

Assess Perceptions of Women and Nurse-Midwives on Antenatal Care and Important Laboratory Tests

Elham Shaker Alshareif¹, Nouf Daifallah Alzahrani², Mona Alqarni³, Khulood Abdullah Altowairqi⁴, Khloud Jaber Shbili⁵, Shifa Hasel Alasmay⁶, Khadijah Suleiman Alasiri⁷, Areej Faisal Muhammad Alshareef⁸, Nora Eidah Alharthi⁹, Hamda Hamoud Alqarni¹⁰

1. Nursing technician, King Faisal Medical Complex in Taif (Taif Health Cluster)
2. Technician Midwifery, Taif Health Cluster
3. Health Informatics Technician, Taif Health Cluster
4. Nursing technician, Taif Health Cluster
5. Lab Technician, Taif Health Cluster
6. Lab technician, Taif Health Cluster
7. Nursing Specialist, Taif Health Cluster
8. Midwife Technician, King Faisal Medical Complex, Taif Health Cluster
9. Technician Midwife, King Faisal Medical Complex, Taif Health Cluster
10. Nursing technician, King Faisal Medical Complex, Taif Health Cluster

ABSTRACT

Background:

Antenatal care (ANC) is essential in improving maternal and neonatal health outcomes by providing education, counseling, disease screening, and treatment. Despite the increasing number of women attending ANC visits, maternal and infant mortality rates remain a significant global challenge, particularly in areas with limited access to high-quality care. Effective communication between nurse-midwives and pregnant women plays a crucial role in ensuring that health information about important laboratory tests and important laboratory tests is delivered clearly and respectfully. However, there is evidence that gaps in communication and the quality of ANC information about important laboratory tests and importance of antenatal laboratory tests persist, potentially affecting pregnancy outcomes. This study explores the perceptions of both pregnant women and nurse-midwives regarding the communication and important laboratory tests provided during ANC visits.

Methods:

A descriptive qualitative research design using thematic analysis was employed to explore the experiences of 16 participants: 11 pregnant women and 5 nurse-midwives. The study was conducted in three health centers located in semi-urban and rural districts, all with high antenatal care attendance. Purposive sampling was

used to select women who had attended at least three ANC visits. In-depth interviews were conducted using a structured guide, and the data were analyzed using thematic analysis to identify key themes and subthemes.

Results:

Key findings indicated that positive communication was facilitated by the freedom to interact with nurse-midwives and the respectful and confidential manner in which information about important laboratory tests was provided. However, barriers to effective communication included nurse-midwives' busy schedules and the use of unpleasant language. In terms of information about important laboratory tests provision, women were generally advised on maintaining a healthy diet, exercise, and preparing for childbirth, but gaps in counseling on stress management and some pregnancy danger signs were reported.

Conclusion:

This study highlights the critical role of communication in antenatal care. While most women valued respectful interactions and the information about important laboratory tests provided, challenges such as time constraints and communication barriers hindered the quality of ANC. There is a need for improved training for nurse-midwives on effective communication skills, ensuring consistent, comprehensive, and respectful delivery of health information about important laboratory tests to enhance pregnancy outcomes. Addressing these gaps could lead to improved maternal and neonatal health, contributing to the reduction of mortality rates.

KEYWORDS: Antenatal, Nurse, Midwives, Care, Laboratory

Introduction

Antenatal care (ANC) plays a critical role in the early identification of high-risk pregnancies and educating women to achieve positive labor outcomes. ANC involves providing education, counseling, disease screening, and treatment to improve outcomes for both mother and fetus (1–3). Its primary goal is to reduce maternal and infant mortality rates, as well as stillbirths (2,3). Globally, the inclusion of antenatal health information about important laboratory tests has become a standard component of ANC.

Despite advancements in healthcare, maternal and infant mortality rates remain significant challenges in many regions. Maternal mortality ratios have shown fluctuations over the years, reflecting the efforts to address these issues. Similarly, neonatal, infant, and under-five mortality rates remain high, even as attendance at ANC clinics grows (4). For example, nearly all pregnant women received ANC services from skilled professionals during at least one visit in some areas (4). However, despite increased attendance, the quality of maternal and child health services often remains inadequate (4,6).

Various interventions have been introduced to address maternal and neonatal mortality rates. These include maternal and reproductive health services, immunization programs, safe motherhood initiatives, and integrated approaches for managing child illnesses (7–9). One notable development has been the adoption of the focused

antenatal care (FANC) model, which follows recommendations from global health authorities (10). FANC integrates health promotion, risk detection, and treatment and views the antenatal period as a critical entry point into the healthcare system (6). The model initially recommended four contacts during pregnancy but has been updated to eight visits as per current guidelines to ensure comprehensive assessment, risk screening, and health education at each visit (11–13).

