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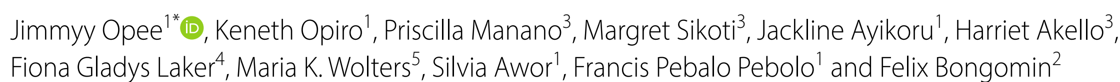
"We provide the methods to others but we don't use the methods ourselves": challenges with utilization of modern contraception among Female Healthcare Workers at two tertiary teaching hospitals, Northern Uganda



Jimmyy Opee[1*], Keneth Opiro[1], Priscilla Manano[3], Margret Sikoti[3], Jackline Ayikoru[1], Harriet Akello[3], Fiona Gladys Laker[4], Maria K. Wolters[5], Silvia Awor[1], Francis Pebalo Pebolo[1] and Felix Bongomin[2]

Abstract

Background Female Healthcare Workers (FHCWs) play a crucial role in advocating for, delivering modern contraceptive methods (MCM) to reproductive-age women and potential users. Despite the high frequency of women seeking healthcare annually, less than half receive adequate contraceptive counseling and services. Investigating FHCWs' adherence to these practices and understanding the obstacles they encounter is essential. This study aimed to explore challenges with utilization of MCM among FHCWs at the two tertiary teaching hospitals in Northern Uganda.

Methods We conducted a descriptive, cross-sectional study employing a qualitative approach at St. Mary's Hospital Lacor (SMHL) and Gulu Regional Referral Hospital (GRRH), Northern Uganda. Qualitative data were explored using the principles of descriptive phenomenology to gain deeper insights into the experiences of twenty (20) FHCWs.

Results Findings revealed various challenges faced by FHCWs, including patient barriers such as religious beliefs, contraceptive myths, fear of side effects, and provider barriers like lack of knowledge, training, and discomfort. Additionally, health system barriers like limited time and competing priorities were identified.

Conclusion Female Healthcare workers experience challenges with utilization of MCM. Efforts should focus on enhancing contraceptive services, particularly in faith-based facilities and among married individuals. Besides, addressing perceived barriers at the patient, provider, and system levels through comprehensive health education, ensuring method availability, and provider training is imperative.

Keywords Utilization, Modern contraception methods, Female healthcare workers, Gulu University Teaching Hospitals, Northern Uganda

*Correspondence:
Jimmyy Opee
jimmyyopee@gmail.com
[1]Department of Reproductive Health, Faculty of Medicine, Gulu University, P.O. BOX 166, Gulu, Uganda
[2]Department of Medical Microbiology and Immunology, Faculty of Medicine, Gulu University, P.O. BOX 160, Gulu, Uganda
[3]St. Mary's Hospital Lacor, P.O.BOX 180, Gulu, Uganda
[4]Urban Research and Consultancy East Africa Limited, P.O. BOX 34950, namuwongo, Kampala, Uganda
[5]OFFIS Institute for Information Technology, Oldenburg, Germany

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Introduction

Modern Contraceptive Method (MCM) encompass a wide array of interventions designed to prevent pregnancy from acts of sexual intercourse [18]. The overall aim is to prevent pregnancy from occurring while couples enjoy sexual intercourse as nature demands from human body [18, 22]. World Health Organizations (WHO) puts examples of MCM as; sterilization, intrauterine devices and systems, subdermal implants, oral contraceptives including emergency pills, injectables, condoms for both females and males, diaphragm and cervical caps, patches, spermicidal agents, vaginal rings and sponge; While the non-MCM include; fertility awareness, coitus interruptus, lactational amenorrhea and abstinence [18, 26]. Female healthcare workers don't only advocate for the use of MCM but are both providers and potential users of MCM themselves.

Contraceptives provides range of benefits from socioeconomic benefits, improvement of children and mothers' health, reduction of maternal mortality and morbidity, overall improvement of nutritional status of mothers and their children to reduction of transmission of HIV from mother to child (Ahmed, Li, Liu, & Tsui [4],; Bellizzi, Sobel, Obara, & Temmerman [10],; Cleland et al., [13] Duerr, Hurst, Kourtis, Rutenberg, & Jamieson [14],; Goodkind, Lollock, Choi, McDevitt, & West [16],; Sonfield, Hasstedt, Kavanaugh, & Anderson [29]),.The contraceptive use among women aged 15–49 years significantly increased to a global prevalence rate of 54.8% and unmet need reduced to 15.3% by 1990 [4]. This trend continued and the global prevalence rate rose to 63.3% with unmet need reduced to 12.3% by 2010 although the overall increase slowed down probably due to shift in donor priorities (Alkema, Kantorova, Menozzi, & Biddlecom [5],; Shiffman [27, 28],.

