Knowledge and Perception Birth Injuries among Women of Childbearing Age in Nnewi, Anambra State: A Cross-Sectional Study

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ABSTRACT

Background: Childbirth is a significant event for women of childbearing age. While it can be a joyful experience, it can also be accompanied by injuries that can have short- and long-term effects on a woman's physical and mental well-being. This study aimed to investigate the knowledge and perception of women of childbearing age concerning birth injuries and their predisposing factors.

Methods: This was a cross-sectional study involving 193 women of childbearing age recruited from Nnewi North, Anambra State. Spearman rank correlation and Mann-Whitney U tests were used to analyze data.

Results: This study involved 192 participants, 76.7% aged 15–23 years and 22.8% aged 24–29 (22.8%). Most participants were single (98.4%) and had not given birth (90.7%). Social media (61.66%) and school/training programs (57.51%) were the primary sources of information. Most participants (84.5%) knew about birth injuries, and 94.8% believed that they could be prevented. Most participants recognized the risk factors (97.4%) and consequences (95.9%) of birth injuries. Approximately 54.4% perceived birth injuries as not having a permanent cure, and 69.9% understood predisposing factors. Age and number of offspring did not significantly affect knowledge or perception of birth injuries ($P>0.05$).

Conclusions: There is a need to improve awareness to stimulate improved knowledge and perception of birth injuries. This may translate to better prevention measures against complications with birth injuries and better acceptance of the affected children by women of childbearing age.

Keywords: Birth injuries; Neonatal trauma: Childbearing age; Predisposing factors; Maternal health

BACKGROUND

Childbirth is a crucial and life-changing experience for women worldwide, marking the beginning of the mother-child relationship [1]. While childbirth is often eagerly anticipated, it is associated with risks and complications [2]. Birth injuries, which refer to physical harm sustained by either the mother or child during labor and delivery, are a significant concern [3]. When birth injuries occur to the child, it is often referred to as neonatal birth trauma, ranging from minor bruises to more severe conditions such as fractures [4].

These injuries predominantly occur during the second stage of labor because of contractions, twisting, and the delivery process [5,6]. Additionally, birth injuries can result from obstetric interventions, further highlighting the complexity of these occurrences [7]. Moreover, birth trauma can occur even with optimal obstetric care and

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in the absence of risk factors [8]. The global impact of birth injuries is profound, with some studies reporting >600,000 neonatal deaths and 1.3 million stillbirths annually owing to intrapartum complications during labor and delivery [9–11]. Fractures (58.8%), brachial plexus injuries (38.8%), and cerebral palsy (2.4%) are the most common birth injuries that occur in Nigeria. Among fractures, clavicle fractures accounted for 46%, followed by femoral (24%), humeral (22%), and radial/ulnar fractures (8%). Brachial injuries included Erb's palsy (93.9%) and Klumpke's palsy (6.1%) [12].

Birth injuries, though often unintentional, can result from various predisposing factors related to maternal health, the birthing process, or the newborn's characteristics [13]. Infants born with macrosomia, defined as a birth weight >4 kg, have a higher risk of neonatal injuries [14]. Their larger size can complicate delivery, potentially causing injuries like shoulder dystocia or fractures [15]. Maternal health conditions, such as gestational diabetes and obesity, can predispose newborns to macrosomia, leading to difficult deliveries [16]. Prolonged labor can increase neonatal injury risk, often requiring medical interventions like vacuum extraction or forceps delivery, which have risks [17,18]. Improper use of these instruments can result in trauma to the baby's head, face, or body [18]. Malpresentation, such as breech or transverse positions, also increases injury risk, necessitating more complex deliveries [19,20].

Carrying multiple fetuses increases the risk of neonatal injuries owing to the likelihood of preterm birth [21,22]. Teenage mothers may have smaller pelvises, while older mothers may have reduced uterine elasticity [23]. Previous childbirth injuries increase the risk of similar issues in future pregnancies [24]. Lifestyle factors such as smoking, substance abuse, and inadequate prenatal care increase injury risks [25]. Women of childbearing age (15–49 years) are at a crucial phase for experiencing motherhood [26]. Their knowledge of neonatal injuries impacts pregnancy choices, healthcare behaviors, and decision-making during labor [27,28].

