Original Research Article

Caring for Preterm Babies at Home: Challenges of Mothers in North-Eastern Ghana

.

ABSTRACT

|  |
| --- |
| **Background:** While many pregnancies progress normally, some result in preterm birth, a stressful and potentially life-threatening condition for both the mother and infant. Mothers of preterm babies often experience heightened psychological and emotional distress, compounded by challenges in caregiving after hospital discharge.**Objective**: This study explores the challenges faced by mothers in caring for preterm babies at home, particularly in relation to the trauma of preterm birth and the subsequent neonatal period.**Methodology:** An exploratory qualitative design was employed. Nineteen (19) mothers of preterm infants aged 2–24 months were purposively sampled. In-depth interviews were conducted, and data was analyzed using thematic content analysis.**Results**: Three major challenges emerged from the data: time constraints, confinement, and financial difficulties. Mothers expressed difficulties balancing childcare with daily responsibilities, limited social support, and financial strain due to reduced income-generating opportunities.**Conclusion**: The study highlights the significant burden mothers face in caring for preterm babies at home. Many struggle with inadequate family, social, and workplace support, which exacerbates the challenges of preterm infant care. Strengthening family and community support systems, as well as integrating targeted interventions into maternal and newborn care programs, is crucial to alleviating these challenges. |

***Keywords:*** *Preterm birth, maternal challenges, neonatal care, caregiving burden, Ghana*

1. INTRODUCTION

Many pregnancies progress normally, resulting in a healthy mother–infant relationship. However, the global incidence of preterm birth has risen, reaching approximately 16% in 2020 (WHO, 2023). Preterm birth, defined as delivery before 37 weeks of gestation, presents significant challenges for mothers, infants, and families (WHO, 2023). It is categorized as extremely preterm, very preterm, or moderately preterm based on gestational age and birth weight (WHO, 2023). Compared to full-term newborns, preterm infants exhibit reduced growth and development (Ohuma et al., 2023).

Neonates are further classified based on birth weight and associated physiological challenges, including Low Birth Weight (≤2,500 grams), Very Low Birth Weight (≤1,500 grams), Extremely Low Birth Weight (≤1,000 grams) (Tchamo et al., 2016). Infants within the 10th–90th percentiles on growth charts are categorized as appropriate for gestational age (AGA), those below the 10th percentile as Small-for-Date, and those above the 90th percentile as Large-for-Gestational-Age (Wang et al., 2016; McMurrugh et al., 2024). The shorter the gestational period, the higher the risk of complications (Wang et al., 2016). Due to these risks, preterm infants often require neonatal intensive care (Lawn et al., 2013).

Maternal health and the quality of healthcare systems are key determinants of preterm infant survival (Raju et al., 2014; Woodward et al., 2014). Factors such as mother–baby attachment, maternal coping ability, neonatal care resources, and skilled professionals play crucial roles in ensuring both maternal and infant well-being (WHO, 2013). Positive coping strategies benefit maternal and infant health (Wu et al., 2013), while maladaptive coping mechanisms may lead to adverse outcomes (Dardas & Ahmad, 2015). Healthcare professionals play a critical role in fostering effective maternal coping strategies in neonatal care units.

The birth of a preterm infant is stressful for mothers, requiring significant adjustments. Preterm infants discharged from hospitals need specialized care, and their mothers often experience distressing challenges, including disrupted bonding, anxiety, and fear of infant loss (Van der Hoeven et al., 2012). These psychological effects can reduce maternal confidence, affecting their ability to care for the infant (Korja et al., 2012). As a result, preterm infants may experience suboptimal growth and development due to inadequate mother–baby bonding.

Caring for a preterm infant at home is challenging and disrupts maternal social lives, necessitating continuous professional and community support (Boykova, 2016). Families face financial strain, affecting parenting (Lakshmanan et al., 2022). In Iran, Jamilah et al. (2013) found that strained relationships with NICU staff led to inadequate training before discharge, impacting mothers’ ability to care for their infants at home. Key challenges include diapering, bathing, umbilical cord care, feeding, skin-to-skin care, and interpreting infant cries (Raffray et al., 2014). Continuous caregiving affects mothers’ work and daily responsibilities (Gondwe et al., 2014). A study in Isfahan, Iran, found that mothers often felt uncertain about managing their infants post-discharge (Hemati et al., 2017). In Ghana, mothers of preterm infants face psychological, social, economic, cultural, physical, emotional, and informational challenges (Flacking et al., 2012).