Use of MCM among married women of reproductive age slowly increased from 55.0 to 57.1% from the year 2000 to 2019. However, unmet need of MCM has remained high in developing countries [15, 26]; Wulifan, Brenner, Jahn, & Allegri [35]),. World health organization estimates up to 214 million women in developing countries would like to prevent pregnancy but are not using MCM in the year 2021 [26]. In Uganda, the prevalence is low among adolescent females, only 9.4% were found to be using MCM from Uganda Demographic and Health Survey (UDHS) data (Sserwanja, Musaba, & Mukunya [30]), and over 24% of girls aged between 15 and 19 are already having children [21]. In addition, the prevalence of contraceptive use among refugees in Northern Uganda and women living with HIV at Gulu Regional referral hospital were 8.7% and 36% respectively [8, 12].

Furthermore, there are several factors that have been shown to influence choice of use of modern contraception among women of reproductive age (15–49 years). A systematic review analyzing factors influencing contraceptive use in sub-Saharan Africa found negative factors reducing the use to be misconception about side effects, male partner disapprovals and social/cultural influence while positive factors included education, employment, and effective communication between partners (Abrahim, Linnander, Mohammed, Fetene, & Bradley). Other studies in other settings showed similar findings [2]; Blackstone, Nwaozuru, & Iwelunmor [11],; Okoeguale, Osagiede, Idumwonyi, & Ehigiegba [25],; Subedi, Jahan, & Baatsen [31]),. Similarly, in Uganda, distance to health facility, knowledge, geographic locations, age, education level, religion, employment, and number of children were all found to be factors that influence utilization of modern methods of contraceptives (Asiimwe, Ndugga, Mushomi, & Manyenye Ntozi [7],; Namasivayam, Lovell, Namutamba, & Schluter [24],; Sserwanja et al., [30] Wasswa, Kabagenyi, & Ariho [34]),. All these studies considered female population with hardly any study done among female healthcare workers especially in the context of northern Uganda. Understanding the practices and barriers encountered by FHCWs is critical, as they serve as influential figures and sources of information for clients seeking contraceptive services. However, little is known about the extent to which FHCWs personally adopt these methods and the specific obstacles they encounter in their professional roles. Addressing these gaps in knowledge is essential for informing targeted interventions to improve MCM provision in Northern Uganda and beyond. Therefore, the aim of this study was to explore the challenges with utilization of MCM among FHCWs at two tertiary teaching hospitals in Northern Uganda.

Methods

Study design

This study employed a cross-sectional qualitative design to comprehensively assess the utilization of modern contraceptive methods (MCM) and the challenges encountered by female healthcare workers (FHCWs) at St. Mary's Hospital Lacor (SMHL) and Gulu Regional Referral Hospital (GRRH) in Northern Uganda. Qualitative data were explored using the principles of descriptive phenomenology to gain deeper insights into the experiences of FHCWs. Saturation was considered when the collected data fully answered the research questions.

Study settings and population

This study was conducted at two distinct healthcare facilities in Gulu, Northern Uganda serving more than estimated population of 261, 656: St. Mary's Hospital Lacor (SMHL), a faith-based private not-for-profit institution, and Gulu Regional Referral Hospital (GRRH), a public hospital supported by the government. Situated

approximately 360 km from the capital city, Kampala, both hospitals serve the Northern region of Uganda. GRRH operates as a government-aided public hospital, offering free healthcare services to the community. It houses a dedicated family planning unit providing a comprehensive range of modern contraceptive methods (MCM), including implants, intrauterine devices, sterilization methods, combined oral contraceptives, emergency pills, and condoms. Conversely, SMHL is a faith-based facility and primarily offers natural contraceptive methods such as moon beads and refers women seeking MCM to appropriate facilities, ensuring uninterrupted access to MCM within the continuum of care. These two hospitals are Gulu University Teaching Hospitals. Combined, these facilities employ around 1,000 healthcare workers, of whom approximately 600 are female workers. Among these female workers, about 405 are professional FHCWs. Most of these FHCWs are trained in modern contraception. The study participants comprised qualified FHCWs from various cadres working at both SMHL and GRRH.