Knowledge gaps among women of childbearing age about neonatal injuries can lead to adverse outcomes. Misunderstandings about risks, prevention, or warning signs may delay interventions, causing birth injuries. Accurate knowledge empowers women to make informed decisions and engage in prenatal care, reducing neonatal injuries. Evaluating their knowledge and perceptions is crucial for improving maternal and neonatal health. This study aimed to investigate the knowledge and perception of women of childbearing age concerning birth injuries and their predisposing factors.

METHODS

Aim, design, and setting

This study aimed to investigate the knowledge and perception of women of childbearing age concerning birth injuries and their predisposing factors. A cross-sectional design was employed, conducted in Nnewi North, Anambra State, Nigeria. The study took place in various community settings, including health centres, markets, and educational institutions, from January to June 2024.

Characteristics of participants

The study included 193 women of childbearing age (15–49 years) residing in Nnewi North. Participants were recruited using convenience sampling. The inclusion criteria were women who (1) were within the specified age range, (2) resided in the study area, and (3) consented to participate in the study. Exclusion criteria were women with severe mental health issues that could impair their ability to provide informed consent or participate in the survey.

Description of processes and interventions

Ethical approval was obtained from the Ethical Review Committee of Nnamdi Azikwe University, Nnewi Campus, and it was conducted following the Declaration of Helsinki. Data were collected using a structured questionnaire developed based on a literature review and expert input. The questionnaire comprised sections on demographic information, knowledge about birth injuries, perceptions of birth injuries, and sources of information. The questionnaire was pretested with a small sample to ensure clarity and reliability.

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Participants were approached in public areas and invited to participate in the study. After obtaining informed consent, trained research assistants administered the questionnaire in a face-to-face interview format. The research assistants were trained to ensure consistency in administering the questionnaire and answering any questions participants had.

Statistical analysis

Data were analyzed using SPSS version 25. Descriptive statistics, such as frequencies, percentages, means, and standard deviations, were used to summarize the data. Mann–Whitney U test was used to assess the influence of age and number of offspring on the knowledge and perception of birth injuries and their predisposing factors. Statistical significance was set at $P<0.05$.

RESULTS

This study comprised 193 participants, with 76.7% aged 15–23 years and 22.8% aged 24–29. Regarding marital status, 98.4% were single, 1.0% were married, and 0.5% were widowed. Most participants had not experienced childbirth (90.7%), and among those who had, a few had children, with 50.3% having none, 10.4% having one child, 1.0% having two children, and 0.5% having three children. The most prevalent source of information among the participants was social media (61.66%), followed by school or training programs (57.51%), medical textbooks (56.48%), hospitals (47.15%), and family members (33.16%) (Figure 1).