FANC emphasizes timely and regular contact with healthcare providers. However, newer guidelines stress the importance of the quality of care over the number of visits. The focus has shifted to the content and process of care during ANC visits, which involve interactions between pregnant women and providers (14). According to the global framework for quality maternal and newborn care, the care process is divided into two main elements: the provision of care and the experience of care. The provision of care includes evidence-based practices, effective complication management, and functional referral systems, while the experience of care emphasizes respectful communication, emotional support, and the maintenance of dignity during care (15). These elements build trust, promote the use of skilled healthcare, and create an environment conducive to learning and behavioral change for improved pregnancy outcomes (15).

Effective communication between nurse-midwives and pregnant women is essential for fostering positive relationships, providing reassurance, and promoting healthy behaviors (16). Positive communication can reduce anxiety and facilitate the delivery of actionable health information about important laboratory tests. However, evidence indicates that the information about important laboratory tests and counseling provided during ANC visits often lack adequate coverage (17–21). Studies show that many women have limited knowledge of pregnancy danger signs and receive insufficient counseling on these topics (22,23). Research in other regions has also highlighted the significance of communication in delivering high-quality ANC information about important laboratory tests, with similar findings regarding gaps in coverage and quality (19–21,24).

This study aimed to explore the perceptions of pregnant women and nurse-midwives regarding communication and information about important laboratory tests provision during ANC visits. It investigated their views on the communication process, identified challenges and gaps in care interactions, and suggested strategies for improvement. Addressing these issues is vital for generating evidence-based recommendations to enhance communication and interaction during ANC, ultimately supporting better outcomes for mothers and newborns.

Methods

Study Design and Setting

A formative descriptive qualitative research design (25), utilizing thematic analysis based on descriptive phenomenology, was employed to explore the perceptions of women and nurse-midwives regarding the health information about important laboratory tests provided during antenatal visits. The study was conducted selected

for the feasibility of a group antenatal care intervention. The study took place in three health centers with high antenatal care attendance: one center had an average monthly attendance of 430, another 580, and the last one 180.

The antenatal clinics were equipped with facilities for the care of pregnant women, including waiting areas, registration, physical examination rooms, and consultation rooms (12, 26). The services provided during antenatal visits were divided into various units such as registration, education and counseling, physical examination, laboratory tests, family planning, prevention of mother-to-child transmission (PMTCT) of HIV, and postnatal care follow-up. Antenatal visits were scheduled from 7:30 AM to 3:30 PM, with one nurse-midwife assigned to each unit due to staff shortages. The health center with the lowest number of nurse-midwives had only three, while the other two had 7 and 8 nurse-midwives, respectively. Health education was typically the first activity provided and was delivered to all women present at the center before they received other services like physical exams and laboratory tests. Given the increasing number of clients and shortage of staff, the study sought to understand the content of the ANC information about important laboratory tests provided and the communication between nurse-midwives and women, identifying barriers to effective communication and strategies for ensuring that women understand the relevant health information about important laboratory tests for improved childbirth experiences and positive outcomes (27).

Participants

The study employed purposive sampling (28). Women who had attended at least three scheduled antenatal visits, had a normal pregnancy were eligible to participate. The rationale for selecting women who had made multiple visits was to ensure they had received adequate information about important laboratory tests about antenatal care. Efforts were made to include women of varying ages, parities, and educational backgrounds to capture diverse experiences. Nurse-midwives eligible for the study were required to be registered with the national nursing and midwifery council and have at least one year of experience working in ANC clinics. Enrolled nurse-midwives held a certificate in nursing and midwifery, while registered nurse-midwives held a diploma in both fields (29). The study team worked with clinic in-charges to identify eligible participants, all of whom provided written informed consent after being informed about the purpose of the study, confidentiality, and the voluntary nature of participation. Participants were also informed that interviews would be audio recorded and their anonymous quotes used in publications.

Tool

A total of 16 face-to-face in-depth interviews (IDI) (30) were conducted, with 11 pregnant women and 5 nurse-midwives, using an IDI guide. The guide included questions based on the literature and was reviewed by the research team before use. During the interviews, pregnant women shared their perspectives on the ANC information about important laboratory tests they received from nurse-midwives, including health promotion messages, their interactions with providers, and feedback on the care they received. Nurse-midwives, in turn, provided insights into the ANC information about important laboratory tests they delivered, along with their interactions with the women. The interviews were conducted in quiet rooms within the

health centers, out of earshot of other participants and clients. The first author, a male nurse with a master's degree and research experience, and a research assistant, a female registered midwife specialist, conducted the interviews. The interviews were conducted and audio recorded with a Sony digital recorder, except for one nurse-midwife who declined to have her interview recorded. After each interview, the researchers listened to the recordings to reflect on them, ensuring emerging themes were followed up in subsequent interviews. After 16 interviews, saturation was considered reached, based on recommendations that 12 interviews are often sufficient to achieve saturation (31). The sample size in qualitative studies varies depending on the complexity of the research questions, the purpose of the study, the diversity of the sample, and available resources (32). Interview sessions with women lasted around 40 minutes, while those with nurse-midwives took between 30 and 50 minutes.

