

ACHIEVERS JOURNAL OF SCIENTIFIC RESEARCH*Open Access Publications of Achievers University, Owo*Available Online at www.achieversjournalofscience.org**Redefining Masculinity and Childbirth: Men's Perception and Attitude towards Caesarean Sections in a Faith based Institution in Zaria, Northern Nigeria*****¹Musa H.A., ²Abdulraheem A., ¹Bashir S.A., ⁴Merengwe P, ³Murtala H.H.**¹Department of Nursing Science, Faculty of Allied Health Science Ahmadu Bello University, Zaria²Department of Nursing Science, Faculty of Allied Health Science, University of Maiduguri, Maiduguri³Department of Nursing Science, Faculty of Allied Health Science, Bayero University Kano, Kano⁴Department of Nursing Science, Faculty of Allied Health Science, Baze University, Abuja***Corresponding Author's Email Address:** limaabdool78@gmail.com**Submitted:** February 25, 2025; **Revised:** March 21, 2025; **Accepted:** March 24, 2025; **Published:** March 27, 2025**Abstract**

Caesarean section (CS) is a crucial surgical intervention recommended when vaginal delivery poses risk to the mother or infant. This study investigates men's perception and attitude towards CS among members of a faith-based institution in Zaria, Kaduna State. Employing a cross-sectional descriptive design, a simple random sampling technique was utilized to select 246 participants from the study population of 504 men. Data were collected using a self-structured, validated questionnaire and analyzed with IBM SPSS version 27, descriptive statistics including frequency, percentage, and mean score were used to summarize the data. Findings indicate that while the majority of respondents hold negative perceptions of caesarean section (aggregate mean: 2.2), they exhibit a generally positive attitude towards CS (aggregate mean: 2.7). The most significant factors influencing perception and attitude were cultural beliefs, media representation and fear of birth complications. Therefore, the study recommends the need for enhanced education and awareness initiatives among stakeholders in faith-based Organisations as well as the provision of detailed explanation by health care providers to men so as to improve understanding and acceptance of caesarean section in this community.

Keywords: Attitude; Caesarean Section; Church; Faith-Based Institution; Men; Perception**1.0 Introduction**

Each childbirth experience is influenced by the perception and attitude of individuals within the mother's immediate support system, shaping an often-overlooked aspect of the birthing process. Male partner involvement is a vital but often overlooked aspect of maternal support, enhancing the mother's health during pregnancy, and childbirth. (Adeniran *et al.* 2016). However, patriarchal gender roles often limit women's autonomy in health decisions, restricting their access to care, financial resources, and consent for procedures like (CS). This can lead to delays and increased health risks (Adeniran *et al.* 2021). The delay in decision making regarding CS may contribute to maternal mortality in Nigeria. Thus, it is crucial to understand the perception and attitude of men towards CS

When looking at maternal deaths globally, the World Health Organization reported that the lifetime risk of maternal death is the highest in Africa, affecting 1 in 42 women (WHO, 2022). Africa accounted for approximately 70% of the 282,000 global maternal deaths, with Nigeria contributing the highest number (82,000) (WHO, 2023). Nigeria, located in Africa and ranked eighth globally in fertility rate, remains a major contributor to maternal mortality (World Bank Group, 2022). The United Nation (UN) Sustainable Development Goal (SDG) target 3.1 is to reduce maternal mortality to less than 70 maternal deaths per 100 000 live births by 2030 (UN, 2015). Thus, it is important to understand some of the factors that may contribute to maternal mortality including the perception of men regarding CS.

Access to emergency obstetric care (EmOC), which encompasses clinical and surgical interventions to address life-threatening complications during pregnancy, childbirth, and the postpartum period, is vital for reducing maternal and perinatal mortality (WHO *et al.*, 2009). One key EmOC intervention is CS, a surgical procedure in which the mother's abdomen and uterus are opened to safely deliver the baby. Caesarean section is a vital obstetric surgical procedure recommended when vaginal delivery poses significant risks to the mother or infant. Conditions such as pelvic abnormalities, fetal distress, multiple gestations, and maternal health issues necessitate the use of CS to mitigate potential complications (Ladan *et al.* 2016). The National demographic Health Survey (2018) provides comprehensive coverage of the population-based CS trends in Nigeria, with a prevalence rate of 2.7% in 2018, which is low compared to the global guidelines of 15% (Berglundh *et al.* 2021). While the global trend shows an increase in CS rates, particularly in developed countries, Nigeria's current CS rate still remains low especially in Northern Nigeria (Ladan *et al.* 2016; Osayande *et al.* 2023). A very recent systematic review in Nigeria by Osayande *et al.* (2023) revealed that the overall prevalence rate of CS in facilities across Nigeria was 17.6% with regional variations.