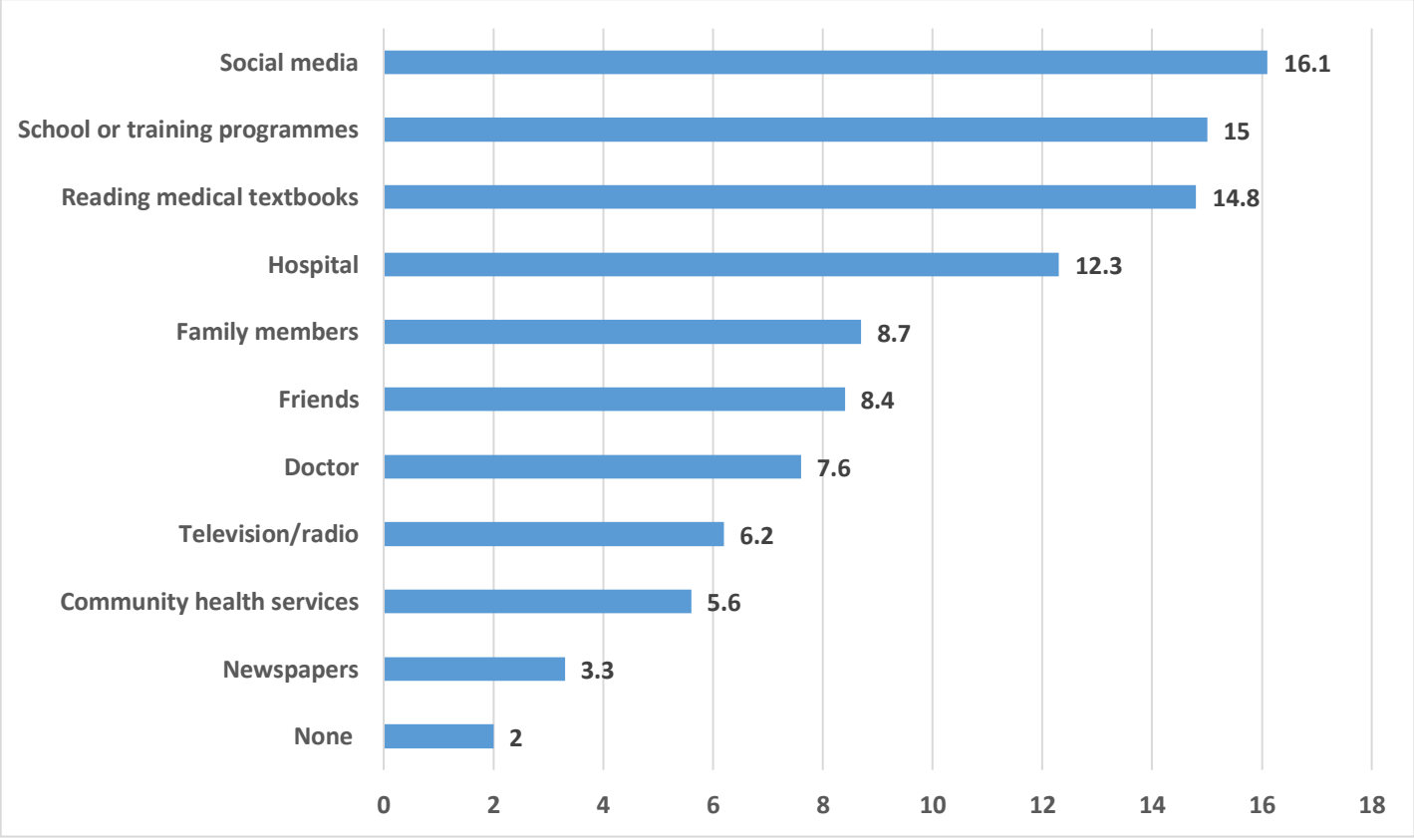

Figure 1. Sources of information on knowledge and perception about birth injuries and their predisposing factors

Most participants (84.5%) knew what a birth injury is, and 72.0% knew some common birth injuries (Table 1). Additionally, 94.8% of the participants believed that birth injuries could be prevented, and 97.4% recognized that there are risk factors that may increase the likelihood of a birth injury. When asked if birth injuries refer to any harm or damage that occurs to a baby during the birthing process, 93.3% of respondents answered affirmatively. Furthermore, 95.9% understood that birth injuries could lead to long-term disabilities or health issues for the child. Approximately 69.9% of the participants had heard of predisposing factors that could contribute to birth injuries.

