for them. Educational institutions could then teach young women about the importance of breastfeeding and vaccination and help raise better informed mothers in the future.

The Government must increase funding of the medical sector, to increase the availability of resources like beds, PICU, and thermal units. This would help address the scarcity of resources and understaffed hospitals, as studies estimate there are only 1.1 physicians per 1000 individuals and only 0.5 midwives and nurses per 1000 individuals.⁵² Increased funding to open additional medical colleges could also be beneficial as it would increase the number of available physicians in future. Increased medical personnel along with additional resources would lead to a higher number of children receiving timely and appropriate medical attention and would help reduce child mortality.

Special attention should also be given toward improving the water sanitation infrastructure by making investments, as this would help decrease the incidence of diarrhea which causes 53 000 child deaths each year in Pakistan.⁷⁹ The old, leaky rusted pipes should be replaced with new ones that carry clean water into people's homes directly, the number of water treatment plants should be increased and there should be improved maintenance of the existing ones. Clean drinking water along with improved sanitation could help reduce child mortality significantly as evident by a research study conducted in Nigeria, where after 10 years neonatal, post-neonatal and child deaths reduced by 31%, 41%, and 47% respectively.⁸⁰

The government must devise new and strict policies to prevent the rising costs of essential goods like food,

medicine, and formula milk. They could impose heavy fines on companies that try to purposely overcharge for such necessities. This is essential as many families reside below the poverty line in Pakistan and cannot afford the rising costs leading to poor nutritional status of children.⁸¹ In a bid to lower the costs, many mothers add more water to formula milk to make it last longer, this dilutes it, and the child often does not get the required amount of nutrients. Additionally, the water could also be contaminated and leads to illness like diarrhea.⁸² While the government has made some effort by launching the Ehsas program in 2020 to help poor income families with the economic crisis during the pandemic; more funding and additional programs are required to meet the nutritional requirements of children from low-income families.⁸³

Investments and increased utilization of Telemedicine would be extremely beneficial for a country like Pakistan, where 63% of the populations resides in rural areas.⁸⁴ Telemedicine would decrease commuting time and costs and make healthcare more accessible for pregnant mothers, who might find traveling difficult especially during third trimester. Governments would have to set up stable internet connections in rural areas and would have to train patients and doctors alike on how to correctly use digital health applications. Video communications would allow trained physicians to counsel midwives during home births and reduce the risk of maternal or child mortality. Furthermore, home-based fetal monitors could monitor newborns at home and reduce the number of antenatal and postnatal visits, while offering timely counsel if the mother or her baby require immediate medical attention.⁸⁵ Lastly, digital health applications could be used to remind mothers to take adequate amounts of folate and vitamins B12 and refrain from harmful substances during pregnancy.⁸⁵

Conclusion

To conclude, child and infant mortality rates in Pakistan are a great cause of concern, with rates being significantly higher compared to those of developed countries and even other third-world countries. The factors influencing these rates include complications associated with premature birth, complications during delivery, poor vaccination, unsterilized birth, substandard breastfeeding practices, stillbirth, and SIDS. In addition to the clinical causes, it is also imperative to consider socioeconomic factors, such as poverty, lack of hygiene and lower education rates among women, that add up to affect infant and child mortality in Pakistan. In order to lower these rates in Pakistan, it is imperative to take multiple actions like putting an end to the spread of fake news affecting EPI vaccination rates and spreading awareness through HCWs and influencers. Moreover, educating healthcare staff about proper breastfeeding practices is also necessary so that they can guide mothers about the proper techniques of breastfeeding and also how to prepare formula feeds if needed. Additionally, to deal with socioeconomic factors, it is necessary that the government invest in

the healthcare sector by providing better resources, hiring more physicians, and incentivizing necessary medications and supplements required during pregnancy. Lastly, investing in telemedicine can prove to be helpful in providing appropriate prenatal care guidance, especially to mothers who are unable to visit hospitals.

Author's Contributions

All authors contributed to the writing, interpretation, revision and approved the final draft of the manuscript.

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Ethics and Informed Consent Statement

Our study did not require an ethical board approval because it is a narrative review.

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