Ghana’s infant mortality rate remains high at 36.3 deaths per 1,000 live births, compared to 4.3 in Australia and the UK (CIA, 2017). Neonatal mortality, a major contributor to this rate, is estimated at 28.4 per 1,000 live births (World Bank Group, 2012). Preterm birth accounts for 26% of neonatal deaths in Northern Ghana (Afagbedzi et al., 2023), with preterm infants being significantly more likely to die in their first month of life (Katz et al., 2013). Institutional records indicate that only 13.2% of neonatal deaths occur in healthcare facilities (Afagbedzi et al., 2023), suggesting that most neonatal deaths happen at home (Dare et al., 2021). This raises concerns about post-discharge parental caregiving practices.

Given the link between coping strategies and infant outcomes, understanding the challenges faced by mothers of discharged preterm infants is essential. Limited research exists on the experiences of mothers caring for preterm infants post-discharge in the Bolgatanga Municipality. This study explores the challenges mothers encounter after their preterm infants are discharged from the hospital.

2. methodology

**2.1 Study Location**

This study was conducted in Bolgatanga Municipality, the capital of the Upper East Region of Ghana. The municipality is one of the fifteen (15) administrative districts in the Region. It is bordered by Bongo District to the north, Talensi District to the south, Nabdam District to the east, and Kassena-Nankana Municipal to the west. Covering an area of approximately 4,220 square kilometers, it constitutes 35.1% of the total land area of the Upper East Region. The municipality has a total population of 131,550 with a fertility rate of 3.0 (Ghana Statistical Service et al., 2015).

Various health interventions have been implemented to improve newborn survival in the Municipality, including the Essential Newborn Care Program initiated by UNICEF (2012) and the Mother and Baby Friendly Health Facility Initiative (GHS, 2016).

**2.2 Study Design**

This study employed a qualitative exploratory design to examine the challenges faced by preterm mothers in providing care at home, the challenges they face and the coping strategies employed.

**2.3 Sampling and Sample Size**

A purposive sampling technique was used to recruit mothers whose preterm babies had been admitted to the neonatal care unit at the Bolgatanga Regional Hospital and were subsequently discharged. Inclusion criteria were mothers aged 18 years and older who had a preterm baby (<37 weeks gestation) discharged from the hospital and were willing to participate. This aligns with Roberts (2014), who noted that individuals aged 18 and above can legally provide consent for research participation. Mothers of preterm babies who had died were excluded.

A total of 34 mothers who met the inclusion criteria were approached by the second author. They were individually informed about the study’s purpose, and a list of their names and telephone numbers was compiled. Mothers were given two weeks to decide on participation. After follow-up, 19 mothers consented to participate. Reasons for non-participation included unavailability for interviews and personal constraints. Data saturation was reached at the sixteenth interview, and three additional interviews were conducted to confirm that no new themes emerged.

**2.4 Data Collection Instruments**

Two main data collection instruments were used. First, a short questionnaire was used to collect socio-demographic characteristics, including maternal age, education level, parity, and household composition. Second, a topic guide was developed based on literature review to gather qualitative data on challenges faced by mothers in the care of their preterm infants. Topic guides serve as structured outlines for qualitative interviews, ensuring consistency in data collection.

**2.5 Data Collection Method**

In-depth interviews were conducted with all 19 participants using an open-ended topic guide. Each interview lasted between 20 and 30 minutes and was conducted in either English or 'Frafra,' the predominant local language in Bolgatanga Municipality. Interviews were conducted privately in participants’ homes to ensure confidentiality. The researcher conducted all interviews, while a research assistant took field notes. All interviews were audio-recorded using a digital voice recorder.

**2.6 Data Analysis**

A thematic content analysis approach was employed, allowing for systematic navigation between empirical data and theoretical concepts. Audio recordings in both 'Frafra' and English were transcribed by the second author and cross-checked by first and third authors. Transcripts were imported into QSR NVivo 11 software for coding and analysis. Data were systematically coded to identify themes, and coding continued until theoretical saturation was reached, ensuring no new concepts emerged. Verbatim quotations from the interview transcripts were included where necessary to illustrate key themes.