Sample size estimation

We conducted twenty (20) key informant interviews, involving participants from both hospitals. We purposefully sampled FHCWs to ensure coverage of different roles such as physicians, nurses, midwives, clinical officers, and pharmacists (10 from each hospital). Participants were selected using purposeful sampling techniques. This was done alongside complete enumeration of specific cadres ensuring a balanced representation of diverse roles and experience at each hospital.

Data collection method

Eligible participants were scheduled for interviews at times convenient for them. Written informed consent, including consent for audio recording, was obtained prior to the interviews. The research assistant who specifically trained in qualitative data collection conducted structured interviews lasting between 10 and 15 min. These interviews aimed to elicit insights into the challenges faced by female healthcare workers (FHCWs) in providing MCM counseling and services. Interviews were documented using notes and audio recording. Saturation was considered during data collection, after ongoing thematic analysis was performed and multiple interviews consistently yielded similar patterns and themes without new emergent data.

Data analysis

The data were analyzed using inductive thematic analysis. The transcripts of the interview and the audio recordings were read and listen to multiple times to gain overview of the content respectively. To validate this was done by having more than one authors identify words and sentences that form as meaning units. A member of the research team developed initial codes and grouped these codes into higher level themes. The codes and themes were then discussed with the entire research team, revised, and finalized. Analysis using thematic approach which entailed sorting codes and categories to generate theme was conducted.

Ethical considerations

This study obtained scientific and ethical approval from Gulu University Research Ethic Committee (Approval reference number: GUREC-2022-426). Administrative clearances were received from hospital administrators of St. Mary's Hospital Lacor and Gulu Regional referral hospital. Informed written consent was sought from all study participants and participation was free and voluntary. The participants were free to withdraw from the study with no penalty. Privacy was observed by ensuring that interviewers were conducted in a private and comfortable room. The study findings will be disseminated to both hospitals which the participants can access. The Helsinki declaration for the conduct of research was followed.

Results

The participants' ages ranged from 23 to 63 years, with varying medical work experience spanning from 1 to 38 years. Three key themes emerged.

Theme 1: perceived barriers to utilisation of MCM by FHCWs

Strong religious beliefs: Some healthcare providers, despite possessing knowledge of modern contraception, may be hesitant to offer MCM due to their strong religious convictions. In key informant interviews, several respondents highlighted the impact of religion as a barrier to the utilization of modern contraception.

> *"The level of knowledge and religious affiliation of the service provider also play key role. For example, our hospital here is a Catholic founded facility and we do not offer any method of hormonal family planning to anyone" (A 28-year-old female health worker at SMHL).*

> *"Let me say this, as a catholic, our religion does not allow us to use contraceptives so that alone can prevent us from using contraceptives" (A 35-years-old male clinical officer at SMHL).*

> *"We provide the methods to others but we don't use the methods ourselves.... and then you've got your religious barriers too sometimes. A patient's religious*

background may not allow her to use certain types of birth control for example Catholics are against the use of hormonal modern contraceptive method but rather encourage natural methods which may not be practical to all" (A 42-years-old female midwife at GRRH).

Influence of husbands' decisions: The study revealed that participants perceived men as the primary decision-makers within households, including decisions regarding the use of modern contraception. As heads of households, men were expected to initiate discussions and make decisions regarding contraception. If a husband objected to contraceptive use, women felt unable to use contraceptives freely due to potential repercussions if their actions were discovered. Consequently, women were often seen as implementers of decisions made by men, without challenging their authority. This perspective is exemplified in the following excerpts from the key informant interviews.

"Men are very reluctant to discuss MCM. They think there is no need to. The husband will tell the wife the number of children they are to have, and that is it. It is the man who decides. Women do not have any say and cannot oppose anything that has been decided upon by the man, she has less control and does exactly as the man instructs" (A 45-years-old female healthcare worker at GRRH).

