

Research Article

Utilization of Modern Family Planning Methods Among Women of Reproductive Age (15-49) Years, in Juba Payam, in Juba City, South Sudan

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Abstract

Modern family planning methods have created a very important avenue for women and families to have sizes they want at the time they need them and also manage them effectively. However in many developing economies this has been hindered by various factors. Many countries in Africa are facing this challenge especially for women in the reproductive age of 15 to 49 years. This study therefore set out to investigate the factors that affect the utilization of modern family planning methods among women of reproductive age (15-49 years) at Juba Payam (District) in Juba City of South Sudan. The study was conducted in Juba Payam and targeted a population of 372 women and a sample size of 197 was considered. The study was cross sectional and applied both qualitative and quantitative methods. Data were analysed using descriptive statistics to derive means, frequencies, and percentages. Inferential statistic was used to derive odds ratios and significance using logistical regression and multivariate analysis. The study met all the ethical considerations required by law and regulations of Bugema University, Juba City authorities and South Sudan. The results revealed that the majority of the respondents were young women aged between 20-35 years, with some having only up to primary education level and with very low income. The contraceptive prevalence rate was very low (34%) and husband's approval (85.5%) greatly affected the utilization of modern family planning methods. The need for education and awareness was also strongly reported and emphasized in the findings. It is therefore recommended that there is need for education and awareness on top of improving the local incomes of the local women especially those with low levels of education. Finally, since men are crucial in decision making among these communities, they should also be targeted in the education and awareness programme on modern family planning methods.

Keywords

Family Planning Methods, Youth (Young Women), Juba City South Sudan

1. Introduction

The World Health Organization [1] defines family planning (FP) as a process that “allows people to attain their desired number of children, if any, and to determine the spacing of

their pregnancies”. It further explains that this may be achieved through use of modern contraceptive methods, e.g. Implants, IUD, Pills, Depo-Provera, Tub ligation Condom,

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Vasectomy, and the treatment of infertility [2]. In reproductive health, modern FP methods are a category of the several family planning methods adopted in females to achieve the desired number of children, follow resource and good health supportive child spacing and appropriate family sizes [2]. The modern family planning methods (MFPM), which constitute the male and female condoms, IUDs, sterilization, tube-ligation, injectable, patches, diaphragms, spermicidal agents, emergency contraception and implants are known to prevent pregnancy in females for greater than one year but call for decisions that are voluntarily made at individual level or as a couple [3].

The utilization of MFPM if embraced provides better lasting prevention of unwanted pregnancy and allows for informed decisions to be made on when to give birth to children. The United States of America Department of Health (2025) indicated that the modern contraceptive like condoms and diaphragms use among women of reproductive age was above 55 per cent in 37 countries and below 20 per cent in 23 countries with the purpose to protect themselves against sexually transmitted infections (STIs) and unintended pregnancies. It has also been reported that countries with high proportions of women using MFPM generally have lower levels of fertility, but may not necessarily exclude spread of sexually transmitted diseases [4].

However, despite the different underlying merits, global trends show that sexual and reproductive health (SRH) needs of youth remain largely unmet with about 20 million females aged 15- 19 years, in need of modern contraceptive methods [3]. In the developed economies of 23 European countries and Canada, it was reported that 32% of females aged 15 years utilize modern FPM while in the developing economies an estimated 20% of unmarried females aged 15 to 24 years utilized the MFPM between the years of 2003 to 2015 inclusive [5]. In the latter societies, a much lower median proportion of 17% is indeed reported to have used MFPM as of the year 2019 [3]. The trends of MFPM utilization remain incomprehensive in the females of reproductive ages, yet the lower overall utilization of MFPM require prioritization in the developing economies like in most African countries [6].

In the Sub-Saharan Africa, for example, the fertility rates are relatively higher than other regions of the world characterized by poorly met contraception needs [7]. The utilization of MFPM is estimated at 40% which is very low compared to the population of reproductive women globally [6]. In this region, the unintended pregnancy rates are the highest (33.3%), and commonly end up as unsafe terminations of fetus [9]. Moreover, pregnancy and child birth related complications are high contributing to poor maternal health outcomes in Africa [8].

In the East African Region, while the overall coverage of MFPMs is expected to grow to 55% by 2030, the current utilization level of 40% is low and the use of MFPMs in females remains inadequate [9]. Several factors affecting low use of MFPMs have been identified to include among others individual factors like side effects, level of education, and income

levels among others [9, 10]. Also several health services factors have been identified as affecting adherence to MFPM for example its high cost. However factors specific to females of reproductive ages remain relatively unknown in this sub region which includes one of the newest countries in the world, South Sudan. This country also experiences challenges of internal civil wars and conflicts making any interventions by government extremely minimal.

The International Red Cross program in South Sudan noted that FP up take involves a set of multiple factors that may be complex and difficult to address in South Sudan settings, specifically in conflict afflicted regions or States where things are always happen in an emergency situation [11]. Several interventions including strengthening channels of communication for demand creation, MFPM during immunization and antenatal visits and providing of FP services during HIV outreach visits have been put in place in the country. This initiative had earlier on yielded some positive results in some parts of this country [11, 12].

It was further revealed that Contraceptive Prevalence Rate of Modern Methods (CPRMM) among women of reproductive age showed increase of 3.2% in 2020 compared to 3.0% in the previous year [13]. However, statistics from Juba Teaching Hospital show that Juba city has a much lower rate of use of MFPM. The percentage of women with an unmet need for MFPM in Juba city has remained relatively constant between 29.6 to 29.7% in the last 10 years. Yet the city has the highest proportion of sexually active population (34.4%) [14]. It was therefore important to investigate and establish the factors associated with the utilization of MFPM among the females of reproductive ages to sufficiently inform interventions in reproductive health.

1.1. Statement of the Problem

The unavailability and poor access of MFPM in a sexually active population [2] mentioned above, clearly necessitates the need to establish the factors associated with use of MFPM among reproductive age females in this country.

The Ministry of Health in South Sudan developed an implementation plan for MFPM aimed at reducing the unmet needs to 10% by 2025 from 30.8% in 2021. This target has not been met [2]. According to the South Sudan FP2030 indicator summary sheet for modern contraceptive use, modern contraceptive use was 3.4% in 2018, 3.6% in 2019, and 3.7% in 2020. South Sudan still faces a major challenge in the utilization of MFPM [15].

This calls for an urgent need to establish the factors involved in and affecting the use of MFPM among females of reproductive ages in South Sudan.

1.2. Objectives

The general objective of this study was to investigate the

factors affecting utilization of MFPM among women of reproductive age (15-49) years in Juba city- South Sudan, so as to guide development of interventions that avert high rates of unwanted pregnancies, unplanned deliveries, unsafe abortions and maternal mortality rates, uneven birth spacing, malnourished and street children.