When looking at maternal mortality rate, the Nigerian's maternal mortality rate stands at 512 per 100,000 live births, contributing to approximately 34% of global maternal deaths (NDHS, 2018; Aderinto, 2022). These statistics underscore the urgent need for timely obstetric interventions, including CS, to prevent avoidable fatalities. Men's perceptions of CS significantly impact maternal and new-born health outcomes. Additionally, cultural beliefs often frame CS as a symbol of reproductive failure or inadequacy, which may lead to reluctance among men to support their partners in seeking necessary medical interventions (Elom *et al.* 2023; Adeniran *et al.* 2021). The stigma associated with CS can result in delays in care-seeking behavior and outright refusals of necessary procedures, exacerbating risks for both mothers and infants such as foetal distress and antepartum hemorrhage requiring emergency CS (Shirzad *et al.* 2021; Waniala *et al.* 2020).

Despite the critical role men play in reproductive health decisions, existing literature primarily focuses on women's experiences and perceptions regarding caesarean sections (Maduka and Okubor 2023, Maitanmi *et al.* 2023). Furthermore, studies have shown that women's acceptance of CS often hinges on their husbands' consent, as men are typically viewed as heads of households with significant influence over healthcare decisions (Ogunkorode *et al.* 2023; Adeniran *et al.* 2016). This oversight highlights the need for research that encompasses men's perspectives on CS.

Regarding men's perception of CS, Adeniran *et al.*'s 2021 study in Ilorin Nigerian, found that the most commonest perception was that it is costly, risky, linked to complications, and results in an extended hospital stay.

Arguably, the role of religion and religious leaders in decision making on health-related issues continues to attract attention globally (Adeniran *et al.* 2021). Adeniran *et al.* (2021) found that 71.3% of men first sought advice from religious leaders when considering CS, 11.3% contacted them after deciding on the procedure, and they influenced consent in 2.0% of cases. This means that men's perception and attitude may be influenced by the decisions of these religious leaders and their religion as well, thus the need for the current study.

Understanding how these factors influence men's perception and attitudes towards CS is essential for developing targeted interventions that may promote informed decision-making and improve maternal health outcomes. This study assessed men's perception and attitudes toward CS among members of a faith-based center (Church) in Zaria, Kaduna State.

1.1 Research questions

This research aims to answer the following questions:

1. What is the perception of men towards Caesarean section in a faith-based center?
2. What is their attitude towards Caesarean section?
3. What are the factors influencing men's perception and attitude towards Caesarean section?

2.0 Materials and methods

2.1 Research Design

This study utilized a cross-sectional descriptive survey design to assess men's perceptions and attitudes towards CS in faith-based Centre in Zaria, Kaduna State. This design was chosen for its ability to provide a comprehensive snapshot of the participants' views at a specific point in time, facilitating the analysis of relationships between various socio-demographic factors and attitudes towards cesarean sections.

2.2. Study Setting

The research was conducted across three branches of the Church in Zaria. These locations were selected due to their unique cultural contexts and religious ideologies that may influence perceptions regarding childbirth methods, particularly CS.

2.3 Target Population

The target population consisted of male church members aged 25years and above who regularly attended services at the selected churches. A total population size of 504 men was obtained from church administration records. Participants were required to have the ability to read and write, ensuring they could comprehend the questionnaire.

a. Sample Size Determination

The sample size was calculated using Yamane's formula (1967) for finite populations:

$$\text{Where } n = \frac{N}{1+N(e)^2} (1)$$

n = sample size

N = total population

E = degree of precision (0.05)

Therefore:

$$n = 504 / 1 + 504(0.05)^2$$

$$n = 504 / 2.26$$

$$n \approx 223$$

To account for a potential non-response rate of 10%, an additional 23 participants were included, resulting in a final sample size of 246.

2.5. Sampling Technique

A simple random sampling technique was employed, by randomly selecting men who consented to participate in the study.

2.6. Data Collection Instrument

Data were collected using a self-administered questionnaire divided into four sections:

Section A: Socio-demographic characteristics (age, marital status, education level, etc.).

