**Knowledge, attitudes, and practices on family planning among Women of Reproductive Age in Mbeya urban, Tanzania**

*Irene I Sulle1 and Theresia Estomih Nkya1[[1]](#footnote-1)\**

1University of Dar es Salaam, Mbeya College of Health and Allied Sciences, P.O Box 608, Mbeya, Tanzania

|  |
| --- |
| **Abstract**  **Introduction**: Family planning involves a couple's intentional efforts to limit or space pregnancies through contraceptive methods. Globally, unintended pregnancies result in approximately 3.9 million unsafe abortions each year, often with fatal consequences, and the adoption of family planning methods remains insufficient. This study aimed to assess the knowledge, attitudes, and practices related to family planning among reproductive-age women in Mbeya urban Tanzania.  **Methods: A cross-sectional study was conducted at Mbeya Zonal Referral Hospital, focusing on reproductive-age women (18-45 years) attending the family planning clinic. Participants were recruited through simple random sampling, and data were gathered using structured, close-ended questionnaires that included demographic information and knowledge, attitudes, and practices regarding family planning. Data analysis was performed using Stata Version 23, employing descriptive statistics and a multivariate logistic regression model to assess associations between variables. A p-value of 0.05 was used as the threshold for statistical significance.**  **Results**: The study had 350 participants, most of whom were women aged 26-35 (50.6%). Of these, 93.1% demonstrated good knowledge of family planning, 2% had a positive attitude, and 80.3% reported good family planning practices. Positive family planning practices were significantly associated with knowledge of FP (p = 0.007), educational level (p = 0.000), and age (p = 0.000).  **Conclusion**: While awareness of family planning and contraceptive methods is satisfactory, the actual use of contraception remains low. Targeted education and counselling for women and family planning messages aimed at men are needed. Further studies are also necessary to explore the reasons for non-use and how to address them. Additionally, future research should assess the cost-benefit and acceptance of contraceptive methods to improve education efforts.  **Keywords:** Family planning, knowledge, attitude and practice, Mbeya |

**Introduction**

Family planning is a conscious effort by individuals or couples to limit or space their children through contraceptive methods. It addresses various aspects of reproductive health, including adequate birth spacing, prevention of unintended pregnancies and abortions, reduction of sexually transmitted infections, and enhancement of the overall quality of life for mothers, infants, and families (Bintabara et al., 2018; May, 2017). Family planning empowers individuals to decide when to have children, the number of children to have, and the intervals between pregnancies, utilizing both modern contraception and natural methods. Effective family planning also encompasses infertility treatment and requires a collaborative effort from couples (Chicoyo, 2016; Coale et al., 1991; Quick, 1978).

Contraception involves explicitly the intentional use of various methods to prevent pregnancy following sexual intercourse. Primary artificial contraception methods include barrier methods (e.g., condoms), hormonal contraceptives (e.g., contraceptive pills), intrauterine devices (IUDs), and sterilization techniques (P et al., 2018). The benefits of family planning are significant, allowing young individuals to postpone parenthood until they are ready to assume parental responsibilities. Access to high-quality family planning services can markedly reduce maternal, neonatal, and child mortality rates while enhancing women’s economic participation and promoting educational opportunities for girls (Dinho & Swai, 2017; Yusuf & Mehmet Yağma, 2021). Furthermore, adequate spacing between pregnancies can lower infant and maternal mortality rates by reducing complications during labour (Nansseu et al., 2015; Thapa et al., 2018). Discussions about family planning and birth control should extend beyond the mechanics of methods, as misconceptions and stigma often hinder open dialogue.

In Sub-Saharan Africa, factors influencing the modest increase in family planning include women's education, program development, and government initiatives, though the high desired family size remains a barrier (Bongaarts, 2020; Kassim & Ndumbaro, 2022; Nansseu et al., 2015). Several countries, such as Ethiopia, Kenya, and Rwanda, have successfully implemented family planning programs, leading to significant fertility declines over the past two decades, influenced by supportive policies (Bongaarts, 2020). In Ethiopia, a study showed that while knowledge of family planning was high, contraceptive use was lower than expected, with 64% of women having used contraceptives and 43% currently using them (Dina et al., 2021; Semachew Kasa et al., 2018). East Africa's contraceptive prevalence stands at 45.68%, affected by factors like education, media exposure, and distance to health facilities. Specifically, it is 69% in Burundi, 36% in Tanzania, and 27% in Uganda (Demeke et al., 2024).