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Table 1. Knowledge of the participants regarding birth injuries and their predisposing factors

Knowledge assessment	No (%)	Yes (%)
Do you know what a birth injury is?	30 (15.5)	163 (84.5)
Do you know some common types of birth injuries?	54 (28.0)	139 (72.0)
Can birth injuries be prevented?	10 (5.2)	183 (94.8)
Are there risk factors that may increase the likelihood of a birth injury?	5 (2.6)	188 (97.4)
Do birth injuries refer to any harm or damage that occurs to a baby during the birthing process.	13 (6.7)	180 (93.3)
Birth injuries can lead to long-term disabilities or health issues for the child.	8 (4.1)	185 (95.9)
Have you heard of predisposing factors that can contribute to birth injuries	58 (30.1	135 (69.9)
Is a prolonged labor considered a predisposing factor for birth injuries	18 (9.3)	175 (90.7)
Does the position of the baby during labor play a role in the likelihood of birth injuries	5 (2.6)	188 (97.4)
Can maternal health conditions, such as diabetes or high blood pressure, increase the risk of birth injuries	24 (12.4)	169 (87.6)
Does a history of previous birth injuries or difficult deliveries in the family increase the likelihood of birth injuries in subsequent birth	48 (24.9)	145 (75.1)
Can certain birthing complications, such as shoulder dystocia, be a predisposing factor for birth injuries	24 (12.4)	169 (87.6)
Can using certain medications during predispose one to birth injuries	16 (8.3)	177 (91.7)
Do you know methods that prevent birth injuries during childbirth	84 (43.5)	109 (56.5)
Is proper prenatal care important in preventing birth injuries	4 (2.1)	189 (97.9)
Can certain birthing positions help reduce the risk of birth injuries	5 (2.6)	188 (97.4)
Can healthcare providers to monitor the progress of labor and make adjustments to reduce the risk of birth injuries	5 (2.6)	188 (97.4)
Are there exercises or techniques that pregnant individuals can do to potentially reduce the risk of birth injuries	11 (5.7)	182 (94.3)
Are there rehabilitation and treatment options available for infants who have sustained birth injuries	9 (4.7)	184 (95.3)

Approximately 54.4% of the participants believed that birth injuries had no permanent cure, 3.1% believed that birth injuries were caused by witchcraft, 2.6% believed that birth injuries were hereditary, and 17.6% believed that birth injuries could not be prevented (Table 2). The mean scores on knowledge (88.25%) and perception (80.05%) about birth injuries and their predisposing factors among the participants are depicted in Table 3.

Table 2. Perception of the participants regarding birth injuries and their predisposing factors

Perception assessment	Frequency (%)	
	Negative perception	Positive perception
Birth injuries is caused by witchcraft	6 (3.1)	187 (96.9)
Do birth injuries have a permanent cure	105 (54.4)	88 (45.6)
Birth injuries cannot be prevented	34 (17.6)	159 (82.4)
All birth injuries are hereditary	5 (2.6)	188 (97.4)
Birth injuries can be cured by traditional medicine	45 (23.3)	148 (76.7)
Birth injuries can occur even with proper antenatal care during pregnancy	157 (81.3)	36 (18.7)

Table 3. Mean knowledge and perception about birth injuries and their predisposing factors

Variable	Mean	SD
Knowledge	88.25	11.77
Perception	80.05	15.61

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Mann–Whitney U test showed no significant influence of age or number of offspring on the knowledge and perception about birth injuries and their predisposing factors among the participants (P>0.05) (Table 4).

Table 4. Influence of sociodemographic variables on knowledge and perception about birth injuries and their predisposing factors

Variable	Class	Mean rank	U	P
Knowledge				
Age (years)	15–23	93.26	2776.50	0.13
	24–29	107.40		
Number of children	None	60.16	857.00	0.41
	≥1	53.35		
Perception				
Age (years)	15–23	95.71	3139.00	0.70
	24–29	99.16		
Number of children	None	60.32	842.00	0.33
	≥1	52.60		

DISCUSSION

This study investigated the knowledge and perception of women of childbearing age regarding birth injuries and their risk factors in Nnewi North, Anambra State. A total of 193 women of childbearing age were recruited. The participants had a good understanding of birth injuries and their risk factors. This study's findings indicate a positive trend, as data on birth injuries are often limited. The results are consistent with those of a previous study**,** which highlighted a good level of knowledge but insufficient understanding of birth injuries among women of childbearing age in Enugu, Nigeria [16].