The specific objectives were to:

- 1) Assess the individual, socio-cultural and health system factors related with utilization of MFPM among women of reproductive age (15-49 years) in Juba Payam, Juba city, South Sudan.
- 2) Establish the level of utilization of MFPM among women of reproductive age in Juba payam, Juba City South Sudan.
- 3) Determine the factors affecting utilization of MFPM among women of reproductive age (15-49) years in Juba payam, Juba city, South Sudan.

1.3. Theoretical and Conceptual Framework

This study used the Andersen Health care utilization model [16] also referred to as the Behavioral Model of Health Services Utilization. This model aims at either demonstrating, predicting or explaining that there are enabling, predisposing and needs factors which are crucial in determining the use of MFPM and results into perceived health [17].

1.4. Literature Review

It was established that whereas this study will use women of age bracket (15-49) years, the majority of past studies [18-20] used varying age brackets for the study respondents. However, Medhanyie et al., in 2017 [11] suggested a need to conduct similar age groups studies in different contexts to explore age influence on utilization of MFPM. In addition, some studies adopted secondary data methodology, meta-analysis, systematic literature reviews and other studies were qualitative [20]. This study, however, used a cross-sectional and quantitative approach, and was undertaken in South Sudan in East Africa.

Some studies were limited to certain groups like female sex workers, HIV infected women, married and none married women, male youths, lesbians and homosexuals among others [22, 23]. This study focused on women in the age range of 15 to 49 years old.

2. Methods

This study was based on positivism philosophy because it emphasizes objective, observable facts [24]. This is significant in establishing empirical evidence initially reported by Auguste Comte [25] but also because positivism has been reported as one of the philosophies which continues to serve as

a foundation in scientific inquiry [24].

2.1. Research Approach

The study adopted mainly quantitative research approach based on the positivism philosophy but used minimal qualitative research approach to clarify the findings from quantitative data where descriptive and cross-sectional analytical research design was employed [25]. Descriptive design was used because it sought to generate frequency counts and percentage, means and standard deviations. The study also used a correlation research design for the purpose of establishing the association between variables. An analytical cross sectional design was adopted to determine the factors associated with utilization of MFPM at Juba Payam in Juba city –South Sudan [26, 27].

2.2. Locale of the Study

The study was conducted in Juba Teaching Hospital in Juba payam (district) of Juba City, South Sudan. This is the major hospital in this country and has capacity of 580 beds and is the national referral hospital funded by the central government. Though it is a national referral hospital it is also the main major hospital for this district (Juba payam). It is therefore characterized with receiving a large number of women coming for a variety services including maternal child health, post natal care, antenatal care, delivery, surgical care, mental care, gynecological care, emergencies among others.

This payam (District) has 3 zones namely: Eastern, Southern and Northern.

2.3. Population and Sample Size

The study targeted all women in the reproductive age living in Juba payam of Juba city. Since 2017, South Sudan has not had a formal census and the data given are estimates duly extrapolated by various international agencies [28] The United Nations Population Fund has the most current estimate of Juba payam population to be 210,550 of which 4,741 were women of reproductive age [28]. The study population comprised women of reproductive age (15-49 years) who use MFPM spread out in the 3 zones of the payam and were a total of 4,741.

The sample size for the study population was calculated using Kish and Leslie (1965) formula [29] for calculating sample size of a cross-sectional study followed by the adjusting formula and the total was 197.

The detailed population distribution and the sample size are provided in the sampling frame Table 1 below which also shows the distribution in the different zones related to the population of the zones.

Table 1. Sampling Frame.

Zone	Accessible Population Size	Sample size	Sampling Technique
Eastern Zone	702	48	Systematic Sampling
Southern Zone	3,486	106	Systematic Sampling
Northern Zone	553	43	Systematic Sampling
Total	4,741	197	

Source: UNPF Records of 2017 and adjusted by researcher

Table 1 further indicates the corresponding sample sizes and sampling techniques.

Key Informants were used to collect qualitative data because they are believed to be knowledgeable about the topic under investigation by virtue of the offices that they hold. The sample size for the Key Informant (KI) was seven (7) respondents and these were selected using purposive sampling techniques a non-probability procedure. The seven KIs were trained medical workers in Juba payam. Two KI were public health specialist from the office of Juba payam and the five were from Juba Teaching Hospital.

2.4. Sampling Procedures

In order to select the sample sizes from the 3 zones as indicated in Table 1 above, a systematic sampling was used to select the n th constant number which was obtained by dividing each zonal population by the desired sample size of the respective zone.

For, the Eastern zone population was 2,870 the desired sample was 91. So, n th value = $2,870 / 91 = 32$. Implying, every 32nd woman on the list was selected to participate in the study. For the rest of the zones, the same method of selection was applied since the n th value was constant.

The study included women, who were within age bracket of 15-49 years, who freely consented to participate in the study. This study excluded women of reproductive age who had memory challenges including mental ill health, those women who live outside Juba payam and those that were unable to respond.

2.5. Data Collection Methods

The study used a questionnaire survey method for the data collection as previously reported to be most appropriate in related circumstances [26, 30]. Each respondent was given 45 minutes to respond to all the questions.

For the key Informants, a guide was developed and followed in face to face interview, with each taking 30 minutes.

2.6. Data Collection Instruments

The study employed face-to-face researcher administered questionnaire survey developed to collect data from

the respondents [31]. This researcher-administered questionnaire was used to collect quantitative data from the respondents.

The questionnaire had four sections: A, B, C, and D. Sections A, B & C, were designed to capture data on individual, socio-cultural and health center factors and its variables. While Section D focused on the factors affecting utilization of MFPM among women of reproductive age.

The questionnaire was translated into the local language to ensure that the respondents understood exactly what was being asked.

Key Informant Interview Guide: This was used to collect qualitative data from the key informants. The key informants were health care providers in Juba Teaching Hospital and public health officers in Juba Payam. They were: a Medical Officer, a consultant Gynecologist, 2 Public Health Officers, a Senior House Officer, a Nurse and a Midwife.

The key informants were purposively selected to provide in-depth information about utilization of MFPM in Juba payam and complement the main instrument [32].

The interview guide focused on the individual, socio-cultural and health system factors which are affecting the utilization of MFPM in Juba payam.

2.7. Validity and Reliability of Instrument

During this study, quality control measures was undertaken to ensure that findings of the study would meet the standard requirement. Measures to ensure quality included validity and reliability procedure.

Validity: The researcher used Content Valid Index (CVI), which is a scale developed by computing the relevant items in the questionnaire by checking their clarity, meaningfulness in line with the objectives stated [33]. The questionnaire was considered valid since the CVI value was 0.92 [26, 33].