Section B: Perceptions regarding Caesarean sections, assessed through statements rated on a 4-point Likert scale (1 = strongly agree to 4 = strongly disagree).

Section C: attitudes toward Caesarean section, similarly, rated on a Likert scale.

Section D: Factors influencing perception and attitude towards Caesarean section.

The instrument was validated for face and content validity by experts in maternal and public health in three Nigerian Universities. To ensure reliability, the instruments were pre-tested at another faith-based center in Wusasa, Zaria, with 25 men (10% of the sample) and Cronbach's alpha yielded an internal consistency of 0.82.

2.7. Data Collection Procedure

Data collection occurred over two months, from July to August 2024. The purpose of the study was explained to potential participants, and informed consent was obtained prior to administering the questionnaire. A total of 246 questionnaires were distributed with the assistance of three trained research assistants. At the end of the data collection period, 230 completed questionnaires were returned, yielding a response rate of 93.5%.

2.8. Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics including frequencies, percentages, and mean scores were utilized to summarize the data. The aggregate mean scores for perceptions and attitudes were calculated, with mean score greater than 2.5 indicating positive attitudes or perceptions and mean scores less than 2.5 indicating negative ones.

2.9. Ethical Considerations

Ethical approval for this study was obtained from the Research Ethics Committee at Ahmadu Bello University Teaching Hospital, Zaria (NHREC/ABUTH number NHREC/29/08/23). A recommendation letter from the Department of Nursing Science at Ahmadu Bello University was issued to the church seeking permission to conduct the study. Consent forms were completed before the commencement of data collection. Participants' anonymity and confidentiality were maintained throughout the research process, ensuring that all ethical standards were upheld.

3.0 Results

Table 1 above shows that most of the respondents, 80 (34.8%) were between the ages of 26 to 35 years of age while just 34 (14.8%) respondents were above 45. The population is predominantly from other ethnic groups. 114 (49.6%), while just 15 (6.5%) respondents were Yoruba. The majority of the respondents, 127 (55.2%) are married while 2 (0.9%) of them are divorced. Based on the highest education background, the majority of the respondents, 182 (79.1%) attended tertiary school education while 7 (3%) have Primary education. The table reveals that 92 (40.0%) are civil servant, while 13 (5.7%) are farmers.

Table 1: Socio-Demographic characteristics of Respondents (n= 230)

Variables	Frequency	Percentage (%)
Age		
18-25	63	27.4
26-35	80	34.8
36-45	53	23.0
Above 45	34	14.8
Ethnicity		
Hausa	48	20.9
Igbo	53	23.0
Yoruba	15	6.5
Others	114	49.6
Marital Status		
Single	98	42.6
Married	127	55.2
Divorced	2	0.9
Widowed	3	1.3
Level of Education		
No formal education	9	3.9
Primary	7	3.0
Secondary	32	13.9
Tertiary	182	79.1
Occupation		
Farming	13	5.7
Trading	24	10.4
Student	81	35.2
Civil servant	92	40.0
Unemployed	20	8.7

Table 2 shows varying opinions about cesarean sections (C-sections) and vaginal births. Respondents tend to agree that doctors prefer C-sections over vaginal births (2.1) and that women can choose to have a C-section regardless of medical reasons (2.1). However, they strongly agree that their culture prefers vaginal birth over C-sections (1.8) and that a healthy pregnancy should result in a vaginal birth, not a C-section (1.8). Additionally, respondents tend to disagree that previous C-section indicates all future deliveries will be by C-section (2.6) and that babies born by C-section are healthier than those delivered vaginally (2.8).

Generally, an aggregate mean of 2.2 was obtained confirming a decision of a negative perception of Caesarean section among men attending a faith-based Centre in Zaria, Kaduna State.

Table 2: Perception of Cesarean Section (n=230)

S/N	STATEMENTS	SA 1	A 2	D 3	SD 4	MEAN	STAND/D EV
1	Doctors prefer to perform C-sections over vaginal births whenever possible	76	74	58	22	2.1	0.98
2	My culture desires vaginal birth more than a C-section	103	74	29	24	1.8	0.99
3	Women can always choose to have a caesarean section, regardless of medical reasons.	61	97	52	20	2.1	0.91
4	A healthy pregnancy should always result in a vaginal birth, not a C-section	112	65	26	27	1.8	1.03
5	Previous use of caesarean section indicates that all other deliveries will be done by caesarean section	38	53	88	51	2.6	1.00
6	Caesarean section is very expensive and overused for hospital profit.	61	80	67	22	2.2	0.94
7	Babies born by caesarean section are not healthier than those delivered through vaginal delivery	43	34	68	85	2.8	1.12