Analysis

Data were analyzed using thematic analysis (33–35), a flexible method allowing researchers from different methodological backgrounds to engage with the data. The recorded interviews were transcribed by the first author, and some transcriptions were cross-checked by other team members (36). The analysis was performed using English-translated transcripts, to ensure accuracy and completeness. Any discrepancies in translation were corrected. The transcripts were then read repeatedly to gain a comprehensive understanding of the pregnancy care and childbirth information about important laboratory tests provided by nurse-midwives, as reported by the women. Initial and potential codes were generated, discussed, and agreed upon by the research team. Throughout the analysis, relevant text segments were compared and rechecked to form categories that reflected the manifest content of the text. These categories were revised as needed.

Results

The results presented here focus on two main themes identified in the interactions between nurse-midwives and pregnant women during antenatal care (ANC):

Enhancing Communication and Respectful Delivery of ANC Information about important laboratory tests and Receiving Information about important laboratory tests about Pregnancy Care and Safe Childbirth.

Enhancing Communication and Respectful Delivery of ANC Information about important laboratory tests

This theme highlights the importance of respectful and clear communication in ANC interactions. Nurse-midwives and pregnant women expressed varying experiences, some facilitating positive communication, while others identified barriers.

- **Facilitators of Positive Interactions:** Women appreciated the freedom to interact with nurse-midwives, citing that being able to ask questions and have meaningful conversations was important. Some women even established personal connections with their midwives, exchanging contact details for further support outside clinic hours.

- **Providing Information about important laboratory tests in a Dignified Manner:** Nurse-midwives emphasized the importance of confidentiality and respectful communication. They took care to ensure that information about important laboratory tests about the pregnancy and delivery was kept private and that their communication was perceived as respectful, though they noted that respect also depends on how women perceive the interactions.
- **Recognizing Barriers to Effective Interaction:** Despite efforts to maintain respectful communication, some women mentioned negative interactions where nurse-midwives were perceived as too busy or used unpleasant language. This created barriers to open communication.

Receiving Information about important laboratory tests About Pregnancy Care and Safe Childbirth

The second theme covers the type of information about important laboratory tests shared with pregnant women to prepare them for childbirth and ensure their health and safety during pregnancy.

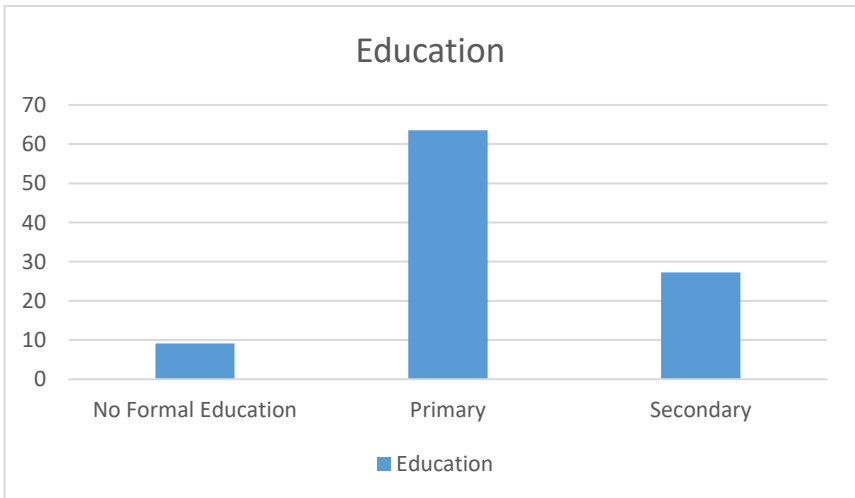
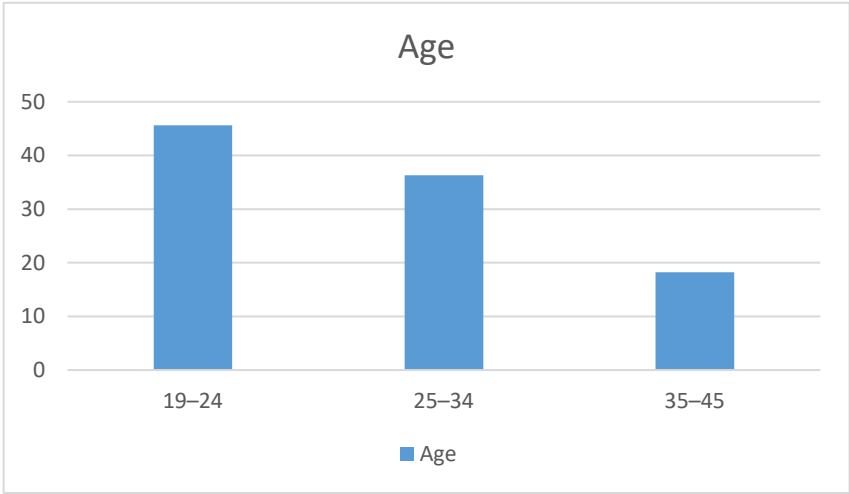
- **Keeping Healthy Through Eating a Balanced Diet and Exercise:** Nurse-midwives regularly provided information about important laboratory tests about nutrition and physical activity. Women were encouraged to eat balanced meals and continue with daily household chores as exercise, though some women did not receive this information about important laboratory tests or relied on others (family or friends) for guidance.
- **Preparing for a Safe Delivery:** Women received guidance on how to prepare for childbirth, such as assembling necessary supplies and identifying someone to care for their family during their absence. However, some women reported not receiving all the necessary information about important laboratory tests, such as preparing transport to the health facility.
- **Recognizing and Responding to Danger Signs:** Nurse-midwives emphasized the importance of recognizing danger signs during pregnancy and labor, such as severe headache or vaginal bleeding. They also encouraged women to inform their partners and family about these signs to ensure timely intervention.