In Tanzania, the total fertility rate is five births per woman, with rural women experiencing a higher rate than their urban counterparts (Kara et al., 2019). While 29% of women use contraceptive methods, fertility rates have decreased slightly due to urbanization and access to modern contraceptives (Agnes Enock Ayubu, 2019; Kara et al., 2019). Tanzania's Vision 2025 emphasizes quality reproductive health services and the reduction of maternal and infant mortality (Kara et al., 2019; Söderbäck et al., 2023). Despite adequate knowledge of family planning, adolescent usage remains low. In a study in Tanzania, only 6% of participants had used family planning services, despite 67.4% demonstrating adequate knowledge (Bintabara et al., 2018; Kara et al., 2019). Similarly, a study in Dar es Salaam found that although adolescent females had good knowledge of contraception, only 34% used it, primarily sourcing contraceptives from pharmacies (Shabhay et al., 2021).

Despite deliberate efforts and strategies placed by the Government of Tanzania, there is a loophole in the awareness of family planning. Misconceptions, concerns about side effects, limited contraceptive options, poor spousal communication, and a preference for larger families have significantly contributed to the decreased use of family planning services in Tanzania (Higgins & Smith, 2016). This study assesses the knowledge, attitudes, and practices regarding family planning among reproductive-age women in Mbeya Urban, Tanzania. The findings will provide current data for resource allocation and planning of interventions to enhance awareness of family planning. This will assist the government and other institutions in allocating necessary resources to mitigate the effects of early pregnancy and reduce maternal and child mortality.

**Methods**

**Study area and targeted population**

This study was conducted in Mbeya Urban, in the Southern Highlands of Tanzania. The Mbeya region is geographically bordered by Tabora to the northwest, Singida to the northeast, Iringa to the east, and Songwe to the south and west, along with Malawi. The study targeted women of reproductive age between 18 and 25 who attended a family planning clinic at the Mbeya Zonal Referral Hospital, which provides health services to people from Mbeya and bordering regions.

**Study Design**

This was a cross-sectional study conducted for three months in 2024. The inclusion criteria encompassed all women of reproductive age attending the family planning clinic at Mbeya Zonal Referral Hospital who provided consent by signing a consent form. Participants were required to be able to read and write and be mentally and physically fit. Exclusion criteria included women who were not of reproductive age and those unable to provide consent, those unable to read and write and those who were not mentally or physically fit.

**Sample size estimation**

The sample size was determined based on a previous study (Id et al., 2024). 5% margin of error, a 95% confidence interval range, and 36% of the proportion of variables in the previous study (Id et al., 2024). The sample size necessary was 355.

This was calculated using the formula:

n = (1.96/ w)2 p (1-p)

Where: n = sample size (minimum sample size)

W = margin of error on P (3%) = 0.03

p = proportion from the previous study 36% = 0.36

Therefore, n = (1.96)2×0.36×0.2/ (0.36)2 = 355

**Sampling procedure**

A simple random technique was used, by which every woman of reproductive age (18-45 years) who attended the family planning clinic during the study's duration had an equal chance to participate.

**Data collection**

Data collection was done using a structured questionnaire to capture qualitative participant data. The questionnaire captured social demographic data, knowledge, attitudes and practices towards family planning.

**Data management and analysis**

The data were inserted in an Excel format database and compiled and analysed using the statistical software Stata Version 23. Descriptive statistics such as frequency (%) for categorical and mean and standard deviation for numerical data were used. Analysis determined the association between variables, and respective p-values were calculated. The p=0.05 was used as a cut-off point to test statistical significance between variables.

**Ethical Considerations**

Ethical approval for this study was obtained from the University of Dar es Salaam's Department of Medical Research and Field Studies Institutional Review Board (IRB) (REF: IIS-2020-04-11892). Permission to conduct research at Mbeya Zonal Regional Hospital was obtained from the Executive Director of Mbeya Zonal Referral Hospital. Participants’ rights to privacy, anonymity and confidentiality were implemented. Before participation, voluntary consent was sought from all participants. Each participant received a written information sheet detailing the study's purpose, potential benefits, and a statement that there were no foreseeable risks. Confidentiality was maintained throughout the research process, including data collection, management, and report writing, ensuring that participants' names and personal information were not disclosed to any third party.