Reliability: The pre-test was conducted of the questionnaire at Munuki Payam in Juba city which district has relatively similar characteristics to Juba Payam. Thirty questionnaires were used and the responses plus any other information were duly examined to ensure clarity and objectivity [34].

2.8. Data Collection Procedure

South Sudan does not have an Institutional Review Board (IRB) so following an accepted practice in such situations, the researcher got an IRB certificate of approval from Mulago National Referral Hospital IRB in Kampala, Uganda (MHREC 2341 of 8th August, 2022).

In addition, there was also an approval given by the Juba Payam Administrator and Directorate of Juba Payam Health Department. These offices authorized data collection from the 3 Zones namely Southern Zone, Northern Zone, and Eastern zone.

Data were collected with support of 3 data collection assistants who were trained and oriented and then provided with verbal information about the purpose of the research. The written prior informed consent forms were then provided to the respondents for signature.

2.9. Ethical Considerations

The respondent's participation in this study was entirely optional, and at any point a respondent who wished to pull out from participation was allowed to do so. Since data was also collected from persons younger than the legal age of 18 years, relevant parent / guardian approval was sought by requesting them to sign an approval document after detailed explanation of what it meant and why it was required. Parents / guardians had a right to withdraw their children (below 18 years) at any stage of data collection.

The relevant COVID-19 standard operating procedures were fully adhered to.

2.10. Data Analysis

Data from field was cleaned from inconsistency, sorted and analysis started using the statistical package for social scientist

(SPSS version 26). Objectives one and two, frequencies and percentages were used for categorical data. However, for objective three, data was analyzed using chi-square and regression tests to correlate more than two variables. Chi-square was used to establish how individual and health system factors were associated with utilization of MFPM. Factors that were statistically associated with the dependent variable were subjected to further analysis using logistic regression to derive the Crude Odds Ratios (COR) and confidence intervals. Identified predictors were subjected to logistic regression to produce Adjusted Odds Ratios (AOR) to determine whether there was any association between the independent and dependent variables at $P < 0.05$.

The qualitative data were analyzed using thematic analysis and searching for patterns and themes then it was related to the variables.

3. Results and Discussion

There was 100% response (197) from the questionnaire and from all the 7 Key Informants.

3.1. Individual Factors Affecting Utilization of Modern FP Methods Among Women of Reproductive Age

Objective one of the study assessed the individual, socio-cultural, health system factors affecting the utilization of modern family planning methods among women of reproductive age (15-49 years) in Juba Payam, in Juba City, in South Sudan.

The individual factors in this study were age, education level, marital Status, religious affiliation, monthly income levels, and employment status. The results are given in Table 2 below.

Table 2. Individual Factors Affecting Utilization of MFPM.

Factors	Frequency (197)	Percent (%)
Age		
15 - 20 years	40	20.3
21-30 years	100	50.8
31 above	57	28.9
Education Level		
Never gone to school	67	34.0
Primary	79	40.1
Secondary	37	18.8
University	14	7.1

Factors	Frequency (197)	Percent (%)
Marital Status		
Single	25	12.7
Married	172	87.3
Religious Affiliation		
Protestant	79	40.1
Catholic	82	41.6
Moslem	28	14.2
Seventh Day Adventists (SDA)	4	2.0
Born – again	4	2.0
Employment status		
Employed	58	29.4
Unemployed	139	70.6
Monthly income level		
Poor ($\leq$ 1000 South Sudan Pounds)	112	56.9
Middle (2000 South Sudan Pounds)	78	39.6
Rich (3000 South Sudan Pounds)	7	3.6

Source: Primary Data

3.1.1. Age

The study results on Table 2 shows that more than half 100 (50.8%) of the respondents were age between 21-30 years. They are the most sexually active group compared to the age group above 31 years. The above distribution presented a suitable segregation for examination of MFPM. It is significant to note that Key Informant stated that:

“When women come to the clinic they are supported regard less of their age and where they come from. They willingly support any client who comes to the clinic” (KI 7).

3.1.2. Marital Status

The study results (Table 2 above) show that the majority (87.3%) of the respondents were married women. The few women (12.7%) who are not married have in some instances been reported [35] to be more promiscuous hence may tend to be inclined to using MFPM.

3.1.3. Education Level

The results further show that the majority (74.1%) of the respondents attended only primary education or no education at all. The low level of education may have significant impact on appreciating use of MFPM. Two Key Informants (KI 3 and

4) confirmed this:

“Education status in South Sudan has higher impact on utilization of MFPM including traditional cultures like having a large number of children. This makes acceptance of MFPM relatively difficult. Changing this may need more education and awareness” (KI 3 & 4).

Several authors [4, 20, 36] agree with the above observation. They have reported that young educated women in Rwanda and Uganda are having lesser number of children and hence are more inclined to be using MFPM.

3.1.4. Religious Affiliation

Study findings in Table 2 above reveal that the majority (41.6%) of the respondents were of the Catholic religion and another 40.1% were of the Protestants Christian religion. This suggests that Christianity, specifically Catholic and the Protestants, were the most dominant religions among the women in this study. This is very important because among the Catholic faith use of any type of contraceptives is not acceptable hence affecting the use of MFPM [37-39]. However, it is also important to note that religious affiliations have been used to improve education and awareness on having planned families hence MFPM [20, 38, 40].

3.1.5. Employment Status

On employment status of these women, it was established that the majority (70.6%) were not employed and are stay home house wives. This is not very surprising considering that many of these women have only up to primary school level of education. This is also an indication that they have very low income and hence may have difficulty in accessing MFPM.

This observation is in agreement with earlier reports [18].

3.1.6. Income Level

The majority (96.5%) of these respondents earn only an equivalent USD 0.44 per day. This extremely low income may

partly lead to low uptake of MFPM. This observation is in agreement with earlier researchers [9, 21].

3.2. Social-Cultural Factors Affecting Utilization of MFPM Among Women of Reproductive Age

The following socio-cultural factors were considered in relationship to the utilization of MFPM among women of reproductive age: peer influence, social support, contraceptive side effects, misconception, and husbands' / guardians' approval. The results are in Table 3 below.

Table 3. Social-Cultural Factors Affecting Utilization of MFPM among Women of Reproductive Age in Juba Payam, Juba City.