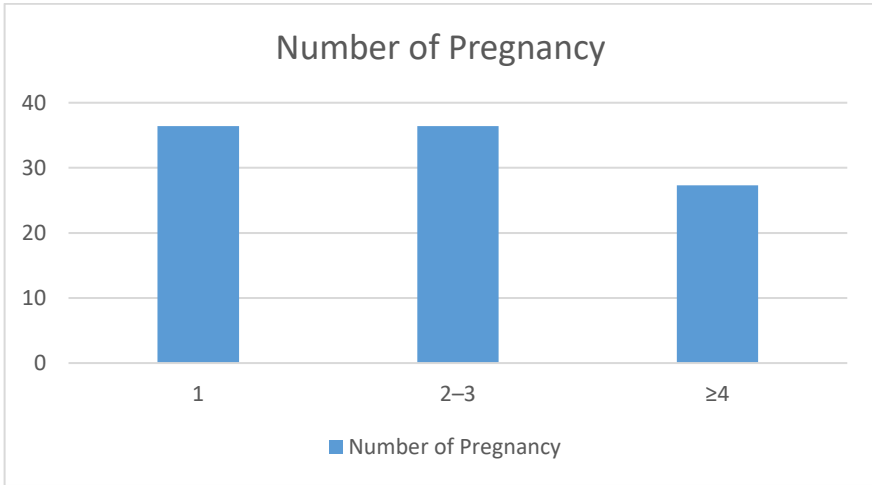
In summary, while positive communication and information about important laboratory tests sharing were common, challenges like busy schedules, language barriers, and inconsistent provision of key information about important laboratory tests about nutrition, exercise, and transport were noted. Additionally, feedback on care, including test results, was regularly provided, though resource limitations sometimes led to women being advised to seek care elsewhere.

Table 1: Characteristics of Pregnant Women

Characteristics of Pregnant Women (n=11)	Frequency (n)	Percentage (%)
Age Group (Years)		
19–24	5	45.6
25–34	4	36.3
35–45	2	18.2

Education		
No Formal Education	1	9.1
Primary	7	63.5
Secondary	3	27.3
Number of Pregnancy		
1	4	36.4
2–3	4	36.4
≥4	3	27.3
Months of Pregnancy (mean ± SD)		7 (1.3)





Discussion

This study aimed to explore the perceptions of women and nurse midwives regarding their interactions and the provision of antenatal care information about important laboratory tests. It was found that women generally felt free to communicate with midwives throughout their antenatal visits, and midwives believed that women felt comfortable asking questions. However, both women and midwives identified personality differences as both facilitators and barriers to effective communication. While some women were reluctant to interact with midwives due to fear of verbal abuse, some midwives were perceived as difficult to approach. Respectful communication was highlighted by midwives as essential for building trust. Despite all women being given antenatal care information about important laboratory tests, not all women recalled receiving all the information about important laboratory tests as outlined by national and international guidelines. The high number of women attending clinics, combined with staff shortages and time constraints, were seen as major barriers to providing comprehensive information about important laboratory tests. Women often relied on friends and relatives to supplement this information about important laboratory tests, although some of it was reported as inaccurate.