Aggregate mean = 2.2

Table 3 shows varying attitudes towards Caesarean sections. Respondents tend to disagree that scars from C-sections make women less attractive (2.8), C-sections can be embarrassing and reduces a woman's dignity (2.8), C-section delivery is a reproductive failure to women (2.8), and C-sections are not meant for good Christians (2.9). Additionally, they strongly disagree that they won't be confident in supporting their partner's decision to undergo a C-section (3.2), but they Respondents agree that C-sections is a sign of a weak body (2.4) and that women who deliver via C-section miss an important life experience (2.4). Generally, aggregate mean of 2.7 was obtained indicating positive attitude towards cesarean section among men attending a faith-based Centre in Zaria, Kaduna State.

Table 3: Attitude Towards Caesarean Section (n=230)

S/N	STATEMENTS	SA 1	A 2	D 3	SD 4	MEAN	STAND/DEV
1	I would be disappointed if my wife or partner couldn't have a vaginal birth, even if a C-section was the safest option for my baby.	52	59	65	54	2.5	1.08

2	I won't be confident and willing to support my partner to undergo a caesarean section if indicated	10	21	104	95	3.2	0.79
3	I feel that Caesarean section is not meant for good Christian	36	36	62	96	2.9	1.10
4	scars from C-sections make women less attractive	42	33	83	73	2.8	1.07
5	Women who deliver through caesarean section miss an important life experience	41	80	63	46	2.4	1.01
6	Caesarean section can be embarrassing and reduces a woman's dignity	38	41	73	78	2.8	1.07
7	Caesarean delivery is a reproductive failure to women	33	48	78	71	2.8	1.03

Aggregate mean = 2.7

Table 4 shows different factors influencing the perception and attitude towards caesarean section. Out of the 230 respondents who took part in the study, Majority of the respondents felt informed about caesarean sections from healthcare professionals 189(82.2%) and were influenced by media representation of caesarean sections 141(61.3%) and personal experiences play a significant role in shaping perceptions and attitudes 148(64.4%). The findings also indicate that Cultural/religious acceptance is not a major concern for most respondents as only 62(27%) of respondents felt that caesarean sections were not accepted in their culture or religion. This table further reveals that Fear of childbirth complications influenced the respondents 120 (52.2%) preferences for caesarean sections. Similarly, Societal norms and expectations moderately influenced 93(40.5%) of respondents, and fear of death was not a major factor as only 109(47.4%) accepted, While Education and awareness campaigns influenced 151(65.5%) of respondents' understanding and attitudes towards caesarean sections.

Table 4: Factors Influencing the Perception and Attitude towards Caesarean Section

Variables	Frequency	Percentage (%)
Healthcare professionals provided you with sufficient information about caesarean		
Yes	189	82.2
No	41	17.8
Media Representation of caesarean sections		
Yes	141	61.3
No	89	38.7
Personal experiences of family members or friends who have undergone caesarean sections influence my perception and attitude		

Yes	148	64.4
No	82	35.6
Caesarean section is not an accepted mode of delivery in my culture or religion		
Yes	62	27.0
No	168	73.0
Fear of childbirth complications influences my preference for caesarean sections over natural childbirth		
Yes	120	52.2
No	110	47.8
Societal norms and community's preference and expectations for vaginal delivery regarding childbirth influence my perception of caesarean sections		
Yes	93	40.5
No	137	59.5
Having a Caesarean delivery is like a death sentence for a pregnant woman (fear of death)		
Yes	121	52.6
Education and awareness campaigns about childbirth options influence my understanding and attitude towards caesarean sections		
Yes	151	65.5
No	79	34.3

4.0 Discussions

This study aimed to examine men's perception and attitude towards CS among members of a faith-based center in Zaria, Kaduna State. The findings indicate a complex interplay between negative perceptions and positive attitude towards CS, highlighting critical factors that influence these views.

The results demonstrated that the majority of respondents held a negative perception of caesarean section, with an aggregate mean score of 2.2. This finding is consistent with previous research indicating that cultural beliefs often frame CS as a symbol of reproductive failure or inadequacy (Adeniran *et al.*, 2021; Elom *et al.*, 2023). Statements such as "My culture desires vaginal birth more than a C-section" received particularly low scores, reflecting deep-rooted cultural norms that idealize vaginal delivery as the preferred mode of childbirth. This perception can lead to reluctance among men to support their partners in opting for CS, when necessary, potentially delaying critical medical interventions which may contribute to the Nigerian's unacceptably high maternal mortality (Shirzad *et al.*, 2021).