Factors	Frequency	Percent
Peer influence		
High	26	13.2
Low	171	86.8
Social support		
High	57	28.9
Low	140	71.1
Contraceptive side effect		
Yes	92	46.7
No	105	53.3
Misconception		
High	83	42.1
Low	114	57.7
Husband's approval		
Yes	136	80.7
No	38	19.3

Source: Primary Data 2022

3.2.1. Peer Influences

The results from Table 3 above shows that the majority (86.8%) of the respondents reported low peer influence on use of MFPM. These results do not take into consideration that these communities also have cultural norms and myths in relationship to children and what type of information women who have husbands can freely release. This also includes other factors like beliefs that modern contraceptives may be major causes of infertility and other diseases like cancer in women [41-43].

3.2.2. Social Support

The results show that majority (71.1%) of the respondents have low social support from the society on the utilization of MFPM among women of reproductive age. This could be related to the common low social interaction among urban dwellers especially in developing economies [44-46].

3.2.3. Contraceptive Side Effects

Most (53.3%) of the respondents reported not experiencing any contraceptive use side effects. However a significant

number (46.7%) reported experiencing side effects. While this may be true some earlier authors [47, 48] have pointed out that some effects are not due to the presence of MFPM themselves but also due to how they are used.

3.2.4. Misconception

The results in Table 3 above further show that the majority (57.7%) of the respondent had low misconceptions on utilization of MFPM. They believed that utilization of MFPM could result in failure to give birth later and also result in cancer and

other related diseases. These findings are consistent with several earlier reports [42, 43, 49].

3.2.5. Husband's Approval

The majority (80.7%) of the respondents do not consent for husband's approval while taking MFPM. This was probably due to the very strong husband's opposition to allow their spouses using MFPM [50, 51]. The above results are consistent with earlier reports [52] who articulated for involving MFPM in school curriculum to encourage future husbands to accept MFPM for their spouses.

3.3. Health System Factors

Table 4. Health System Factors and Utilization of MFPM among of Reproductive Age (15-49 Years) Women.

Factor	Frequency	Percent
Distance from the health facility		
Less than 5 KMs	192	97.5
More than 5 KMs	5	2.5
Availability of FP services		
Yes	177	89.8
No	20	10.2
Affordably of FP methods		
Yes	68	34.5
No	129	65.5
Sources of FP services		
Public	180	91.4
Private	17	8.6
Health worker's attitudes		
positive	194	98.5
Negative	3	1.5

Source: Primary Data

3.3.1. Distance from the Health Facility

The results from Table 4 above indicated that majority (97.5%) of the respondents live within Juba city which was less than 5 Kilometers. This short distances encourages women to attend MFPM clinics much more easily and also especially because they are young and energetic.

The above is in agreement with a recent study [52] which reported that there is increased utilization of sexual and reproductive health services in places where the facility is relatively close.

3.3.2. Health Worker's Attitudes

According to the results from Table 4 above, majority (98.5%) of the respondents reported that the health workers provide MFPM services to women of all ages including unmarried and those below 20 years. This implies that the health workers have good professional attitudes towards their work. This sentiment was complemented by a Key Informant, who stated that:

"They don't have problems giving support to anybody who comes for help in their clinic being a minor or not since they all citizens and even foreigners. Except when the

MFPM type they want is not available" (KI 1).

3.3.3. Availability of FP Services

The results from Table 4 above further shows that the majority (89.3%) of the respondents reported that FP services are always available at the health facilities. Similar results have been reported earlier in Tanzania [19, 53].

3.3.4. Affordability of Service

The results in Table 4 also show that the majority (71.8%) of the respondents cannot afford the costs of MFPM in this public health facility. This implies that the MFPM services in this public facility are not free of charge. This a major challenge especially when earlier results clearly indicated that these women basically have the lowest incomes if any. Earlier, Nakirijja, *et al.* (2010) [18] reported this challenge in South Sudan.

3.3.5. Sources of FP Services

The majority (91.4%) of the respondents reported the public health facilities have MFPM services and that they can access them from these facilities.

However though only a minority (8.6%) of the respondents indicated getting MFPM from private facilities, earlier authors [54] had reported relatively more women getting MFPM from private facilities despite these being even more expensive.

3.4. Level of Utilization of MFPM Among Women of Reproductive Age

The objective two of this study was to establish the level of

utilization of MFPM among women of reproductive age in Juba Payam, Juba City. The level was found to be low (34%). This is despite higher levels earlier reported in other parts of South Sudan [4, 19], and in other parts of the world [18, 49, 55, 56].

A Key Informant (KI 2) elaborated that:

"Women in Juba City have very low education level and understanding about modern contraceptive uptake is very hard. This lack of education have made women believe that MFPM can cause them infertility and predispose them into diseases like cancers and side effects like abdominal cramps, nausea and missing of monthly menstruation are irreversible" (KI 2).

3.5. Establish Factors Affecting Utilization of MFPM among Women of Reproductive Age

Objective 3 of this study was to establish factors affecting utilization of modern MFPM among women of reproductive age in Juba Payam, Juba City. The results in relationship to individual, socio-cultural and health system factors are shown in Tables 5, 6, 7 and 8.

3.5.1. Individual Factors

The major individual factors affecting utilization of MFPM in Juba Payam, Juba City, include: Age, level of education, marital status, religious affiliation, employment status and income levels. The results in Table 5 below shows what was most significant using Chi-square (χ^2) inferential statistical analysis.

Table 5. Results of Individual Factors Associated with the Utilization MFPM.

Variable	FP Utilization (%)		χ^2	df	p-value
	Yes	No			
Age					
< 20 years	12.5	87.5	5.609	1	0.018
> 21 years	31.2	68.8			
Education level					
Primary	21.8	78.2	9.267	1	0.002
Post primary	44.0	56.0			
Marital status					
Unmarried	72.0	28.0	26.61	1	0.000
Married	20.9	79.1			
Religious affiliation					
Others	26.1	73.9	0.243	1	0.622
Catholic	29.3	70.7			

Variable	FP Utilization (%)		χ^2	df	p-value
	Yes	No			
Employment status					
Employed	55.2	44.8	31.839	1	0.000
Unemployed	15.8	84.1			
Income status					
Not Rich	25.8	74.2	7.067	1	0.000
Rich	71.4	28.6			

Source: Primary Data **Significant at < 5% level

From Table 5 above the results show that out of the 6 individual factors only religious affiliation was established not be significantly associated with MFPM utilization ($p=0.622$).

3.5.2. Socio- Cultural Factors Affecting Utilization of MFPM

The socio-cultural factors examined to establish which are mainly affecting utilization of MFPM utilization among women of reproductive age in Juba Payam, Juba city were: peer influence, social support, side effect, misconception and husband's approval. The results of the chi-square analysis are in Table 6 below.

Table 6. Results of Analysis of Social-Cultural Factors Affecting Utilization of MFPM.