"If a woman's husband is against her using contraceptives, then he will be left with no option but make decision by herself. For some method once she is injected with the contraceptive, she just goes home and her husband will never know" (A 23 years old female Midwife at SMHL).

"Sometimes women even fear that her husband will find out the FP method she is using and that will bring quarrels. So, she cannot think of using it" (A 40-years-old female healthcare workers at GRRH).

"The problem is with men; the women want to use contraceptives but men always refuse them and for that matter some women have resorted to using contraceptives discreetly" (A 27-years-old male midwife at SMHL).

"If their husband is against them using contraceptives, they have no option but make their own decision. For some method once they have been injected with the contraceptive, they just go home and their husband will never know. However, sometimes they even fear that their husband will find out the FP method they are using and that will bring quarrels, so they cannot think of using it" (A 55-years-old female healthcare worker at GRRH).

Requirement for trained personnel to administer specific methods: The necessity for skilled healthcare providers to perform certain procedures, such as intrauterine device (IUD) insertions or contraceptive implant placements, emerged as a significant barrier. Some providers expressed apprehension that referring patients to family planning specialists could be perceived as a lack of proficiency, potentially undermining their credibility.

"I have a problem of recommending for FP methods because when I recommend and I cannot administer it and at the end of the day I have to send them to another midwife, or nurse to administer the service I may look like I don't have any knowledge thus the patients may also doubt the quality of services they will be offered" (A 36-years-old female nurse at GRRH).

Theme 2. Challenges FHCWs face while providing MCM services

Impact of current contraceptive use: Certain healthcare providers observed that women who were already using contraceptives were less open to considering alternative or potentially more effective options.

"When a woman is already on a method, most of the time they're on something. They're not open to changing or asking about it" (A 28-years-old male doctor at SMHL).

Workstation absenteeism: A key informant highlighted that the absence of family planning providers posed a challenge to family planning counseling. Despite not all healthcare workers being trained, some trained personnel frequently provided excuses and were often absent from work, thereby impacting the provision of modern contraceptive services.

"Absenteeism…. here at Lacor, the experts in offering the natural family planning method in this facility are the big bosses now so they would always move out of station and leave the students to attend to patients yet they cannot deliver the service as required thus affecting the counseling session at the Outpatient department" (A 25-years-old female midwife at SMHL).

Preference for contraceptive methods: Individuals' method preferences are largely shaped by their previous experiences with a method, potential side effects encountered, or aversion to specific modes of administration (e.g., injectables). These preferences are influenced by factors such as family opinions, peer influence, and

pharmaceutical marketing strategies. Healthcare providers believed that these preferences constrained women's openness to exploring all available contraceptive options, consequently narrowing the scope for comprehensive counseling.

> *"I feel like patients usually have a specific thing in mind that they want. Whether they feel like they prefer … they've heard of that or they're usually the ones who bring up something that they feel like they would prefer. Sometimes they'll even say my mother doesn't want me to go on the pill because she said it's bad for me" (A 30-years-old female midwife at SMHL).*

Concerns among minors and adolescents: The findings indicated heightened discomfort, particularly among minors expressing interest in accessing modern contraceptive methods (MCM), yet feeling apprehensive about parental reactions.

> *"The adolescent youth most times feel uncomfortable discussing contraception especially when they are accompanied by their parents to the facility because of fear that their parents may realize that they are on contraceptives. Additionally, others just sneak from home to come and access this service therefore this leaves them with no room for counseling but rather they dictate on the method they would want to use" (A 46-years-old female healthcare workers at GRRH).*

Concerns regarding side effects: Key informants further highlighted fears about the potential side effects linked to the use of modern contraception. For instance, some service provider expressed the following:

> *"Bleeding …. that is the most common side effect I know. It scares people because some women even become anemic as a result of over bleeding. The other is that many women complain of nausea and this has been reported widely along with weight loss, loss of appetite among many others" (A 63-years-old female nurse at SMHL).*

> *"Like for my case, when the bleeding starts, sometimes it is so heavy that it may go on for up to two weeks and this worried me a lot, it nearly broke up my marriage. Because, when the flow from this month's period is still going on, it may continue through the cycle until the next menstruation and it will just continue and it is really heavy" (A 30 years old FHCW at SMHL).*

> *"Patients can go to access these services, but then when it comes to managing the side effects, if they go back to the health facility to remove it -the modern contraceptive method, for cases of implants, in most cases they often refuse to remove it……it then becomes very costly when they have to treat themselves for these side effects" (A 32 years old female midwife at GRRH).*

Theme 3. Mitigation measures to overcome challenges and improve uptake

Promoting male involvement: The study revealed that when men dominate decision-making regarding fertility preferences, contraceptive utilization tends to decrease. Therefore, there is a clear need for ongoing efforts to sensitize men and empower women in making decisions related to sexual and reproductive health.