**Results**

**Socio-demographic characteristics of study participants**

A total of 258 participants were enrolled in this study, yielding a response rate of 77%. Most participants were between 26 and 35 years old, accounting for 50.6% of the sample, with a mean age of 29.66 ± 6.84 years. Participants aged 15 to 25 years constituted 30%. Regarding religious affiliation, 21.7% of participants identified as Muslims, while 10.9% identified with other religions, including Buddhism. The majority (67.4) were Christians from various denominations. Regarding marital status, most participants were single (39.4%), while 7.4% were divorced. Educational attainment varied, with 30% of participants having completed university-level education, 16.9% having completed primary education, and 9.7% having attained advanced secondary education, as summarized in **Table 1**.

**Table 1:** **Demographic characteristics of study participants (N=258)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | | **Frequency** | **Percentage (%)** |
| Age | 15 – 25 | 96 | 30 |
| 26 – 35 | 162 | 50.6 |
| Religion | Roman Catholic | 53 | 15.1 |
| Muslim | 76 | 21.7 |
| Lutheran | 68 | 19.4 |
| Adventist | 57 | 16.3 |
| Pentecostal | 58 | 16.6 |
| Others | 38 | 10.9 |
| Marital status | Single | 138 | 39.4 |
| Married | 128 | 36.6 |
| Divorced | 26 | 7.4 |
| Widow | 58 | 16.6 |
| Education level | Primary School | 59 | 16.9 |
| Secondary School | 83 | 23.7 |
| Advanced secondary education level | 34 | 9.7 |
| College level | 69 | 19.7 |
| University level | 105 | 30 |

**Knowledge of and source of information on family planning**

In this study, 6.9% of participants demonstrated poor knowledge of family planning, while the majority (93.1%) exhibited good knowledge. Regarding awareness of family planning, 8% of the participants had never heard of it, whereas 92% were familiar with it. Regarding awareness of contraceptives, 82.6% of participants acknowledged that contraceptives could have side effects, while 17.4% believed that contraceptives had no side effects. A small proportion (6.9%) were unaware of any contraceptive methods, whereas the majority (74.6%) knew about three different contraceptive methods. Only one participant (0.3%) was aware of four contraceptive methods. Participants had varying sources of information on family planning. 7.7% were not informed, while the most common source of information was the hospital (24.6%), and only 1.7% were obtained from both parents and social media.

**Figure 1: Knowledge of participants on family planning and contraceptives**

**Figure 2: Source of information on family planning among participants**

**Attitude Toward Family Planning**

Most participants (98%) exhibited a poor attitude toward family planning. Among these, 74.6% agreed that adhering to family planning methods was challenging, 3.1% felt that it reduced sexual pleasure, and 1.7% viewed family planning as a sin. Conversely, only 2% of participants supported family planning (**Figure 3**).

**Family Planning Practice**

Despite the widespread poor attitude toward family planning, most participants (80.3%) demonstrated good family planning practices. Conversely, 19.7% of participants exhibited poor family planning practices (**Figure 4**). In this study, the most preferred contraceptive method among participants was abstinence, chosen by 24.9%. Other popular methods included pills, selected by 14.9% of participants, and implants, favoured by 14.3%. while a small proportion (1.4%) opted for the withdrawal method, and 58.8% favoured other methods (**Figure 4**).

**Figure 3: Attitude of participants towards family planning**

**Figure 4:** **Family planning practices among study participants**

**Factors Affecting Family Planning**

Using a multivariate logistic regression model, this study identified several factors significantly associated with good family planning practices (**Table 2**). These included age, knowledge of family planning, and level of education, all showing strong associations (p = 0.000, 0.007, and 0.000, respectively). This suggests that older age, higher knowledge levels, and higher educational attainment positively influenced family planning practice.