Effective communication between nurse midwives and pregnant women is critical for providing adequate health information about important laboratory tests. It fosters positive relationships and reduces negative emotions, which may encourage health-promoting behaviors among pregnant women (15). Although most women felt their interactions with midwives were positive, some expressed that midwives' busy schedules made them less approachable, and a few midwives observed that some women were hesitant to engage. A study in the Netherlands also highlighted that women, despite being allowed to contact midwives for queries, often refrained from doing so, fearing their questions might seem trivial (38). As the number of women attending antenatal care (ANC) increases, integrating telephone and digital platforms

could alleviate some of the burden by offering remote consultations for non-urgent concerns (38).

Respect and dignity in interactions were emphasized by midwives as key to fostering trust. Women expected midwives to be friendly, humble, and patient, and they preferred midwives who treated them with care, listened attentively, and clarified information about important laboratory tests. This aligns with studies from Iran, which found that pregnant women valued compassion, attention, and friendly attitudes in ANC care (39). Harsh language and mistreatment were identified as significant barriers, particularly during labor and delivery (40). Ensuring respectful care and maintaining confidentiality are critical for retaining women's trust in the healthcare system.

Both women and midwives agreed on the importance of delivering key antenatal education, including topics such as nutrition, pregnancy monitoring, risk behaviors, and delivery preparation. Providing accurate nutrition information about important laboratory tests is essential for promoting healthy eating habits, which, in turn, contribute to the overall health of both the mother and the baby. Women expressed receiving only general advice about nutrition, such as eating a balanced diet and increasing fruit and vegetable intake. However, specific, individualized nutrition education, especially for women with conditions like anemia, was limited (38, 44). Other studies also observed that women received insufficient guidance on nutrition during pregnancy (45, 46), contributing to inadequate intake of essential nutrients like fruits and vegetables (47, 48).

Exercise, despite its benefits, was also underemphasized in many ANC settings. It is associated with improved physical fitness and mood, and helps maintain a healthy weight during and after pregnancy (50). However, midwives often did not prioritize this topic, possibly due to women's active daily routines or the lack of time to cover all relevant subjects.

Educating women about danger signs during pregnancy is crucial for early identification and prompt medical intervention, which can reduce maternal morbidity and mortality. Some women recalled being informed about danger signs, but studies elsewhere have shown that many women have limited knowledge of these signs (22, 23). The emphasis on danger signs in our study aligns with international recommendations to ensure that women are aware and able to seek help as soon as possible (51, 52).

Preparation for delivery, another essential component of antenatal care, was also inadequately covered. Although women generally received information about important laboratory tests about birth preparedness, many did not recall specific details like identifying a place of birth, arranging for blood donors, or preparing funds for transportation (53). Similar gaps in delivery preparation have been observed in other studies in countries like Iceland (21) and Rwanda (54). This lack of preparation could lead to delays in seeking care and even complications during delivery.

The importance of understanding the signs of labor was another area where information about important laboratory tests was lacking. Inadequate knowledge of labor signs can delay a woman's decision to seek medical care, which, when combined

with logistical challenges like transportation issues, can result in serious consequences (55). Women often relied on informal sources, such as advice from friends and family, for guidance on labor signs, which may not always be accurate.

A key aspect of improving care is providing women with feedback on test results and explaining the purpose of examinations. Many women in our study did not receive adequate explanations, particularly regarding tests and lab procedures, except for HIV tests, which were most commonly explained. Similar findings were reported in studies in Tanzania and Uganda, where women were not given sufficient explanations about clinical procedures and test results (17, 18).

Finally, addressing risk behaviors such as smoking, alcohol consumption, and unprotected sex is essential during antenatal care. However, few women in this study were informed about these behaviors and their potential risks to pregnancy and fetal health. This might be due to assumptions that pregnant women in the region do not engage in such behaviors, or due to time constraints during ANC visits. Additionally, psychological issues like stress and anxiety, which can adversely affect pregnancy outcomes, were rarely addressed, despite the growing recognition of their importance (1, 57). Stress management and mental health care need to be prioritized to ensure the well-being of both mothers and their children.

Conclusion

Despite multiple ANC visits, many women did not recall receiving all the necessary information about important laboratory tests according to national and international guidelines. The challenges faced by nurse-midwives in delivering comprehensive health information about important laboratory tests, such as inadequate staffing and high clinic attendance, hindered effective care. Increasing the number of midwives, improving working conditions, and incorporating technology into ANC services could help address these issues and improve communication between healthcare providers and pregnant women.