Variable	Utilization of FP Services		X^2	Df	p-value
	Yes	No			
Peer influence					
High	46.2	53.8	5.288	1	0.021
Low	26.6	75.4			
Social support					
High	59.6	40.4	41.894	1	0.000
Low	14.3	85.7			
Misconception					
Low	28.9	71.1	0.163	1	0.686
High	26.3	73.7			
Side effects					
Yes	48.9	51.1	40.107	1	0.000
No	8.6	91.4			
Husband approval					
No	81.6	18.4	69.428	1	0.000
Yes	14.5	85.5			

Source: Primary Data **Significant at <5% level

The results (Table 6 above) clearly show that out of the 5 social cultural factors only one misconception was found not significant ($p=0.686$).

3.5.3. Health System Factors Affecting Utilization of MFPM among Women of Reproductive Age in Juba Payam, Juba City

Five health system factors affecting utilization of MFPM were analyzed for significance included: distance from health facility, available FPM, affordable FPM, source of FP services and health care workers attitude (Table 7 below).

Table 7. Results of Chi-Square Analysis of the Health System Factors Affecting the Utilization of MFPMs.

Variable	Utilization of FP Services		χ^2	df	p-value
	Yes	No			
Distance from health facility					
< 5 KMS	26.0	74.0	7.131	1	0.008
> 6 KMS	80.0	20.0			
Availability FP					
Yes	22.6	77.4	20.292	1	0.000
No	70.0	30.0			
Affordability FP					
Yes	42.6	57.4	12.115	1	0.000
No	19.4	80.6			
Source of FP services					
Public	22.8	72.2	22.506	1	0.000
Private	76.5	23.5			
HCW attitude					
Positive	5.9	94.1	4.334	1	0.037
Negative	29.0	71.0			

Source: Primary Data 2022 **Significant at < 5% level

From Table 7 above, all the five health system factors examined were confirmed to have a significant association with the utilization of MFPM.

3.6. Level of Significance of Association of the Important Factors Identified Above on Utilization of MFPM

A further analysis was undertaken examining all the significant factors identified above to find out which among them were more significantly associated with utilization of MFPM. The multivariate level analysis using binary logistic regression was used. The crude odds ratio (COR) and adjusted odds ratio (AOR) and their corresponding 95% confidence interval (CI) were determined (Table 8 below).

Table 8. Multivariate Analysis of all Factors Affecting Utilization of MFPM among Women of Reproductive Age at Juba Payam in Juba City.

Variable	FP Use (%)	COR 95% CI		AOR 95% CI	P	
	No	Yes	P			
Marital Status						
Married	20.9	79.1	9.714	0.000	20.40	0.001**
Unmarried	72.0	28.0	1		1	
Level of Education						
Primary	21.8	78.2	1		1	
Post primary	44.0	56.0	0.354	0.003	0.040	0.011**
Employment status						
Employed	15.8	84.2	6.545	0.000	3.849	0.024**
Unemployed	55.2	44.8	1		1	
Side Effect						
No	8.6	91.4	10.21	0.000	20.45	0.000**
Yes	49.9	51.1	1		1	
Husband approval						
Yes	14.5	85.5	26.18	0.000	34.05	.0001**
No	81.6	18.4	1		1	
Distance from health facility						
> 6 KMS	80.0	20.0	.088	0.032	.269	0.575
< 5 KMS	26.0	74.0	1		1	
Peer Influence						
High	46.2	53.8	2.633	0.025	.523	0.418
Low	24.6	75.4	1		1	
Affordability						
No	19.4	72.6	3.093	0.000	6.423	0.012**
Yes	42.6	57.4	1		1	
Source of FP services						
Public point	22.8	77.2	.091	0.000	0.165	0.150
Private point	76.5	32.5	1		1	

The results (Table 8 above) show that out of the 9 significant factors only 6 are highly significant after the multivariate analysis and these are: Marital status, Educational level, Employment status, Side effects, Husband approval and affordability of MFPM.

3.6.1. Marital Status

On marital status, the results show that married women are 10 times more likely to use MFPM in this city. This implies

that improvement on use of MFPM should focus more on the unmarried women. This was further supported by a Key Informant (KI 01) who reported that:

“Unmarried women do not commonly come for MFPM services; they believe that these methods and sex are for married couples only because their traditions cannot permit girls into sexual activities outside marriage.” (KI 01)

The marital status findings and observations are in agreement with earlier reports from several countries [20, 31, 57]. These authors reported that MFPM are highly used by married

women compared to the unmarried and that there was a significant relationship between marital status and utilization of MFPM among women of reproductive age.

3.6.2. Education Level

Education level was established to significantly affect utilization of MFPM among women of reproductive age. The educated women above primary level of education were 25 times higher in use of MFPM compared to those who only stopped at primary level. These findings were further elaborated by another Key Informant (KI 2) who reported that:

“Education level of women in Juba city is low and hence understanding about modern contraceptive uptake is very hard. Lack of education make utilization of MFPM hard since these women believe it causes infertility and other diseases like cancer and abdominal cramps, nausea and missing of monthly menstruation are irreversible” (KI 2)

Several authors [3, 31, 58] have earlier reported that education is significant in level of utilization of MFPM in several developing economies like Ethiopia and Rwanda.

This implies there is need to improve the education and awareness level of women if they are to adhere to use of MFPM in Juba city.

3.6.3. Employment Status

The results in Table 8 also show that employed women are 4 times more likely to use MFPM than their unemployed colleagues. These findings were explained by a key informant (KI 3) as follows:

“The majority of the women in this Payam are not employed and most of them are just housewives for their families. They get support only from their husbands. Probably this is because they did not get any further education beyond primary school level” (KI 3).

Doyle, (2008) reported earlier that employed women had to organize and create time for their work and hence tended to use MFPM more often to regulate child birth, home management and they do not have enough time to use traditional methods. Other authors [51, 59, 60] have also reported that there was a very strong correlation between employed women and use of MFPM compared to the unemployed. It has also been reported more recently [5, 61] that in rural areas of developing economies when young women are provided employment, they get more interested in using MFPM.

3.6.4. Side Effects

Side effects arising from use of MFPM significantly affects its utilization. The odds of utilization of MFPM among women of reproductive age who do not experience contraceptive use side effects were 20 times higher than those who experience contraceptive side effects. This raises the importance of adequate information and guidance to women using MFPM so that side effects can be minimized and or different methods can be used.

These findings were further explained by a Key Informant (KI 4) [64] as follows:

“Women in their community lack appropriate knowledge on the utilization of MFPM although they know these methods can avert unnecessary pregnancy and allow adequate spacing and may support to improve their health but the misconception still remains a great factor in South Sudan” (KI 4).

Several authors [62, 63] working in several developing countries, established that side effects of using MFPM was significant in reducing the utilization of these methods in developing economies and that this was made worse by the low levels of education.