> *"I would still advocate for continuous use sensitization of men because at the end of the day all the decision concerning fertility is made by men and the majorly discourage the use of family planning yet they cannot provide for their children" (A 55-years-old female healthcare worker at GRRH).*

Enhancing availability of MCM supplies: Our study found that facilities experiencing shortages of essential MCM supplies often face challenges in delivering services. Therefore, there is a critical need to address this issue, as highlighted in our findings.

> *"Looking at this Health facility of ours……the situation still needs a lot of improvement because, the health workers are few and, on several occasions, when clients come to facility they are either turned away or told that there is no medicine" (A 28-years-old FHCW at GRRH).*

Capacity building for healthcare workers: The study emphasized the necessity of providing comprehensive training to healthcare workers to ensure their competence in delivering all modern contraceptive methods effectively.

> *"Sometimes I believe modern contraceptives are available, but the right personnel are the problem especially when it concerns IUDs not all the health workers know how to insert it. The health workers therefore need more trainings regarding the application of family planning methods" (A 36-years-old female nurse at GRRH).*

Discussion

Our study identified several challenges with utilization of modern contraceptive methods (MCM) among female healthcare workers (FHCWs), including strong religious convictions, negative husband decisions, and healthcare provider skill levels. These findings align with previous research which is not of any difference from study findings reflecting utilization of similar services in the general population [1, 3, 19, 33]. In addition, FHCWs encountered various challenges while providing MCM, such as current use of inferior MCM method, absenteeism from the workstation, counseling failures, method preferences, fear among minors and adolescents, and concerns about side effects. These challenges have also been documented in prior studies [19]; Kebede, Abaya, Merdassa, & Bekuma [20],; Mbalire [23],. In addressing these barriers and challenges, our study highlights the importance of sensitizing the population about MCM, increasing the availability of MCM supplies, and providing training for healthcare workers in MCM provision. These strategies have shown efficacy in numerous studies [6, 19].

Some of these barriers can be addressed using facility level interventions, such as upskilling healthcare providers, ensuring sufficient staff are present, and mitigation of potential side effects. For example, care plans may address what should be done in case severe bleeding occurs. When prioritizing side effects, the situation of the women needs to be carefully considered, such as the availability of period products, quality and quantity of nutrition, and the availability of therapies such as iron tablets [17].

Our study also highlights the importance of considering the sociocultural context of MCM use. Sensitizing the population, in particular men and parents of adolescents interested in using MCMs requires investment in public health campaigns. Such campaigns however are likely to fail to address barriers due to strong religious convictions, which are typically strongly linked to a person's identity and social circle [9]; Thakuri, KC Singh, Karkee, & Khatri, 32; Wusu [36],.

Strength and possible limitations of this study

Busy work schedules may have led to hurried responses from participants. To address this issue, we allowed participants to schedule interviews at times convenient for them, ensuring adequate time for thoughtful responses. Selection bias due to purposive sampling may have limited the generalizability of the findings. However, this was mitigated by ensuring a diverse sample across various cadres and health facilities, which helped maintain the study's relevance and comprehensiveness.

Additionally, the possibility of information bias, particularly with self-reported data, was counteracted by cross-referencing participant responses with secondary data sources where applicable. To uphold study rigor, data saturation was monitored closely, ensuring that the collected information was rich and reflective of the key themes of interest, thus minimizing the impact of these limitations on the overall findings.

Throughout the data collection process, researchers directly observed and supervised the interviewers to ensure data quality and consistency. Furthermore, robust measures were implemented to ensure data security, including encryption and password protection, minimizing the risk of unauthorized access or manipulation of the information.