References

- Al-Ateeq MA, Al-Rusaiees AA. Health education during antenatal care: the need for more. *Int J Women's Health*. 2015;7:239–242. doi: 10.2147/IJWH.S75164
- Lavin T, Pattinson RC. Does antenatal care timing influence stillbirth risk in the third trimester? A secondary analysis of perinatal death audit data in South Africa. *BJOG*. 2018;125(2):140–147. doi: 10.1111/1471-0528.14645
- Maloni JA, Cheng CY, Liebl CP, Maier JS. Transforming prenatal care: reflections on the past and present with implications for the future. *J Obstetr Gynecol Neonatal Nurs*. 1996;25(1):17–23. doi: 10.1111/j.1552-6909.1996.tb02508.x
- MoHCDGEC M, NBS, OCGS, and ICF. Tanzania Demographic and Health Survey and Malaria Indicator Survey 2015–2016; 2016. Available from: <http://dhsprogram.com/pubs/pdf/FR321/FR321.pdf>. Accessed May 30, 2023.
- National Bureau of Statistics- Tanzania. 2012 population and housing census; 2012.
- Kearns A, Hurst T, Caglia J, et al. Focused antenatal care in Tanzania: delivering individualised, targeted, high quality care. *Woman Health Initiat*. 2014;2014:1–14.

- Elham Shaker Alshareef, Nouf Daifallah Alzahrani, Mona Alqarni, Khulood Abdullah Altowairqi, Khlood Jaber Shbili, Shifa Hasel Alasmay, Khadijah Suleiman Alasiri, Areej Faisal Muhammad Alshareef, Nora Eidah Alharthi, Hamda Hamoud Alqarni
- Keja K, Chan C, Hayden G, Henderson RH. Expanded programme on immunization. *World Health Stat Q*. 1988;41(2):59–63.
- Ministry of Health. The national road map strategic plan to accelerate reduction of maternal, newborn and child deaths in Tanzania 2008–2015; 2008.
- Robinson D. The integrated management of childhood illness. *Afr Health*. 1996;18(6):20–21.
- World Health Organization. *WHO Antenatal Care Randomized Trial Manual for the Implementation of the New Model*. World Health Organization; 2001.
- Villar J, Ba'aqel H, Piaggio G, et al. WHO antenatal care randomised trial for the evaluation of a new model of routine antenatal care. *Lancet*. 2001;357(9268):1551–1564. doi: 10.1016/s0140-6736(00)04722-x
- MoHCDEC. *Antenatal Care Guidelines*. Dar es salaam: Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) (Tanzania); 2018.
- World Health Organization. *WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience*. Luxembourg: WHO Press; 2016.
- Lattof SR, Tuncalp O, Moran AC, et al. Developing measures for WHO recommendations on antenatal care for a positive pregnancy experience: a conceptual framework and scoping review. *BMJ Open*. 2019;9(4):e024130. doi: 10.1136/bmjopen-2018-024130
- Tuncalp Ö, Were WM, MacLennan C, et al. Quality of care for pregnant women and newborns-The WHO vision. *BJOG*. 2015;122(8):1045–1049. doi: 10.1111/1471-0528.13451
- Nicoloro-SantaBarbara J, Rosenthal L, Auerbach MV, Kocis C, Busso C, Lobel M. Patient-provider communication, maternal anxiety, and self-care in pregnancy. *Soc Sci Med*. 2017;190:133–140. doi: 10.1016/j.socscimed.2017.08.011
- Sarker M, Schmid G, Larsson E, et al. Quality of antenatal care in rural southern Tanzania: a reality check. *BMC Res Notes*. 2010;3:209. doi: 10.1186/1756-0500-3-209
- Conrad P, De Allegri M, Moses A, et al. Antenatal care services in rural Uganda: missed opportunities for good-quality care. *Qual Health Res*. 2012;22(5):619–629. doi: 10.1177/1049732311431897
- Dougherty L, Stammer E, Valente TW. Interpersonal communication regarding pregnancy-related services: friends versus health professionals as conduits for information about important laboratory tests. *BMC Pregnancy Childbirth*. 2018;18(1):97. doi: 10.1186/s12884-018-1729-x
- Attanasio L, Kozhimannil KB. Patient-reported communication quality and perceived discrimination in maternity care. *Med Care*. 2015;53(10):863–871. doi: 10.1097/MLR.0000000000000411
- Gottfredsdottir H, Steingrimsdottir T, Bjornsdottir A, Guethmundsdottir EY, Kristjansdottir H. Content of antenatal care: does it prepare women for birth? *Midwifery*. 2016;39:71–77. doi: 10.1016/j.midw.2016.05.002
- Mwilike B, Nalwadda G, Kagawa M, Malima K, Mselle L, Horiuchi S. Knowledge of danger signs during pregnancy and subsequent healthcare seeking actions among women in Urban Tanzania: a cross-sectional study. *BMC Pregnancy Childbirth*. 2018;18(1):4. doi: 10.1186/s12884-017-1628-6
- Pembe AB, Carlstedt A, Urassa DP, Lindmark G, Nyström L, Darj E. Quality of antenatal care in rural Tanzania: counselling on pregnancy danger signs. *BMC Pregnancy Childbirth*. 2010;10(1):35. doi: 10.1186/1471-2393-10-35
- Anya SE, Hydara A, Jaiteh LE. Antenatal care in The Gambia: missed opportunity for information about important laboratory tests, education and communication. *BMC Pregnancy Childbirth*. 2008;8:9. doi: 10.1186/1471-2393-8-9