3. results and discussion

**3.1 Background of Participants**

Nineteen mothers with preterm babies participated in this study. Their ages ranged from 18 to 41 years, with the majority (42.1%) in the 18–25 age group. Eighteen (94.7%) were biological mothers, while one was a foster mother. The gestational ages of their children at birth ranged from 23 to 34 weeks, and their postnatal ages were between 2 and 24 months. The majority of the mothers (57.9%) had no formal education. Most participants (89.5%) were married, while 10.5% were single mothers. Regarding employment status, 57.9% were unemployed, some were self-employed, and only one mother had formal employment.

**3.2 Challenges in Caring for Preterm Babies**

A few mothers indicated that they did not face major challenges due to the strong family support they had. However, majority of reported experiencing significant difficulties in caring for their preterm babies. The main challenges included time constraints, confinement, and financial difficulties.

***3.2.1 Time Constraints***

Most participants expressed that caring for a preterm baby demands a significant amount of time, affecting their daily routines. This challenge was particularly pronounced among traders, who wished they could return to work, as they did not benefit from maternity leave packages.

A 29-year-old mother described her experience:

Taking care of my preterm baby interferes with my daily activities whenever there is no one to assist.

Another mother, a 26-year-old housewife, elaborated on the time-intensive nature of preterm care:

Hmmmm… caring for a preterm baby is very challenging… one has to express breast milk for top-up breastfeeding and always maintain infection prevention measures, which consumes a lot of time.

A 24-year-old mother, who also assists her husband on the farm, shared:

The main challenge is that the preterm baby needs more attention, and this hinders some of my working activities, for instance, helping my husband on the farm.

***3.2.2 Confinement***

Several mothers indicated that caring for a preterm baby led to confinement, either due to prolonged stays in the Neonatal Intensive Care Unit (NICU) or the need for continuous care at home. This was particularly challenging for mothers whose babies had additional health complications, requiring extended hospital stays, or for those who lacked family and community support.

A 30-year-old mother recounted her experience:

It is very challenging because this baby made me go through a lot… I stayed in the NICU for six months.

Another participant, a 27-year-old trader, lamented:

I wish I could go out to work to help take care of my children, but it is impossible because of this baby. Confinement is my main headache.

***3.2.3 Financial Challenges***

Many mothers reported financial difficulties in caring for their preterm babies at home. The demands of care limited their ability to engage in income-generating activities. Aside from a few mothers who had strong family financial support, most found it challenging to meet financial demands.

A 25-year-old mother, who had to stop trading, shared her struggles:

At first, I used to go out to trade, but now I cannot anymore, so it brings hardship.

Another participant, a 28-year-old mother, recounted:

I used to sell items, but I have stopped so that I can have enough time for my baby. This affects me financially because no income is generated. It is only my husband who goes to work to earn some money to support the family, but it is not enough.

Conversely, a 32-year-old mother who had financial support described a different experience:

Not really… even though we spend, it does not affect me much because we had prepared well for the birth of the baby. So, we have enough to take care of the baby.

Similarly, another mother expressed:

No economic effect. I do not work, but my husband and his family support me in taking care of the babies. In fact, they are doing very well; I don’t lack anything.

These findings highlight the varied experiences of mothers in caring for preterm babies, with some benefiting from strong family support while others struggle with time constraints, confinement, and financial hardships.

**4. Discussion**

Caring for a preterm baby presents significant challenges for mothers, particularly in resource-limited settings such as North-Eastern Ghana. This study identified three major difficulties: time constraints, confinement, and financial struggles. These findings align with existing literature, which highlights the multifaceted burdens of preterm care, including psychological, social, economic, cultural, and emotional challenges (Flacking et al., 2012). However, the current study provides a contextual understanding of these difficulties, emphasizing how local economic conditions, cultural expectations, and healthcare system constraints shape the experiences of mothers caring for preterm infants at home.

One of the primary challenges mothers reported was the significant time commitment required for preterm care. Participants expressed concerns about how the constant attention and care required by their infants interfered with their daily responsibilities, particularly economic activities. This finding is consistent with studies that have shown that preterm birth often disrupts maternal routines, particularly for women engaged in informal trading or subsistence farming (Gondwe, Munthah, Ashorn & Ashorn, 2014). Unlike women in settings where paid maternity leave is available, many Ghanaian mothers in informal employment must return to work shortly after childbirth to sustain their livelihoods. The absence of structured support systems further exacerbates this burden (Apedani et al., 2021), forcing many mothers to make difficult choices between childcare and economic survival.