Most of the participants in this study were aged 15–23 years and single. During these years, priorities are on academic and professional development rather than marriage. Higher education levels correlate with delayed marriage, as individuals prioritize obtaining degrees and securing employment before marriage [29,30]. In addition to educational pursuits, societal norms and expectations have evolved, particularly in urbanized and liberal societies. There is increasing acceptance of delayed marriage and non-marital childbearing. Young women in this age group may feel less societal pressure to marry early, allowing them to focus on personal growth and career advancement [31]. This shift in societal attitudes contributes to the high percentage of single women in the study.

The good knowledge level among the participants may be attributed to various health education messages disseminated through seminars, social media, community awareness programs, classroom lectures, health shows on television, and other platforms. This study revealed that only a few participants obtained information from newspapers because newspapers are gradually being replaced by social media platforms, such as WhatsApp, Facebook, and Instagram, as primary information sources. This shift raises concerns because the percentage of accurate and reliable information from health practitioners on social media is significantly lower than the higher volume of general information available. This is particularly troubling as social media content is often unreliable and may be posted by individuals without medical expertise. While most participants had a positive perception of birth injuries, few demonstrated moderate knowledge, highlighting the necessity for ongoing awareness efforts. Additionally, few participants believed that birth injuries are caused by witchcraft, aligning with the findings of a study that reported similar social norms as potential causes of stillbirth [32].

Women, especially those of childbearing age, are expected to have a more comprehensive knowledge of birth injuries. This contrasts with the findings of a study in some European countries, where their study on the prevalence of birth injuries revealed a poor perception [33]. Similarly, a study found that most families of children with birth injuries, such as cerebral palsy, in the Jalandhar district of Punjab had a negative perception [34]. This study also found no significant difference in knowledge about birth injuries and their predisposing factors across different age groups, likely owing to the homogenous nature of the study population. This indicates that knowledge levels were consistent regardless of age, underscoring the need to empower women

with adequate information about the causes and implications of birth injuries. Organizing programs, community workshops, and campaigns to improve knowledge about birth injuries are essential.

No significant difference was observed in the perception of birth injuries and their predisposing factors across different age groups. This indicates that the perception of participants was not influenced by their age, highlighting the importance of educating and enlightening women of childbearing age about birth injuries and their predisposing factors, regardless of age. Additionally, no significant difference in knowledge of birth injuries and their predisposing factors between women of childbearing age with or without offspring. This aligns with a study that reported a significant correlation between knowledge of birth injuries among participants with and without offspring attending antenatal care [35]. Improved knowledge about birth injuries enhances perception among participants. Therefore, increasing awareness can stimulate better knowledge and perception of birth injuries and their predisposing factors. This may lead to better preventive measures against birth injuries and improved acceptance of affected children by women of childbearing age.

This study had some limitations. This study's reliance on a purposive sampling technique may not provide a representative sample of the broader population of women of childbearing age. Additionally, using a self-administered questionnaire may introduce response bias, as participants may have provided socially desirable answers rather than their true perceptions and knowledge. Furthermore, the questionnaire was only available in English, potentially excluding non-English-speaking participants and limiting the diversity of the sample. Finally, the cross-sectional design of the study does not allow for the assessment of changes in knowledge and perceptions over time.

CONCLUSIONS

This study highlights the knowledge and perceptions of women of childbearing age in Nnewi North, Anambra State, regarding birth injuries and their predisposing factors. The findings indicate a generally high level of awareness and understanding among participants, though certain misconceptions persist, such as the belief in witchcraft as a cause of birth injuries. The use of social media as a primary information source underscores the need for accurate and reliable health information dissemination through these platforms. Despite some limitations, including the use of convenience sampling and the cross-sectional design, this study provides valuable insights into the awareness and perceptions of birth injuries among women of childbearing age. Continuous education and targeted awareness programs are essential to address knowledge gaps and further improve maternal and neonatal health outcomes in the region.

Ethics approval

Ethical approval was obtained from the Ethical Review Committee of Nnamdi Azikwe University, Nnewi Campus.