Moreover, the perception that "doctors prefer to perform C-sections over vaginal births whenever possible" further underscores skepticism towards medical motives, suggesting that some men may view CS as an unnecessary intervention driven by profit rather than patient care. This may be due to poverty, lack of social protection or lack of confidence with the health facility. Such misconceptions can significantly hinder timely

access to necessary surgical procedures, exacerbating maternal and neonatal health risks (Milton, 2019). The study found that respondents exhibited a generally positive attitude towards cesarean sections, with an aggregate mean score of 2.7. This indicates that while men may harbor reservations about CS, they recognize its importance in certain medical contexts. For instance, the statement "I would be disappointed if my wife or partner couldn't have a vaginal birth, even if a C-section was the safest option for my baby" received a neutral response, suggesting that many men are beginning to understand the necessity of CS for the health and safety of both mother and child. This positive attitude is encouraging and may reflect an evolving understanding of maternal health issues within this community. However, it also highlights the need for continued education and awareness campaigns targeting men to reinforce the importance of supportive roles in reproductive health decisions (Aderinto, 2022).

Several key factors were identified as influencing men's perceptions and attitudes towards Caesarean sections. A significant majority (82.2%) felt informed about CS through healthcare professionals, indicating the critical role that effective communication plays in shaping perception. However, only 61.3% reported being influenced by media representations of CS, suggesting the need for more sensitization through media and key religious leaders.

Personal experiences also emerged as a significant factor, with 64.4% of respondents acknowledging that family or friends' experiences with CS influenced their views. This finding emphasizes the importance of social networks in shaping health beliefs and decisions (Waniala *et al.*, 2020). Interestingly, cultural acceptance was not perceived as a major concern by most respondents; only 27% felt that CS was not accepted within their culture or religion. This suggests that while traditional beliefs may still exist, there is a growing recognition among men in this community regarding the medical necessity of cesarean sections.

The findings underscore the urgent need for targeted interventions aimed at improving men's understanding and acceptance of cesarean sections within religious communities. Healthcare professionals should actively engage men in discussions about childbirth options during health talks and community outreach programs. By involving traditional birth attendants and faith healers who hold significant influence within these communities—healthcare providers can help mitigate fears and misconceptions surrounding cesarean section.

5.0 Conclusions

In conclusion, this study reveals a dichotomy between negative perception and positive attitude towards CS among men attending a faith-based center (church) in Zaria. While cultural beliefs continue to shape perception negatively, there is an opportunity to leverage positive attitude to foster greater acceptance of CS when medically indicated. Addressing this perception through education and community engagement is essential for improving maternal health outcomes and reducing preventable maternal and neonatal morbidity and mortality. There is also the need for further research, particularly longitudinal studies to assess changes in perceptions and attitudes over time as well as a study to understand the perception of the religious leaders towards CS. Health professionals (Nurses) should also encourage men to actively participate during health talks, share their ideas too especially as it relates to their partners and baby's health. Implement targeted educational programs to address misconceptions about C-section, emphasizing medically necessary indications and the importance of informed decision-making. Religious leaders significantly influence their congregants' health decisions at individual, group, and community levels. Partnering with them in health promotion and equipping them with accurate information can enhance acceptance of CS among their followers and the broader community.

References

- Adeniran, A. S., Adesina, K. T., Aboyeji, A. P., Fawole, A. A., Ogunlaja, I. P., Ogunlaja, O. O. and Okesina, S. B. (2021). Pre-and-post-operative aversion among men whose partners had caesarean delivery in a patriarchal setting. *Ghana Medical Journal*. 55(4):285–291. <https://doi.org/10.4314/gmj.v55i4.9>.
- Adeniran, A. S., Aboyeji, A. P., Fawole, A. A., Balogun, O. R., Adesina, K. T. and Isiaka-Lawal, S. (2016). Evaluation of parturient perception and aversion before and after primary cesarean delivery in a low-