- Colorafi KJ, Evans B. Qualitative descriptive methods in health science research. *Herd*. 2016;9(4):16–25. doi: 10.1177/1937586715614171
- MoHCDEC. *Provider's Guide Antenatal Care in Tanzania Mainland*. Dar es salaam: Ministry of Health, Community Development, Gender, Elderly and Children (MoHCDEC) (Tanzania); 2018.
- Kwesigabo G, Mwangi MA, Kakoko DC, et al. Tanzania's health system and workforce crisis. *J Public Health Policy*. 2012;33(Suppl 1):S35–S44. doi: 10.1057/jphp.2012.55
- Campbell S, Greenwood M, Prior S, et al. Purposive sampling: complex or simple? Research case examples. *J Res Nurs*. 2020;25(8):652–661. doi: 10.1177/1744987120927206
- Ministry of Health. *The Nursing and Midwifery (Registration, Enrollment and Licencing) Regulations, 2010*. Council TNaM, editor. Dar es salaam: Tanzania Government Printer; 2010:53.
- Moridi M, Pazandeh F, Hajian S, Potrata B, Gurgel RQ. Midwives' perspectives of respectful maternity care during childbirth: a qualitative study. *PLoS One*. 2020;15(3):e0229941. doi: 10.1371/journal.pone.0229941
- Guest G, Bunce A, Johnson L. How many interviews are enough? An experiment with data saturation and variability. *Field Methods*. 2016;18(1):59–82. doi: 10.1177/1525822x05279903
- Francis JJ, Johnston M, Robertson C, et al. What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychol Health*. 2010;25(10):1229–1245. doi: 10.1080/08870440903194015
- Braun V, Clarke V. Using thematic analysis in psychology. *Qual Res Psychol*. 2006;3(2):77–101. doi: 10.1191/1478088706qp063oa
- Braun V, Clarke V. *Thematic Analysis*. Cooper H, Camic PM, Long DL, Panter AT, Rindskopf D, Sher KJ, editors. American Psychological Association; 2012:57–71.
- Braun V, Clarke V. Reflecting on reflexive thematic analysis. *Qualitat Res Sport Exerc Health*. 2019;11(4):589–597. doi: 10.1080/2159676X.2019.1628806
- Thurmond VA. The point of triangulation. *J Nurs Scholarship*. 2001;33(3):253–258. doi: 10.1111/j.1547-5069.2001.00253.x
- Dunkel Schetter C, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry*. 2012;25(2):141–148. doi: 10.1097/YCO.0b013e3283503680
- Baron R, Heesterbeek Q, Mannien J, Hutton EK, Brug J, Westerman MJ. Exploring health education with midwives, as perceived by pregnant women in primary care: a qualitative study in the Netherlands. *Midwifery*. 2017;46:37–44. doi: 10.1016/j.midw.2017.01.012
- Gheibizadeh M, Abedi HA, Mohammadi E, Abedi P. Iranian women and care providers' perceptions of equitable prenatal care: a qualitative study. *Nurs Ethics*. 2016;23(4):465–477. doi: 10.1177/0969733015573653
- Mselle LT, Kohi TW, Dol J. Humanizing birth in Tanzania: a qualitative study on the (mis) treatment of women during childbirth from the perspective of mothers and fathers. *BMC Pregnancy Childbirth*. 2019;19(1):231. doi: 10.1186/s12884-019-2385-5
- Koehn ML. Childbirth education outcomes: an integrative review of the literature. *J Perinat Educ*. 2002;11(3):10–19. doi: 10.1624/105812402X88795
- Serçekuş P, Mete S. Turkish women's perceptions of antenatal education. *Int Nurs Rev*. 2010;57(3):395–401. doi: 10.1111/j.1466-7657.2009.00799.x
- World Health Organization. *WHO Recommendations on Maternal Health Guidelines*. Geneva: World Health Organization; 2017.