**Table 2: Factors associated with family planning**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Variable** | **COR (95% CI)** | **p-value** | **AOR (95% CI)** | **p-value** |
| Age group | 0.50 (0.36 - 0.68) | 0 | 0.69 (0.44 - 1.07) | 0.101 |
| Marital status | 0.38 (0.26 - 0.57) | 0.178 | 0.53 (0.33 - 0.83) | 0.006 |
| Education level | 2.04 (1.48 - 2.84) | 0.007 | 1.38 (0.93 - 2.07) | 0.113 |
| Religion | 0.77 (0.65 - 0.93) | 0.275 | 0.85 (0.67 - 1.09) | 0.203 |
| Knowledge on FP | 0.98 (0.73 - 1.32) | 0 | 1.27 (0.87 - 1.85) | 0.218 |

FP= family planning

**Discussion**

**Background Characteristics of the Respondents**

This study involved women of reproductive age, with the majority aged between 26 and 35. Most participants were single and had attained university-level education. These findings are consistent with a similar study conducted in India, where most participants were aged between 20 and 30 years and had some level of education (Abul Kalam Azad et al., 2022). A study from India reported a mean age of 26 years, while another study in the same area found the mean age of participants to be 30 years, with more than 80% aged 25 years or above (Dhakal et al., 2020; Nayak & Jain, 2022). These results suggest that women aged 20 to 30 years make up a significant portion of the population seeking reproductive health services. This could be attributed to health-seeking behaviours particularly prominent among women in this age group.

**Knowledge of Family Planning Among Participants**

In this study, 93.1% of participants had good knowledge of family planning. This is comparable to findings from studies in Uganda and Nigeria (Denis Turyasingura, 2023; Ikechebelu et al., 2005). However, a study from India reported that only 56% of respondents had good knowledge (Abul Kalam Azad et al., 2022), and a study in Ethiopia found that 42.3% had adequate knowledge (Semachew Kasa et al., 2018). These discrepancies may be due to differences in health-seeking behaviours and access to information in various regions worldwide, particularly among women.

In this study, 92% of participants were aware of family planning. Similarly, high levels of awareness were observed in studies from Nepal (Dhakal et al., 2020) and Thailand (>90%) (Salisbury et al., 2016). In contrast, a study conducted in a Bangladesh refugee camp revealed that 60% of respondents were unaware of family planning (Abul Kalam Azad et al., 2022). A similar pattern was observed in Cameroon, where 39.7% of women did not practice family planning and lacked adequate information (Nansseu et al., 2015). This variation may reflect the successful implementation of family planning programs in certain regions, which provide extensive services and education.

In this study, 74.6% of participants were familiar with three contraceptive methods. In contrast, a study conducted in Cameroon found that 5.9% of participants cited one method, 8.9% knew two methods, and 7.9% were aware of three methods, while a significant 53.4% of women knew more than five methods (Nansseu et al., 2015). Additionally, 2% of participants in that study were not aware of any contraceptive methods. The lower awareness of multiple contraceptive methods in this study might indicate that family planning education is not sufficiently comprehensive, limiting the range of knowledge about different contraceptive methods and their benefits.

*Source of Information on Family Planning*

In this study, hospitals were the most common source of information on family planning (24.6%). This finding aligns with studies from Uganda (Denis Turyasingura, 2023), Ethiopia (Semachew Kasa et al., 2018), and Nepal (Dhakal et al., 2020), where hospitals served as the primary source of family planning knowledge. In another study from India, however, 54% of participants cited their social circle as their primary source of information, with healthcare providers accounting for only 35% (Nayak & Jain, 2022). These findings highlight the need for policymakers to enhance the training of healthcare providers to ensure that accurate and comprehensive family planning services and education are delivered.

**Attitude Towards Family Planning**

In this study, 98% of participants exhibited a poor attitude towards family planning, consistent with findings from Ethiopia (Semachew Kasa et al., 2018). In contrast, studies from Nepal (Salisbury et al., 2016), Nigeria (Ikechebelu et al., 2005) and Uganda (Denis Turyasingura, 2023) reported that respondents had poor attitudes towards family planning. The prevailing poor attitudes in some regions may be due to misconceptions and cultural beliefs that discourage interference with childbearing. Lack of knowledge and deep-rooted cultural beliefs play a significant role in shaping these negative attitudes.