Healthcare providers and policymakers must recognize this burden and develop interventions that enable mothers to balance childcare with economic responsibilities. Possible strategies include establishing community-based support networks where trained health workers assist mothers with preterm baby care, allowing them some flexibility to engage in economic activities (Olaniran et al., 2019). Additionally, education on time management and caregiving strategies tailored to mothers of preterm infants could be beneficial (Apedani et al., 2021).

Many mothers in this study described a sense of confinement due to their caregiving responsibilities. For some, extended stays in the Neonatal Intensive Care Unit (NICU) meant prolonged separation from family and community, while others felt isolated at home due to a lack of support. Research has shown that prolonged hospitalization of preterm infants can be emotionally draining for mothers, leading to heightened stress, anxiety, and even postpartum depression (Lakshmanan et al., 2017).

In the Ghanaian cultural context, new mothers often rely on extended family and community networks for support. However, in the case of preterm infants, fear of infections and special care requirements may limit traditional caregiving practices (Buys & Gerber, 2021), leaving mothers without the usual communal assistance. This situation underscores the need for targeted psychosocial interventions, such as peer support groups and counseling services, to address feelings of isolation and emotional distress (Shalaby & Agyapong, 2020). Furthermore, policies should be considered to enable mothers to stay with their infants in NICU settings under better conditions, reducing the stress associated with extended hospital stays (Apedani et al., 2021).

The financial strain of caring for a preterm baby was another critical challenge highlighted in this study. The inability to work, coupled with increased healthcare costs, created economic hardships for many mothers. This finding aligns with research indicating that families with preterm infants often face increased medical expenses, transportation costs to healthcare facilities, and the need for specialized nutrition and care (Lakshmanan et al., 2021). In Ghana, where many families rely on daily income from informal employment (Haug, 2014), the additional financial burden of preterm care can be overwhelming.

Although some mothers in the study reported having sufficient family support, many others struggled to meet the financial demands of childcare. This highlights the urgent need for social protection policies that can provide financial relief to families caring for preterm infants. Government and non-governmental organizations should explore initiatives such as conditional cash transfers, subsidized healthcare costs, or microfinance opportunities tailored to mothers of preterm infants (Glassman et al., 2013). Additionally, strengthening the implementation of the National Health Insurance Scheme (NHIS) to ensure comprehensive neonatal care coverage would be a vital step in mitigating the financial burden on affected families (Christmals et al., 2020).

This study provides valuable insights into the lived experiences of mothers caring for preterm infants in a resource-limited setting, contributing to the limited body of literature on neonatal care challenges in Ghana. The use of in-depth interviews allowed for a rich exploration of participants' perspectives, ensuring that the findings accurately reflect their realities. However, the study has some limitations. The sample was limited to mothers from one municipality, which may restrict the generalizability of the findings to other regions of Ghana or similar low-resource settings. Additionally, the study did not assess the perspectives of fathers or other family members, whose involvement may influence maternal experiences of preterm care. Future research should explore the role of broader family and community support in neonatal care, as well as the long-term economic and psychological impacts of caring for a preterm infant.

The findings of this study underscore the need for multi-level interventions to support mothers in caring for preterm infants. Healthcare providers should offer tailored counseling and education on managing preterm care at home, while policymakers should strengthen social support systems, financial aid programs, and community-based neonatal care initiatives. Public health campaigns to raise awareness about the challenges of preterm care and mobilize community support could also play a crucial role in reducing the burden on mothers.

5. Conclusion

Mothers caring for preterm infants in North-Eastern Ghana face significant challenges, including time constraints, confinement, and financial hardships. These difficulties have far-reaching implications for maternal well-being and the overall health of preterm infants. Addressing these challenges requires a comprehensive approach involving healthcare professionals, policymakers, and community stakeholders to ensure that mothers receive the necessary support to provide optimal care for their babies. Future research should continue to explore innovative strategies to enhance the well-being of both mothers and preterm infants in resource-limited settings.

Ethical approval (where ever applicable)

Ethical approval for the study was obtained from the Ghana Health Service Ethics Review Committee (GHS-ERC: 061/12/17). Further approval was granted by the Upper East Regional Health Directorate and the Medical Director of the Bolgatanga Regional Hospital. Informed consent was obtained from all participants before data collection. Participants were assured of their right to voluntary participation and withdrawal at any time without consequences. To ensure inclusivity, mothers who were unable to sign provided consent via thumb-printing. Confidentiality was guaranteed through private interview settings and careful handling of all collected data.