- Elham Shaker Alshareef, Nouf Daifallah Alzahrani, Mona Alqarni, Khulood Abdullah Altowairqi, Khlood Jaber Shbili, Shifa Hasel Alasmay, Khadijah Suleiman Alasiri, Areej Faisal Muhammad Alshareef, Nora Eidah Alharthi, Hamda Hamoud Alqarni
- Edvardsson K, Ivarsson A, Eurenus E, et al. Giving offspring a healthy start: parents' experiences of health promotion and lifestyle change during pregnancy and early parenthood. *BMC Public Health*. 2011;11(1):936. doi: 10.1186/1471-2458-11-936
- Garnweidner LM, Sverre Pettersen K, Mosdol A. Experiences with nutrition-related information about important laboratory tests during antenatal care of pregnant women of different ethnic backgrounds residing in the area of Oslo, Norway. *Midwifery*. 2013;29(12):e130–e137. doi: 10.1016/j.midw.2012.12.006
- Szwajcer EM, Hiddink GJ, Koelen MA, van Woerkum CM. Written nutrition communication in midwifery practice: what purpose does it serve? *Midwifery*. 2009;25(5):509–517. doi: 10.1016/j.midw.2007.10.005
- Wen LM, Flood VM, Simpson JM, Rissel C, Baur LA. Dietary behaviours during pregnancy: findings from first-time mothers in southwest Sydney, Australia. *Int J Behav Nutr Phys Act*. 2010;7(1):13. doi: 10.1186/1479-5868-7-13
- Wilkinson SA, Miller YD, Watson B. Prevalence of health behaviours in pregnancy at service entry in a Queensland health service district. *Aust N Z J Public Health*. 2009;33(3):228–233. doi: 10.1111/j.1753-6405.2009.00380.x
- Lucas C, Charlton KE, Yeatman H. Nutrition advice during pregnancy: do women receive it and can health professionals provide it? *Matern Child Health J*. 2014;18(10):2465–2478. doi: 10.1007/s10995-014-1485-0
- The American College of Obstetricians and Gynecologists (ACOG). *Physical Activity and Exercise During Pregnancy and the Postpartum Period*. The American College of Obstetricians and Gynecologists; 2020.
- Trotman G, Chhatre G, Darolia R, Tefera E, Damle L, Gomez-Lobo V. The effect of centering pregnancy versus traditional prenatal care models on improved adolescent health behaviors in the perinatal period. *J Pediatr Adolesc Gynecol*. 2015;28(5):395–401. doi: 10.1016/j.jpag.2014.12.003
- Teng SP, Zuo TC, Jummaat FB, Keng SL. Knowledge of pregnancy danger signs and associated factors among Malaysian mothers. *Br J Midwifery*. 2015;23(11):800–806. doi: 10.12968/bjom.2015.23.11.800
- World Health Organization. *WHO Recommendations on Health Promotion Interventions for Maternal and Newborn Health 2015*. Geneva: World Health Organization; 2015.
- Smeele P, Kalisa R, van Elteren M, van Roosmalen J, van den Akker T. Birth preparedness and complication readiness among pregnant women admitted in a rural hospital in Rwanda. *BMC Pregnancy Childbirth*. 2018;18(1):190. doi: 10.1186/s12884-018-1818-x
- Félix HCR, Corrêa CC, Matias T, Parreira BDM, Paschoini MC, Ruiz MT. The Signs of alert and Labor: knowledge among pregnant women. *Revista Brasileira de Saúde Materno Infantil*. 2019;19(2):335–341. doi: 10.1590/1806-93042019000200005
- Chung EK, Nurmohamed L, Mathew L, Elo IT, Coyne JC, Culhane JF. Risky health behaviors among mothers-to-be: the impact of adverse childhood experiences. *Acad Pediatr*. 2010;10(4):245–251. doi: 10.1016/j.acap.2010.04.003
- Nigenda G, Langer A, Kuchaisit C, et al. Women's opinions on antenatal care in developing countries: results of a study in Cuba, Thailand, Saudi Arabia and Argentina. *BMC Public Health*. 2003;3(1):17. doi: 10.1186/1471-2458-3-17
- Hodgkinson EL, Smith DM, Wittkowski A. Women's experiences of their pregnancy and postpartum body image: a systematic review and meta-synthesis. *BMC Pregnancy Childbirth*. 2014;14(1):330. doi: 10.1186/1471-2393-14-330