In this study, 74.6% of participants cited difficulty adhering to family planning methods as a reason for not using them. Similarly, a study in Bangladesh found that 40% of participants were too ashamed to discuss family planning with their partners, and 30% believed that using family planning methods was sinful (Abul Kalam Azad et al., 2022). Addressing these barriers is crucial in promoting open dialogue within communities and fostering positive attitudes toward family planning.

**Family Planning Practice**

Despite poor attitudes, 80.3% of participants in this study practised family planning, comparable to 74% of respondents in Bangladesh (Abul Kalam Azad et al., 2022). These findings suggest that, despite negative attitudes, socioeconomic factors may compel individuals to adopt at least natural methods of contraception to avoid unintended pregnancies. In terms of preferred contraceptive methods, 24.9% of participants in this study favoured abstinence, while 14.9% preferred pills. In contrast, studies from Nepal (Salisbury et al., 2016), Uganda (Denis Turyasingura, 2023), Thailand (Nayak & Jain, 2022), and Bangladesh (Dhakal et al., 2020) reported that most participants preferred pills. A study from Ethiopia showed that participants preferred injectables (Semachew Kasa et al., 2018), while in Cameroon, male condoms were the most preferred (Nansseu et al., 2015). However, natural methods were also commonly used. The availability and accessibility of specific techniques may influence the variation in contraceptive preferences across regions. Pills, for instance, are widely accepted in many countries due to their easy availability over the counter (Wani et al., 2019).

**Factors Affecting Family Planning Practice**

*Age*

This study found that age was significantly associated with good family planning practice (p = 0.000). Similar results were observed in a study from Ethiopia (Semachew Kasa et al., 2018). However, they contrast with findings from a survey conducted in India, where no demographic variables besides wealth rank influence family planning practice (Dhakal et al., 2020). The increasing awareness, responsibility, and necessity for family planning as women grow older may explain the positive association between age and family planning practice. As age increases, sexual activity tends to become more regular, and women may become more interested in using family planning methods to manage family size and prevent unintended pregnancies.

*Knowledge of Family Planning*

In this study, knowledge of family planning was also strongly associated with good family planning practices. Similar findings have been reported in studies conducted in Cameroon (Nansseu et al., 2015) and Nigeria (Ikechebelu et al., 2005). This relationship underscores the importance of knowledge as a key factor in motivating individuals to adopt and maintain family planning practices. Awareness of the benefits, methods, and consequences of family planning enables women to make informed decisions, leading to the consistent and responsible use of contraceptive methods (Bintabara et al., 2018; Haberlen et al., 2017).

*Level of Education*

The level of education was another significant factor associated with good family planning practice. This finding is consistent with studies from Ethiopia (Semachew Kasa et al., 2018) and Pakistan (Wani et al., 2019), demonstrating that higher educational attainment correlates with better family planning practices. Educated women are more likely to understand the economic, health, and social benefits of family planning, enabling them to make informed decisions. Additionally, educated women may feel more confident in negotiating family size and contraceptive use with their partners, leading to more effective family planning.

**Limitations of the Study**

This study has several limitations. First, as a cross-sectional study, it may not fully capture the prevalence of knowledge, attitudes, and practices related to family planning. Cross-sectional studies provide a snapshot in time, which may not reflect changes in these factors over time or across different settings. Additionally, the study did not assess the role of men in family planning decisions. The exclusion of this factor may limit the understanding of the broader dynamics that influence family planning practices in the community.

**Conclusion**

While awareness of family planning and contraceptive methods is relatively high, the actual uptake of contraceptives remains suboptimal among women in Mbeya. To improve contraceptive use, targeted educational and counselling interventions should be implemented, focusing on both women and men. Family planning messages that include men are crucial for increasing community-wide support and participation. Further research is needed to explore the various reasons for the non-use of contraception and how these barriers can be effectively addressed. Future studies should also focus on evaluating the cost-benefit and acceptance of different contraceptive methods, which can guide health education efforts and promote more informed choices.

**Acknowledgements**

The author would like to thank the Mbeya Zonal Referral Hospital staff and the University of Dar Es Salaam-Mbeya College of Health and Allied Sciences management for allowing us to conduct this study.