3.6.5. Husband's Approval

Husband's approval for their wives to access and use MFPM is critical and directly affects utilization by 34 times higher compared to those who do not get the spouses' approval. This indicates that involving spouses in utilization of MFPM dramatically improves its uptake.

One Key Informant (KI 5) commented on this issue as follows:

“Husbands are head of families and a decision about the number of children entirely comes from them. Married women have no decision on utilization of FP services. Cultural belief in South Sudan is that a large number of children are there great sources of family wealth in future. The use of MFPM contradicts this belief” (KI 5).

The above findings strongly suggest that it is important for husbands to be involved in the decision of using MFPM despite the cultural desire to have many children.

Other authors [62, 63] earlier reported similar results showing the significance of spouses support being crucial in improved utilization of MFPM.

3.6.6. Affordability of FP Services

Finally the results indicates that affordability of FP services directly affects MFPM utilization by 6 times compared to those who cannot afford the FP services.

On the above results a key Informant (KI 6) commented as follows:

“Family planning methods can be affordable if the clients are interested in them. Although there is a user fee, it is small and cannot stop or prevent them from attending the FP clinics if they are serious and really interested in the service. The service providers are always available to receive and provide them with the necessary support.” (KI 6)”

While the user fee may cause women not to access FP clinics, it is not clear if removing them will results in an increases in accessing FP services. This is despite the fact that many of the women in this area are very poor earning very little money per month. This calls for a need for various Governments and institutions plan to completely eliminate these service charges if the local communities are to be able to afford and access

these health services.

4. Conclusion and Recommendations

The utilization of MFPM is an important health aspect especially in developing economies with limited resources and growing populations [64].

This study established that utilization of MFPM was low (34%) in this Juba Payam. In addition the factors identified to be affecting this MFPM utilization were: marital status, education level, employment status, side effects, husband's approval and affordability of the MFPM services.

These results therefore call for a need to improve knowledge level of the unmarried and those whose education level is below primary in MFPM. There is need to encourage husband to support unemployed spouses and to involve them in decision making. Finally, there is need for continuous encouragement and counseling of mothers having side effects arising from use of MFPM as well as abolishing the user fee in the FP clinics. This will strongly contribute towards improving the utilization of MFPM in Juba City.

Abbreviations

AOR	Adjusted Odd Ratio
COR	Crude Odd Ration
CPRMM	Contraceptive Prevalence Rate of Modern Methods
CVI	Content Valid Index
FP	Family Planning
HIV	Human Immunodeficiency Virus
IUDs	Intrauterine Devices
KI	Key Informant
MFPM	Modern Family Planning Methods
SRH	Sexual and Reproductive Health
STIs	Sexually Transmitted Infections
UNFP	United Nations Population Fund

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Conflicts of Interest

The authors wish to confirm that there is no conflict of interest in the process of producing this publication.

References

- [1] WHO (2025). Contraception. Down loaded from: https://www.who.int/health-topics/contraception#tab=tab_1
- [2] WHO (2024). South Sudan Annual Report 2023. Advancing resilient systems and services in South Sudan Annual Report 2023. Down Loaded from:
- [3] Eltomy, E. M., Saboula, N. E., & Hussein, A. A. (2013). Barriers affecting utilization of family planning services among rural Egyptian women. *Eastern Mediterranean Health Journal*, 19(5), 400–408. <https://doi.org/10.26719/2013.19.5.400>
- [4] Harzif, A. K., Mariana, A., Malik, D. M., Silvia, M., & Lovita, B. T. (2019). Factors associated with the utilization of long-acting reversible contraceptives among family planning clients at the Pameungpeuk rural hospital, Indonesia. F1000 Research. <https://doi.org/10.12688/f1000research.15755.2>
- [5] US Department of Health (2025). US Department of Health and Human Services FY 2025. Down loaded from: <https://www.hhs.gov/sites/default/files/fy2025-performance-plan.pdf>
- [6] World Bank. (2016). Gender and Economic Growth in Uganda Unleashing the Power.
- [7] WHO. (2019). Preventing Unsafe Abortion: Evidence Brief. World Health Organization.
- [8] USAID. (2018). 2016 WHO Antenatal Care Guidelines Malaria in Pregnancy Frequently Asked Questions (FAQ) (Issue March, pp. 1–6).
- [9] Obwoya, J. G., Wulifan, J. K., & Kalolo, A. (2018). Factors Influencing Contraceptives Use among Women in the Juba City of South Sudan. 2018.
- [10] Tibaijuka, L., Odongo, R., Welikhe, E., Mukisa, W., Kugonza, L., Busingye, I., Nabukalu, P., Ngonzi, J., Asimwe, S. B., & Bajunirwe, F. (2017). Factors influencing use of long-acting versus short-acting contraceptive methods among reproductive-age women in a re-source-limited setting. *BMC Women's Health*, 17(1), 1–13. <https://doi.org/10.1186/s12905-017-0382-2>
- [11] Medhanyie, A. A., Desta, A., Alemayehu, M., Gebrehiwot, T., & Abraha, T. A. (2017). Factors associated with contraceptive use in Tigray, North Ethiopia. 1–11. <https://doi.org/10.1186/s12978-017-0281-x>
- [12] ICRC (2026). South Sudan: January to December 2025 Facts and Figures. Down loaded from: <https://www.icrc.org/en/article/south-sudan-Jan-to-Dec-2025-figures>
- [13] Ouma, S., Tumwesigye, N. M., Abbo, C., Ndejjo, R., & Article, R. (2020). Factors associated with use of long-acting reversible contraception among female sex workers operating in Gulu distct, Northern Uganda-a cross-sectional study. 1–17. <https://doi.org/10.21203/rs.3.rs-275872/v1>
- [14] South Sudan FP 2030 (2020). South Sudan Family Planning Strategy for 2030. Down loaded from: <https://www.fp2030.org/commitment-maker/south-sudan/>