Availability of data and materials

All data generated or analyzed during this study are included in this published article.

Competing interests

The authors declare that they have no competing interests.

REFERENCES

1. Azarkish M, Malakouti J, Mirghafourvand M. The relationship of childbirth experience with mother-infant bonding and child's growth and development. J Holist Nurs Midwifery. 2022;32:292-300.
2. Chabbert M, Panagiotou D, Wendland J. Predictive factors of women's subjective perception of childbirth experience: a systematic review of the literature. J Reprod Infant Psychol. 2021;39:43-66.
3. Luca A, Vinturache A, Ilea C, Avasiloaiei A, Paduraru L, Carauleanu A, et al. Birth trauma in preterm spontaneous vaginal and cesarean section deliveries: A 10-years retrospective study. PLoS One. 2022;17:e0275726.

4. Yismaw AE, Abebil TY, Biweta MA, Araya BM. Proportion of neonatal sepsis and determinant factors among neonates admitted in University of Gondar comprehensive specialized hospital neonatal Intensive care unit Northwest Ethiopia 2017. BMC Res Notes. 2019;12:1-5.
5. Akangire G, Carter B. Birth injuries in neonates. Pediatr Rev. 2016;37:451-62.
6. Belay AS, Negese K, Manaye GA, Debebe S. Prevalence and associated factors of birth injury among neonates admitted at neonatal intensive care unit (NICU) in governmental hospitals of Southwest Ethiopian people regional state, Ethiopia: A multicenteric cross-sectional study. Front Pediatr. 2022;10:1052396.
7. Uchenna E, Chidiebere OD, Nwabueze AI. Birth injuries in newborn: a prospective study of deliveries in South-East Nigeria. Afr J Med Health Sci. 2021;20:41-6.
8. Musharraf M, Jinnat MA, Morshed SS, Rahman S, Khan MT, Shome A, et al. Evaluation of risk factors of birth injuries in a tertiary care hospital. KYAMC Journal. 2022;13:129-33.
9. Tibebu EA, Desta KW, Ashagre FM, Jemberu AA. Prevalence of birth injuries and associated factors among newborns delivered in public hospitals Addis Ababa, Ethiopia, 2021. Crossectional study. PLoS One. 2023;18:e0281066.
10. Kc A, Wrammert J, Ewald U, Clark RB, Gautam J, Baral G, et al. Incidence of intrapartum stillbirth and associated risk factors in tertiary care setting of Nepal: a case-control study. Reprod Health. 2016;13:103.
11. Boo YY, Bora AK, Chhabra S, Choudhury SS, Deka G, Kakoty S, Kumar P, Mahanta P, Minz B, Rani A, Rao S. Maternal and fetal factors associated with stillbirth in singleton pregnancies in 13 hospitals across six states in India: a prospective cohort study. Int J Gynecol Obstet. 2024;165:462-73.
12. Adegbehingbe O, Owa J, Kuti O, Oginni L. Orthopaedic Birth Trauma: A Reflection of Current Perinatal Care. Int J Gynecol Obstet. 2006 Vol 6.
13. Auriti C, De Rose DU, Santisi A, Martini L, Piersigilli F, Bersani I, et al. Pregnancy and viral infections: Mechanisms of fetal damage, diagnosis and prevention of neonatal adverse outcomes from cytomegalovirus to SARS-CoV-2 and Zika virus. Biochim Biophys Acta Mol Basis Dis. 2021;1867:166198.
14. Brilli Y, Restrepo BJ. Birth weight, neonatal care, and infant mortality: Evidence from macrosomic babies. Econ Hum Biol. 2020;37:100825.
15. Jaufuraully S, Lakshmi Narasimhan A, Stott D, Attilakos G, Siassakos D. A systematic review of brachial plexus injuries after caesarean birth: challenging delivery? BMC Pregnancy Childbirth. 2023;23:361.
16. Asuquo JE, Abang IE, Urom SE, Anisi CO, Eyong ME, Agweye PU. Prevalence and predisposing factors to birth fractures and brachial plexus injuries seen in a tertiary hospital in Calabar, Nigeria. Niger J Med. 2018;27:78-83.
17. Blankenship SA, Raghuraman N, Delhi A, Woolfolk CL, Wang Y, Macones GA, et al. Association of abnormal first stage of labor duration and maternal and neonatal morbidity. Am J Obstet Gynecol. 2020;223:445.e1-445.e15.
18. Felis S, Cremonini F, Primizia E, Tomasi A. The use of the obstetric vacuum extractor for rotational and non-rotational vaginal delivery. J Surg Case Rep Rev. 2023;2.
19. Takeda J, Ishikawa G, Takeda S. Clinical tips of cesarean section in case of breech, transverse presentation, and incarcerated uterus. Surg J (N Y). 2020;6:S81-S91.
20. Taylor S, Hassan WA. Vacuum Extractor: Skills, Education, Simulation, and learning. inpractical guide to simulation in delivery room emergencies. Cham: Springer International Publishing; 2023. p. 479-96.
21. Narang K, Szymanski LM. Multiple gestations and hypertensive disorders of pregnancy: what do we know?. Curr Hypertens Rep. 2021;23:1-4.
22. Karnati S, Kollikonda S, Abu-Shaweesh J. Late preterm infants - Changing trends and continuing challenges. Int J Pediatr Adolesc Med. 2020;7:36-44.
23. Palacios-Jaraquemada JM. Caesarean section in cases of placenta praevia and accreta. Best Pract Res Clin Obstet Gynaecol. 2013;27:221-32.
24. Bahl R, Hotton E, Crofts J, Draycott T. Assisted vaginal birth in 21st century: current practice and new innovations. Am J Obstet Gynecol. 2023.
25. Ahmed A, Rosella LC, Oskoui M, Watson T, Yang S. In utero exposure to maternal injury and the associated risk of cerebral palsy. JAMA Pediatr. 2023;177:53-61.