**Authors' contributions**

IIS conceived the study, collected data, and performed analysis. TEN and TBR provided data interpretation and wrote and approved the manuscript.

**Funding**

No specific funding was received to conduct this study.

**Competing interests**

The author declares that she has no competing interests.

**Availability of data and material**

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

**References**

Abul Kalam Azad, M., Zakaria, M., Nachrin, T., Chandra Das, M., Cheng, F., & Xu, J. (2022). Family planning knowledge, attitude and practice among Rohingya women living in refugee camps in Bangladesh: a cross-sectional study. *Reproductive Health*, *19*(1). https://doi.org/10.1186/s12978-022-01410-0

Agnes Enock Ayubu, L. K. M. L. D. K. (2019). *Knowledge, attitudes, and use of family planning methods among female secondary school students in Tanzania*.

Bintabara, D., Ntwenya, J., Maro, I. I., Kibusi, S., Gunda, D. W., & Mpondo, B. C. T. (2018). Client satisfaction with family planning services in the area of high unmet need: Evidence from Tanzania Service Provision Assessment Survey, 2014-2015. *Reproductive Health*, *15*(1). https://doi.org/10.1186/s12978-018-0566-8

Bongaarts, J. (2020). Trends in fertility and fertility preferences in sub-Saharan Africa: the roles of education and family planning programs. *Genus*, *76*(1). https://doi.org/10.1186/s41118-020-00098-z

Chicoyo, C. (2016). Socio - Cultural Factors Influencing Fertility in MOROGORO District, Tanzania. *IOSR Journal of Humanities and Social Science*, *21*(07). https://doi.org/10.9790/0837-02107032541

Coale, A. J., Wang Feng, Riley, N. E., & Lin Fu De. (1991). Recent trends in fertility and nuptiality in China. *Reprint - East-West Population Institute*, *267*. https://doi.org/10.1126/science.251.4992.389

Demeke, H., Legese, N., & Nigussie, S. (2024). Modern contraceptive utilization and its associated factors in East Africa: Findings from multi-country demographic and health surveys. *PLoS ONE*, *19*(1 January). https://doi.org/10.1371/journal.pone.0297018

Denis Turyasingura. (2023). Knowledge, attitude and practices among women between 15-49 years towards utilisation of family planning services at Itojo hospital, Ntungamo district. *Student’s Journal of Health Research Africa*, *9*.

Dhakal, U., Shrestha, R. B., Bohara, S. K., & Neupane, S. (2020). Knowledge, Attitude and Practice on Family Planning among Married Muslim Women of Reproductive Age. *Journal of Nepal Health Research Council*, *18*(2). https://doi.org/10.33314/jnhrc.v18i2.2244

Dina, G. D., Debelo, B. T., Belema, D., Danusa, K. T., & Muleta, R. (2021). Fertility desire, knowledge of prevention of MCT of HIV and associated factors among men and women attending ART clinic at public health institutions of West Shoa Zone, Oromia, Ethiopia, 2020. *HIV/AIDS - Research and Palliative Care*, *13*. https://doi.org/10.2147/HIV.S328565

Dinho, A. E., & Swai, E. (2017). Tutor’s Clinical Knowledge, Attitude and Teaching Strategies in Nursing Schools of Mwanza Region – Tanzania. *The International Annals of Medicine*, *1*(10). https://doi.org/10.24087/iam.2017.1.10.350

Haberlen, S. A., Narasimhan, M., Beres, L. K., & Kennedy, C. E. (2017). Integration of Family Planning Services into HIV Care and Treatment Services: A Systematic Review. *Studies in Family Planning*, *48*(2). https://doi.org/10.1111/sifp.12018

Higgins, J. A., & Smith, N. K. (2016). The Sexual Acceptability of Contraception: Reviewing the Literature and Building a New Concept. In *Journal of Sex Research* (Vol. 53, Issues 4–5). https://doi.org/10.1080/00224499.2015.1134425

Id, H. D., Id, N. L., & Nigussie, S. (2024). *Modern contraceptive utilization and its associated factors in East Africa : Findings from multi-country demographic and health surveys*. 1–15. https://doi.org/10.1371/journal.pone.0297018