References

Afagbedzi, S. K., Alhassan, Y, Alangea, D. O. and Taylor, H. (2023) Maternal factors and child health conditions at birth associated with preterm deaths in a tertiary health facility in Ghana: A retrospective analysis. Front. Public Health 11:1108744. doi: 10.3389/fpubh.2023.1108744

Apedani, D. B., Koduah, A. Druye, A. A., Ebu, N. I. (2021). Experiences of mothers with preterm babies on support services in Neonatal Intensive Care Unit of a mission hospital in Ghana. International Journal of Africa Nursing Sciences, 15,

Boykova, M. (2016). Life After Discharge: What Parents of Preterm Infants Say about their Transition to Home. Newborn and Infant Nursing Reviews.16 (2),58-65

Buys, K. & Gerber, B., 2021, ‘Maternal experiences of caring for preterm infants in a vulnerable South African population, Health SA Gesondheid 26(0), a1549. https://doi.org/10.4102/ hsag.v26i0.1549

Central Intelligence Agency. (2017). The World Factbook (Publication no. https://www.cia.gov/library/publications/resources/the-worldfactbook/geos/uk.html).

Christmals, C. D., & Aidam, K. (2020). Implementation of the National Health Insurance Scheme (NHIS) in Ghana: Lessons for South Africa and Low- and Middle-Income Countries. Risk management and healthcare policy, 13, 1879–1904. https://doi.org/10.2147/RMHP.S245615

Dardas, L. A. & Ahmad, M. M., 2015, ‘Coping strategies as mediators and moderators between stress and quality of life among parents of children with autistic disorder’, Stress and Health 31(1), 5–12. https://doi.org/10.1002/smi.2513

Dare, S., Oduro, A. R., Owusu-Agyei, S., Mackay, D. F., Gruer, L., Manyeh, A. K., Nettey, E., Phillips, J. F., Asante, K. P., Welaga, P., & Pell, J. P. (2021). Neonatal mortality rates, characteristics, and risk factors for neonatal deaths in Ghana: analyses of data from two health and demographic surveillance systems. Global health action, 14(1), 1938871. https://doi.org/10.1080/16549716.2021.1938871

Flacking, R., Lehtonen, L., Thomson, G., Axelin, A., Ahlqvist, S., Moran, V. H., & the SCENE group (2012). Closeness and separation in neonatal intensive care. Acta Paediatrica 101(10), 1032–1037.

Ghana Health Service (2016). Mother and Baby Friendly Health Facility Initiative: Upper East Region, Ghana. Ghana Statistical Service, (2015). 2010 population census, district analytic report of Bolgatanga Municipalilty: Accra Ghana.

Glassman, A., Duran, D., Fleisher, L., Singer, D., Sturke, R., Angeles, G., Charles, J., Emrey, B., Gleason, J., Mwebsa, W., Saldana, K., Yarrow, K., & Koblinsky, M. (2013). Impact of conditional cash transfers on maternal and newborn health. Journal of health, population, and nutrition, 31(4 Suppl 2), 48–66.

Gondwe, A., Munthali, A.C., Ashorn, P. &Ashorn, U. (2014). Perception and experiences of community members on caring for preterm newborns in rural Mangochi, Malawi; a qualitative study. BMC Pregnancy Childbirth; Dec.2; 14(1); 399

Greeff, M., Kruger, A., & Van der Hoeven, M. (2012). Differences in health care seeking behaviour between rural and urban communities in South Africa.

Haug, J. (2014). Critical Overview of the (Urban) Informal Economy in Ghana. Friedrich Ebert Stiftung Ghana Office

Hemati, Z., Namnabati, M., Taleghani, F. & Sadegnia, A. (2017). Mothers’ challenges after Infants’ Discharge from Neonatal Intensive Care Unit. A Qualitative study. Iranian Journal of Neonatology. 8(1).doi:10.22038/ijn.2017.15546.1174.

Jamilah, M., Mahnaz, J., Susan, V. &Jalil, B. (2013). Mothers’ experience of having a preterm infant in the Neonatal Intensive Care Unit, a Phenomenological Study. Iran J Crit Nur, 5(4) 172-181

Katz, J., Lee, A. C., Kozuki, N., Lawn, J. E., Cousens, S., Blencowe, H., . . . Willey, B. A. (2013). Mortality risk in preterm and small-for-gestational-age infants in low-income and middle-income countries: a pooled country analysis. The lancet, 382(9890), 417-425.