- [15] David et al, (2024). Modern contraceptives use among women of reproductive age in Terekeka County, Central Equatoria State, South Sudan, *South Sudan Medical Journal*, 2024; 17(4): 159-166 © 2024 The Author (s) License: This is an open access article under CC BY-NC
<https://dx.doi.org/10.4314/ssmj.v17i4.2>
- [16] Alkhawaldeh, A., ALBashtawy, M., Rayan, A., Abdalrahim, A., Musa, A., Eshah, N., Abu Khait, A., Qaddumi, J., Khraisat, O., & ALBashtawy, S. (2023). Application and Use of Andersen's Behavioral Model as Theoretical Framework: A Systematic Literature Review from 2012-2021. *Iranian journal of public health*, 52(7), 1346–1354.
<https://doi.org/10.18502/ijph.v52i7.13236>
- [17] Mbalinda, S. N., Kaye, D. K., Nyashanu, M., & Kiwanuka, N. (2020). Using Andersen's Behavioral Model of Health Care Utilization to Assess Contraceptive Use among Sexually Active Perinatally HIV-Infected Adolescents in Uganda. *International journal of reproductive medicine*, 2020, 8016483.
<https://doi.org/10.1155/2020/8016483>
- [18] Nakirijja, D. S. (2018). iMedPub Journals Socio-economic Determinants of Access to and Utilization of Contraception among Rural Women in Uganda: The Case of Wakiso District Background of the Research. 1–20.
<https://doi.org/10.21767/1791-809X.1000608>
- [19] Dasa, T. T., Kassie, T. W., Roba, A. A., Wakwoya, E. B., & Kelel, H. U. (2019). Factors associated with long-acting family planning service utilization in Ethiopia: a systematic review and meta-analysis. *Contraception and Reproductive Medicine*, 4(1), 1–14.
<https://doi.org/10.1186/s40834-019-0095-z>
- [20] Kunene W, Habyarimana F, Ramroop S. Spatial Distribution and Risk Factors Associated with Contraceptive Use among Women of Reproductive Age in Zambia. *Open Public Health J*, 2025; 18: e18749445398889.
<http://dx.doi.org/10.2174/0118749445398889250706195319>
- [21] Mahesh Karra and Joshua Wilde (2023). IZA DP No. 1588, Economic Foundations of Contraceptive Transitions. Theories and a Review of the Evidence. DISCUSSION PAPER SERIES – January 2023: IZA Institute of Labor Economics. Downloaded from <https://docs.iza.org/dp15889.pdf>
- [22] Njuguna, E., Ilovi, S., Muiruri, P., Mutai, K., Kinuthia, J., & Njoroge, P. (2017). Factors influencing the utilization of family planning services among HIV infected women in a Kenyan health facility. 6(5), 1746–1752.
<https://doi.org/10.18203/2320-1770.ijrcog20171935>
- [23] Nwadiaru BC, Omosivie M, Ogaji DS (2025). Factors associated with Uptake of Modern Family Planning Methods among Women of Reproductive Age in Mgbuoshimini Community, Rivers State, Nigeria. *The Nigerian Health Journal* 2025; 25(1): 125 – 133. <https://doi.org/10.71637/tmhj.v25i1.900>
- [24] Irwan Mohammad Ali (2024). A Guide for Positivist Research Paradigm: From Philosophy to Methodology. Vol. 9 No. 2 (2024): *Ideology Journal* (September 2024).
<https://doi.org/10.24191/ideology.v9i2.596>
- [25] Creswell, J. W. and Creswell, J. D. (2023) *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*. Sage Publications Ltd.
- [26] Amin, M. (2005). *Social science research : conception, methodology and analysis*. Makerere University.
- [27] Mugenda, O. M. and Mugenda, A. G. (2003) *Research Methods, Quantitative and Qualitative Approaches*. ACT, Nairobi.
- [28] United Nations Population Fund (2026). *South Sudan Population 2025 - United Nations Population Fund*:
<https://www.unfpa.org/data/world-population/SS>
- [29] Singh A & Masaku M (2014). Sampling techniques & determination of sample Size in applied statistics research: an overview. *International Journal of Economics, Commerce and Management*, United Kingdom Vol. II, Issue 11, Nov 2014.
<https://ijecm.co.uk/wp-content/uploads/2014/11/21131.pdf>
- [30] Ranganathan, P., & Caduff, C. (2023). Designing and validating a research questionnaire - Part 1. Perspectives in clinical research, 14(3), 152–155.
https://doi.org/10.4103/picr.picr_140_23
- [31] Roopa, S., & Rani, M. (2012). Questionnaire Designing for a Survey. *Journal of Indian Orthodontic Society*, 46(4_suppl1), 273–277.
<https://doi.org/10.1177/0974909820120509s>
- [32] Kothari, C. R. (2004) *Research Methodology: Methods and Techniques*. 2nd Edition, New Age International Publishers, New Delhi.
- [33] Polit, D. E. and Beck, C. T. (2006) *Essentials of Nursing Research*. 6th Edition, Lippincott Williams & Wilkins, Philadelphia.
- [34] Sharma, H., & Ruikar, M. (2025). Crafting an effective questionnaire: An essential prerequisite of engaging surveys. Perspectives in clinical research, 16(3), 118–126.
https://doi.org/10.4103/picr.picr_157_24
- [35] Weiner, J. (2007). Neoteric video segmentation scheme using NCD for detecting indistinct scenes. *ICSPC 2007 Proceedings - 2007 IEEE International Conference on Signal Processing and Communications*, 900–903.
<https://doi.org/10.1109/ICSPC.2007.4728465>
- [36] Swahn, M. H., Namuyiga, J., Matovu, G., Natuhanya, C., Palmier, J., Nabulya, A., & Kebirungi, H. (2025). Modern Contraceptive Use Among Young Women in Kampala Slums: Research Findings from the TOPOWA Study. *International journal of environmental research and public health*, 22(11), 1730.
<https://doi.org/10.3390/ijerph22111730>
- [37] Etta, R. B., & Iwuagwu, E. K. (2025). Family planning: an appraisal from a moral and catholic church perspective. *Euromentor Journal*, 16(2), 43-66.
- [38] Aggrey-Korsah, J., Adoma, P. O., Oke, S., & Agorinya, I. A. (2025). Factors influencing contraceptive use among teenage girls in Ghana: analysis of the Ghana living standard survey 7. *Contraception and Reproductive Medicine*, 10(1), 47.
<https://doi.org/10.1186/s40834-025-00387-y>