Ikechebelu, J. I., Joe-Ikechebelu, N. N., & Obiajulu, F. N. (2005). Knowledge, attitude and practice of family planning among Igbo women of south-eastern Nigeria. *Journal of Obstetrics and Gynaecology*, *25*(8). https://doi.org/10.1080/01443610500328231

Kara, W. S. K., Benedicto, M., & Mao, J. (2019). Knowledge, Attitude, and Practice of Contraception Methods Among Female Undergraduates in Dodoma, Tanzania. *Cureus*. https://doi.org/10.7759/cureus.4362

Kassim, M., & Ndumbaro, F. (2022). Factors affecting family planning literacy among women of childbearing age in the rural Lake zone, Tanzania. *BMC Public Health*, *22*(1). https://doi.org/10.1186/s12889-022-13103-1

May, J. F. (2017). The Politics of Family Planning Policies and Programs in sub-Saharan Africa. *Population and Development Review*, *43*. https://doi.org/10.1111/j.1728-4457.2016.00165.x

Nansseu, J. R. N., Nchinda, E. C., Katte, J. C., Nchagnouot, F. M., & Nguetsa, G. D. (2015). Assessing the knowledge, attitude and practice of family planning among women living in the Mbouda health district, Cameroon. *Reproductive Health*, *12*(1). https://doi.org/10.1186/s12978-015-0085-9

Nayak, A. K., & Jain, M. K. (2022). Family planning knowledge, attitude, and practice among postnatal women in a Medical College Hospital. *Asian Journal of Medical Sciences*, *13*(9). https://doi.org/10.3126/ajms.v13i9.45094

P, T., N, P., & M, S. (2018). Knowledge, Attitude and Practices of Contraception among the Married Women of Reproductive Age Group in Selected Wards of Dharan Sub-Metropolitan City. *Journal of Contraceptive Studies*, *03*(03). https://doi.org/10.21767/2471-9749.100051

Quick, J. D. (1978). Liberalized abortion in Oregon: effects on fertility, prematurity, fetal death, and infant death. *American Journal of Public Health*, *68*(10). https://doi.org/10.2105/AJPH.68.10.1003

Salisbury, P., Hall, L., Kulkus, S., Paw, M. K., Tun, N. W., Min, A. M., Chotivanich, K., Srikanok, S., Ontuwong, P., Sirinonthachai, S., Nosten, F., Somerset, S., & McGready, R. (2016). Family planning knowledge, attitudes and practices in refugee and migrant pregnant and post-partum women on the Thailand-Myanmar border - A mixed methods study. *Reproductive Health*, *13*(1). https://doi.org/10.1186/s12978-016-0212-2

Semachew Kasa, A., Tarekegn, M., & Embiale, N. (2018). Knowledge, attitude and practice towards family planning among reproductive age women in a resource-limited setting of Northwest Ethiopia. *BMC Research Notes*, *11*(1). https://doi.org/10.1186/s13104-018-3689-7

Shabhay, A., Horumpende, P., Shabhay, Z., Mganga, A., Van Baal, J., Msuya, D., Chilonga, K., & Chugulu, S. (2021). Clinical profiles of diabetic foot ulcer patients undergoing major limb amputation at a tertiary care center in North-eastern Tanzania. *BMC Surgery*, *21*(1). https://doi.org/10.1186/s12893-021-01051-3

Söderbäck, K., Holter, H., Salim, S. A., Elden, H., & Bogren, M. (2023). Barriers to using postpartum family planning among women in Zanzibar, Tanzania. *BMC Women’s Health*, *23*(1). https://doi.org/10.1186/s12905-023-02330-2

Wani, R., Rashid, I., Nabi, S., & Dar, H. (2019). Knowledge, attitude, and practice of family planning services among healthcare workers in Kashmir – A cross-sectional study. *Journal of Family Medicine and Primary Care*, *8*(4). https://doi.org/10.4103/jfmpc.jfmpc\_96\_19

Yusuf, S., & Mehmet YAĞMA, N. (2021). Knowledge, attitude and practice of family planning in east african countries. *Medical Research Reports*, *4*(2).

1. \* **Corresponding author:** Theresia Estomih Nkya; theresia.nkya@gmail.com [↑](#footnote-ref-1)