Korja, R., Latva, R., & Lehtonen, L. (2012). The effects of preterm birth on mother–infant interaction and attachment during the infant's first two years. Acta obstetricia et gynecologica Scandinavica, 91(2), 164-173.

Lakshmanan, A., Song, A. Y., Belfort, M. B., Yieh, L., Dukhovny, D., Friedlich, P. S., & Gong, C. L. (2022). The financial burden experienced by families of preterm infants after NICU discharge. Journal of perinatology : official journal of the California Perinatal Association, 42(2), 223–230. https://doi.org/10.1038/s41372-021-01213-4

Lawn, J., E., Mary, V. K, Behzan, J. M., Elizabeth, M. M., Lori, M., Jim, L. …& Christopher, P. H. (2013). Born Too Soon: Care for the preterm baby. Reproductive Health, 10(1) 9.

McMurrugh, K., Vieira, M. C., Sankaran, S. (2024). Fetal macrosomia and large for gestational age. Obstetrics, Gynaecology and Reproductive Medicine, 34 (3): 66 – 72

Ohuma, Eric O et al. (2024). National, regional, and global estimates of preterm birth in 2020, with trends from 2010: a systematic analysis. The Lancet, 402, 1261 - 1271

Olaniran, A., Madaj, B., Bar-Zev, S., van den Broek, N. (2019). The roles of community health workers who provide maternal and newborn health services: case studies from Africa and Asia: BMJ Global Health, 4:e001388.

Raffray, M., Osorio, S., Ochoa, S.C., & Semenic, S. (2014). Barriers and facilitators to preparing families with premature infants for discharge home from the neonatal unit; Perceptions of health care providers. Investigation & Education Enfermeria; 32(3): 379-392.

Raju, T.N., Mercer, B.M., Burchfield, D.J. & Joseph Jr, G.F., (2014), ‘Periviable birth: Executive summary of a joint workshop by the Eunice Kennedy Shriver National Institute of Child Health and Human Development, Society for Maternal-Fetal Medicine, American Academy of Pediatrics, and American College of Obstetricians and Gynecologists’, American Journal of Obstetrics and Gynecology 210(5), 406–417. <https://doi.org/10.1016/j.ajog.2014.02.027>.

Roberts, L.W. (2014) 'Informed consent and the capacity for voluntarism', American Journal of Psychiatry 159(5), 705-712. <https://doi.org/10.1176/appi.ajp.159.5.705>

Shalaby, R. A. H., & Agyapong, V. I. O. (2020). Peer Support in Mental Health: Literature Review. JMIR mental health, 7(6), e15572. <https://doi.org/10.2196/15572>

Tchamo, Mario & Prista, António & Leandro, Carol. (2016). Low birth weight, very low birth weight and extremely low birth weight in African children aged between 0 and 5 years old: a systematic review. Journal of developmental origins of health and disease. 1: 1-8. 10.1017/S2040174416000131

United Nations Children's Fund (2012). Essential Newborn Care: Upper East Region, Ghana.

Wang, X., Zhu, J., Guo, C., Shi, H., Wu, D., Sun, F., Shen, L., Ge, P., Wang, J., Hu, X., Chen, J., & Yu, G. (2018). Growth of infants and young children born small for gestational age: growth restriction accompanied by overweight. The Journal of international medical research, 46(9), 3765–3777. <https://doi.org/10.1177/0300060518779305>

Woodward, L.J., Bora, S., Clark, C.A., Montgomery-Hönger, A., Pritchard, V.E., Spencer, C. et al. (2014). ‘Very preterm birth: Maternal experiences of the neonatal intensive care environment’, Journal of Perinatology 34(7), 555. https://doi.org/10.1038/ jp.2014.43

World Bank Group. (2012). World Development Indicators 2012: World Bank Publications.

World Health Organization (2013). Counselling for Maternal and Newborn Health Care: A Handbook for Building Skills. Geneva: World Health Organization; 2013. 11, POSTNATAL CARE OF THE MOTHER AND NEWBORN. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK304191/>

World Health Organization (2023). Preterm birth. World Health Organization. Available at: <https://www.who.int/news-room/fact-sheets/detail/preterm-birth>

Wu, L.M., Sheen, J.M., Shu, H.L., Chang, S.C. & Hsiao, C.C., 2013, ‘Predictors of anxiety and resilience in adolescents undergoing cancer treatment’, Journal of Advanced Nursing 69(1), 158–166. <https://doi.org/10.1111/j.1365-2648.2012.06003.x>