Conclusions

Our study demonstrated that FHCWs experience challenges with utilization of MCM. Efforts should focus on enhancing contraceptive services, particularly in faith-based facilities and among married individuals. Besides, addressing perceived barriers at the patient, provider, and system levels through comprehensive health education, ensuring method availability, and provider training is imperative. We need to pay attention to these challenges that these FHCWs face and ensure that mitigation strategies are employed to improve uptake of MCM.

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Author contributions

J.O, K.O, P.F.P and F.B wrote the proposal. J.O, P.M, M.S, H.A, and F.G.L conducted data collection. J.O, K.O, F.G.L, M. W, S. A, P.F.P and F.B carried out data analysis. J.O, F.G.L and F.B wrote the main manuscript. All the authors reviewed the manuscripts.

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Data availability

No datasets were generated or analysed during the current study.

Declarations

Competing Interests

The authors declare no competing interests.

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References

1 Abrahim O, Linnander E, Mohammed H, Fetene N, Bradley E. (2015). A patient-centered understanding of the referral system in Ethiopian primary health care units. PLoS ONE, 10(10), e0139024.
2 Afriyie P, Tarkang EE. (2019). Factors influencing use of modern contraception among married women in ho west district, Ghana: descriptive cross-sectional study. Pan Afr Med J, *33*(1).