- resource country. *International Journal of Gynecology & Obstetrics*. 132(1):77-81.
- Aderinto, N. (2022). Addressing maternal mortality in Nigeria. *The Guardian*. <https://guardian.ng/opinion/addressing-maternal-mortality-in-nigeria/>
- Berglundh, S., Benova, L., Olisaekke, G. and Hanson, C. (2021). Caesarean section rate in Nigeria between 2013 and 2018 by obstetric risk and socio-economic status. *Tropical Medicine & International Health*. 26(7):775-788.
- Elom, N. A., Nwimo, I. O., Ilo, C. I., Ngwakwe, P. C., Ezugwu, U. A., Alegu, D. N., Ojide, R. N. and Okpata, O. O. (2023). Belief towards caesarean section: A community-based study of male partners in Ebonyi State, Nigeria. *SAGE Open Medicine*. 11:20503121221147810. <https://doi.org/10.1177/20503121221147810>
- Ladan, A. A., Nwobodo, E. I., Tunau, K. A., Panti, A., Burodo, A. T., Magaji, B. A. and Ibrahim, U. A. (2016). Caesarean section at usmanu danfodiyo university teaching hospital: a cross-sectional study. *Nigerian Journal of Medicine*. 25(4):341-347
- Maduka, N. R. and Okubor, P. O. (2023). The Perceptions and Attitude of Pregnant Women towards Caesarean Section in South South Nigeria: Perception and Attitude of Pregnant women. *Tropical Journal of Obstetrics and Gynaecology*. 40(2):106-112.
- Maitanmi, B. T., Oluyomi, O. V., Aderemi, I. O., Maitanmi, J. O., Aminu, A., Ojewale, M. O., ... & Akingbade, O. (2023). Knowledge, attitude and perception of cesarean section among pregnant women attending antenatal clinic at Babcock University Teaching Hospital, Ilishan-Remo, Ogun State. *The Journal of Maternal-Fetal & Neonatal Medicine*. 36(2):2278019.
- National Population Commission (NPC) [Nigeria], and ICF. (2019). *Nigeria Demographic and Health Survey 2018 key indicators report*. Abuja, Nigeria, and Rockville, MD, USA: NPC and ICF.
- Ogunkorode, A., Omolekan, T., Alade, M. I. and Adebisi, S. O. (2023). Perceptions and attitudes of pregnant women towards caesarean section in Ado Local Government Area, Ekiti, Southwest Nigeria. *African Journal of Reproductive Health*. 27(6s):28-35.
- Osayande, I., Ogunyemi, O., Gwacham-Anisiobi, U., Olaniran, A., Yaya, S. and Banke-Thomas, A. (2023). Prevalence, indications, and complications of caesarean section in health facilities across Nigeria: a systematic review and meta-analysis. *Reproductive Health*. 20(1):81.
- Shirzad, M., Shakibazadeh, E., Hajimiri, K., Betran, A. P., Jahanfar, S., Bohren, M. A., Opiyo, N., Long, Q., Kingdon, C., Colomar, M. and Abedini, M. (2021). Prevalence of and reasons for women's, family members', and health professionals' preferences for caesarean section in Iran: a mixed-methods systematic review. *Reproductive Health*. 18(1):3. <https://doi.org/10.1186/s12978-020-01047-x>
- United Nations (2015). *Transforming our world: the 2030 Agenda for Sustainable Development*. New York:United Nations UN.
- Waniala, I., Nakiseka, S., Nambi, W., Naminya, I., Ajeni, M. O., Iramiot, J., Nekaka, R. and Nteziyaremye, J. (2020). Prevalence, Indications, and Community Perceptions of Caesarean Section Delivery in Ngora District, Eastern Uganda: Mixed Method Study. *Obstetrics and Gynecology International*. 5036260. <https://doi.org/10.1155/2020/5036260>
- World Health Organization, United Nations Population Fund, Mailman School of Public Health, Averting Maternal Death and Disability & United Nations Children's Fund (2009). *Monitoring emergency obstetric care: a handbook*. World Health Organization. ISBN: 9789241547734.
- The World Bank Group (2022). Fertility rate, total (births per woman) available at <https://data.worldbank.org/indicator/SP.DYN.TFRT.IN>. Accessed 23/11/24
- World Health Organization. (2022). *Atlas of African health statistics 2022: health situation analysis of the WHO African Region—summary report*.
- World Health Organization. (2023). *Trends in maternal mortality 2000 to 2020: estimates by WHO, UNICEF,*

UNFPA, World Bank Group and UNDESA/Population Division. World Health Organization.
Yamane, T. (1967) Statistics: *An Introductory Analysis*. 2nd Edition, Harper and Row New York.