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26. Martino ML, Lemmo D, Moylan J, Stevenson C, Bonalume L, Freda MF, et al. The role and function of autobiographical memory narratives during the emotional processing of breast cancer treatment: An empirically-derived memory coding system. Int J Environ Res Public Health. 2023;20:1492.
27. Olza I, Uvnas-Moberg K, Ekström-Bergström A, Leahy-Warren P, Karlsdottir SI, Nieuwenhuijze M, et al. Birth as a neuro-psycho-social event: An integrative model of maternal experiences and their relation to neurohormonal events during childbirth. PLoS One. 2020;15:e0230992.
28. Udenigwe O, Okonofua FE, Ntoimo LF, Yaya S. Seeking maternal health care in rural Nigeria: through the lens of negofeminism. Reprod Health. 2023;20:103.
29. Marphatia AA, Saville NM, Amable GS, Manandhar DS, Cortina-Borja M, Wells JC, et al. How much education is needed to delay women's age at marriage and first pregnancy? Front Public Health. 2020;7:396.
30. Lai T, Huang Y, Xiong J. Changes in behavior patterns or demographic structure? Re-estimating the impact of higher education on the average age of the first marriage. Front Psychol. 2023;14:1085293.
31. Merzlyakova SV, Golubeva MG. Value Orientations as a factor in the development of ideas about marriage among adolescent women. Eur J Soc Behav Sci. 2022.
32. Noge S, Botma Y, Steinberg H. Social norms as possible causes of stillbirths. Midwifery. 2020;90:102823.
33. Dumpa V, Kamity R. Birth Trauma. 2023 Aug 28. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024.
34. Sharma R, Sinha AG. A study on the awareness, beliefs, and service utilization among families of children with cerebral palsy in Jalandhar District of Punjab. Chrismed J Health Res. 2014;1:170-5.
35. Haleema M, Raghuveer P, Kiran R, Mohammed IM, Mohammed ISA, Mohammed M. Assessment of knowledge of obstetric danger signs among pregnant women attending a teaching hospital. J Family Med Prim Care. 2019;8:1422-6.