3 Afriyie P, Tarkang EE. (2019). Factors influencing use of modern contraception among married women in ho west district, Ghana: descriptive cross-sectional study. Pan Afr Med J, *33*.
4 Ahmed S, Li Q, Liu L, Tsui AO. Maternal deaths averted by contraceptive use: an analysis of 172 countries. Lancet. 2012;380(9837):111–25.
5 Alkema L, Kantorova V, Menozzi C, Biddlecom A. National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: a systematic and comprehensive analysis. Lancet. 2013;381(9878):1642–52.
6 Antarini A. Factors influencing the use of modern contraception among reproductive aged women in Bangka Belitung Province, Indonesia. Pan Afr Med J. 2021;39:39. https://doi.org/10.11604/pamj.2021.39.39.28870.
7 Asiimwe JB, Ndugga P, Mushomi J, Manyenye Ntozi JP. Factors associated with modern contraceptive use among young and older women in Uganda; a comparative analysis. BMC Public Health. 2014;14:1–11.
8 Bakesiima R. Modern contraceptive Use among Female Refugee adolescents in Northern Uganda: prevalence, effect of peer counselling, adherence, and experiences. Karolinska Institutet (Sweden); 2022.
9 Barro A, Bado AR. (2021). Religious leaders' knowledge of family planning and modern contraceptive use and their involvement in family planning programmes in Burkina Faso: a qualitative study in Dori in the Sahel Region. Open Access J Contracept, 123–32.
10 Bellizzi S, Sobel HL, Obara H, Temmerman M. Underuse of modern methods of contraception: underlying causes and consequent undesired pregnancies in 35 low-and middle-income countries. Hum Reprod. 2015;30(4):973–86.
11 Blackstone SR, Nwaozuru U, Iwelunmor J. Factors influencing contraceptive use in sub-saharan Africa: a systematic review. Int Q Community Health Educ. 2017;37(2):79–91.
12 Bongomin F, Chelangat M, Eriatu A, Chan Onen B, Cheputyo P, Godmercy SA, Henry Obol J. (2018). Prevalence and factors associated with contraceptive use among HIV-infected women of reproductive age attending infectious disease clinic at Gulu Regional Referral Hospital, Northern Uganda. *BioMed Research International, 2018*.
13 Cleland J, Bernstein S, Ezeh A, Faundes A, Glasier A, Innis J. Family planning: the unfinished agenda. Lancet. 2006;368(9549):1810–27.
14 Duerr A, Hurst S, Kourtis AP, Rutenberg N, Jamieson DJ. Integrating family planning and prevention of mother-to-child HIV transmission in resource-limited settings. Lancet. 2005;366(9481):261–3.
15 Ewerling F, Victora CG, Raj A, Coll CV, Hellwig F, Barros AJ. Demand for family planning satisfied with modern methods among sexually active women in low-and middle-income countries: who is lagging behind? Reproductive Health. 2018;15:1–10.
16 Goodkind D, Lollock L, Choi Y, McDevitt T, West L. The demographic impact and development benefits of meeting demand for family planning with modern contraceptive methods. Global Health Action. 2018;11(1):1423861.
17 Guta A, Amsalu B, Weldamanuel T, Sema A, Abera L, Demissie BS, Belay Y. Utilization of modern contraceptives and associated factors among street women in dire Dawa, Eastern Ethiopia: a mixed study. Reproductive Health. 2021;18:1–12.
18 Hubacher D, Trussell J. A definition of modern contraceptive methods. Contraception. 2015;92(5):420–1.
19 Kaniki FR. Factors influencing the use of modern contraceptive methods among rural women of child bearing age in the Democratic Republic of the Congo. J Family Med Prim Care. 2019;8(8):2582–6. https://doi.org/10.4103/jfmpc.jfmpc_345_19.
20 Kebede A, Abaya SG, Merdassa E, Bekuma TT. Factors affecting demand for modern contraceptives among currently married reproductive age women in rural Kebeles of Nunu Kumba district, Oromia, Ethiopia. Contracept Reproductive Med. 2019;4(1):21. https://doi.org/10.1186/s40834-019-0103-3.
21 Kemigisha E, Bruce K, Nyakato VN, Ruzaaza GN, Ninsiima AB, Mlahagwa W, Michielsen K. Sexual health of very young adolescents in South Western Uganda: a cross-sectional assessment of sexual knowledge and behavior. Reproductive Health. 2018;15:1–8.
22 Lopez-del Burgo C, de Irala J. Modern contraceptive methods: a new misleading definition. Contraception. 2016;93(6):565–6.
23 Mbalire C. Factors influencing utilisation of Modern Family Planning methods among sexually active adolescents in Mukungwe Sub-county, Masaka District, Uganda. International Health Sciences University.; 2015.
24 Namasivayam A, Lovell S, Namutamba S, Schluter PJ. (2020). Predictors of modern contraceptive use among women and men in Uganda: a population-level analysis. BMJ Open, 10(2), e034675.
25 Okoeguale J, Osagiede EF, Idumwonyi O, Ehigiegba AE. Factors influencing the use of modern contraceptives amongst postpartum women in a rural tertiary hospital in South-South Nigeria. Afr J Reprod Health. 2022;26(1):15–23.
26 Organization WH. (2021). Family planning/contraception methods; 2021. In.
27 Shiffman J. Has donor prioritization of HIV/AIDS displaced aid for other health issues? Health Policy Plann. 2008;23(2):95–100.
28 Shiffman J, Quissell K. Family planning: a political issue. Lancet. 2012;380(9837):181–5.
29 Sonfield A, Hasstedt K, Kavanaugh ML, Anderson R. The social and economic benefits of women's ability to determine whether and when to have children. In: New York: Guttmacher Institute; 2013.
30 Sserwanja Q, Musaba MW, Mukunya D. Prevalence and factors associated with modern contraceptives utilization among female adolescents in Uganda. BMC Womens Health. 2021;21:1–7.
31 Subedi R, Jahan I, Baatsen P. Factors influencing modern contraceptive use among adolescents in Nepal. J Nepal Health Res Counc. 2018;16(3):251–6.
32 Thakuri DS, Singh KC, Karkee Y, R., Khatri RB. (2022). Knowledge and practices of modern contraceptives among religious minority (Muslim) women: a cross-sectional study from Southern Nepal. PLoS ONE, 17(12), e0278899.
33 Tsehay CT. Factors associated with modern contraceptive demands satisfied among currently married/in-union women of reproductive age in Ethiopia: a multilevel analysis of the 2016 demographic and Health Survey. BMJ Open. 2022;12(2):e049341. https://doi.org/10.1136/bmjopen-2021-049341.
34 Wasswa R, Kabagenyi A, Ariho P. Multilevel mixed effects analysis of individual and community level factors associated with modern contraceptive use among married women in Uganda. BMC Public Health. 2021;21:1–13.
35 Wulifan J, Brenner S, Jahn A, Allegri Md. (2016). A scoping review on determinants of unmet need for family planning among women of reproductive age in low and middle income countries.
36 Wusu O. Religious influence on non-use of modern contraceptives among women in Nigeria: comparative analysis of 1990 and 2008 NDHS. J Biosoc Sci. 2015;47(5):593–612.

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