- [39] Kubahoniyesu, T., & Mugabo, H. (2025). Predictors of Family Planning Choices in Rwanda: Insights from the 2019-2020 Demographic and Health Survey. *Open Access Journal of Contraception*, 71-80. <https://doi.org/10.2147/OAJC.S527717>
- [40] Tadele, A., & Berhanu, M. (2021). Trends and factors influencing long-acting contraceptive utilisation among contraceptive users in Ethiopia: Repeated cross-sectional study. *BMJ Open*, 11(1), 1–7. <https://doi.org/10.1136/bmjopen-2020-037103>
- [41] Mohammed-Amen, H. Y., & Ali, S. M. (2024). Factors influencing modern contraceptive usage among women aged 15-49 years: a cross-sectional study. *Jurnal Ners*, 19(3), 363. <https://doi.org/10.20473/jn.v19i3.56756>
- [42] Mkande, A. S., & Mosha, I. H. (2025). A Qualitative Exploration of Perceptions and Experiences of Adolescent Girls and Young Women on Modern Contraceptive Methods Use in Malinyi District, Morogoro, Tanzania. *The East African Health Research Journal*, 8(3), 363–371. <https://doi.org/10.24248/eahrj.v8i3.806>
- [43] Genazzani, A. R., Fidecicchi, T., Arduini, D., Benagiano, G., Birkhaeuser, M., Schenker, J.,... & Kihara, A. B. (2025). Contraception today and family planning: a comprehensive review and position statement on the ethical, medical, and social dimensions of modern contraception. *Gynecological Endocrinology*, 41(1), 2543423. <https://doi.org/10.1080/09513590.2025.2543423>
- [44] Ochen AM, Primus CC (2023) Family planning uptake and its associated factors among women of reproductive age in Uganda: An insight from the Uganda Demographic and Health Survey 2016. *PLOS Glob Public Health* 3(12): e0001102. <https://doi.org/10.1371/journal.pgph.0001102>
- [45] Fasanu A, Fasanu O A, Adeyemo S C, et al. (April 23, 2025) Perceived Barriers to Uptake of Family Planning Services Among Women of Reproductive Age in Osun State, Nigeria: Findings From a Qualitative Study. *Cureus* 17(4): e82823. <https://doi.org/10.7759/cureus.82823>
- [46] Majok SA, Makunyi EG, Onsongo L. Uptake of modern family planning methods among women receiving spontaneous post abortion care at Kuajok hospital, South Sudan: a cross-sectional study. *Int J Community Med Public Health* 2022; 9: 3090-4. <https://doi.org/10.18203/2394-6040.ijcmph20222005>
- [47] Alemayehu, M., Belachew, T., & Tilahun, T. (2012). Factors associated with utilization of long acting and permanent contraceptive methods among married women of reproductive age in Mekelle town, Tigray region, north Ethiopia. *BMC Pregnancy and Childbirth*, 12(1), 6. <https://doi.org/10.1186/1471-2393-12-6>
- [48] Shattnawi, K., S Khader, Y., Al-Sheyab, N., Alyahya, M., Ready, K., A Halasa-Rappel, Y., & Prince, H. (2021). Perceived Barriers of Using Modern Family Planning Methods among Women in Jordan: A Qualitative Study. *International journal of community based nursing and midwifery*, 9(4), 278–288. <https://doi.org/10.30476/ijcblnm.2021.88675.1531>
- [49] Alamdo, A. G., Debere, M. K., & Tirfe, Z. M. (2020). Factors associated with non-utilization of long acting and permanent contraceptive methods among married women of reproductive age in chench district, Southern Ethiopia: A case-control study. *Pan African Medical Journal*, 35, 1–9. <https://doi.org/10.11604/pamj.2020.35.109.20683>
- [50] Asif, M. F., Pervaiz, Z., Afridi, J. R., Abid, G., & Lassi, Z. S. (2021). Role of husband's attitude towards the usage of contraceptives for unmet need of family planning among married women of reproductive age in Pakistan. *BMC women's health*, 21(1), 163. <https://doi.org/10.1186/s12905-021-01314-4>
- [51] D'Exelle B. & Ringdal C. (2022). Women's use of family planning services: An experiment on the husband's involvement. *Journal of Development Economics* 158 (2022) 102915. <https://doi.org/10.1016/j.jdeveco.2022.102915>
- [52] Apuke, O. D. (2017). Quantitative Research Methods : A Synopsis Approach. Kuwait Chapter of Arabian Journal of Business and Management Review, 6(11), 40–47. <https://doi.org/10.12816/0040336>
- [53] Anyanwu, M., & Alida, B. W. N. (2017). Uptake of long-acting reversible contraceptive devices in Western region of the Gambia. *African Health Sciences*, 17(2), 409–417. <https://doi.org/10.4314/ahs.v17i2.15>
- [54] Ssebadduka, B. and Nanyingi, M., 2021. Determinants of adolescent and youth sexual and reproductive health service utilization in hard-to-reach communities of Amudat District, Uganda. *African Journal of Health Sciences*, 34(4), pp. 512-525. <http://hdl.handle.net/20.500.12280/3018>
- [55] Lejibo, Teshale & Assegid, Sahilu & Ahmed Phd, Muktar & Handiso, Tilahun & Beyene, Tilahun. (2017). Pediatric and Adolescent Medicine Reproductive Health Service Utilization and Associated Factors Among Female Adolescents in Kachabirra District, South Ethiopia: A Community Based Cross Sectional Study. *Pediatric and Adolescent Medicine*. Vol. 2, 2017, pp. 67-76. <https://doi.org/10.11648/j.pam.20170204.15>
- [56] Violita, F., Hadi, E. N. (2019). Determinants of adolescent reproductive health service utilization by senior high school students in Makassar, Indonesia. *BMC Public Health* 19, 286 (2019). <https://doi.org/10.1186/s12889-019-6587-6>
- [57] Ekambi, S., Sugg, K., Mpata, F., Aliango, D. M., & Winch, P. J. (2025). "It's me who supports. How are you going to refuse to have a child?": the social norms and gender dynamics of men's engagement in family planning practices in the Democratic Republic of the Congo. *Reproductive health*, 22(1), 120. <https://doi.org/10.1186/s12978-025-02029-7>
- [58] Tsikouras, P., Galazios, G., Anthoulaki, X., Chalkidou, A., Deuteraiou, T., Koutsogiannis, M., Babageorgaka, I., Gaitatzi, F., Nikolettos, K., Zervoudis, S., & Nikolettos, N. (2020). Family Planning Laboratory Review of Factors Affecting the Choice of Contraceptive Methods in Three Teenagers Populations in Thrace, Greece. *Archives of Obstetrics and Gynaecology*, 1(1), 13–22. <https://doi.org/10.33696/gynaecology.1.003>

- [59] Raagavendaran, Suvarna. (2023). Investigating the Relationship between Family Planning, Labour Force, and Income Fluctuations. *Tuijin Jishu/Journal of Propulsion Technology*. 44. 137-149. <https://doi.org/10.52783/tjjpt.v44.i3.251>
- [60] Ugoni, A., & Walker, B. F. (1995). The Chi square test: an introduction. *COMSIG Review*, 4(3), 61–64.
- [61] Opiro, K., Opee, J., Sikoti, M., Pebalo, P. F., Ayikoru, J. H., Akello, H., Manano, P., & Bongomin, F. (2024). Utilization of modern contraceptives among female health care workers at Gulu university teaching hospitals in Northern Uganda. *Contraception and reproductive medicine*, 9(1), 13. <https://doi.org/10.1186/s40834-024-00274-y>
- [62] Shiferaw, K., & Musa, A. (2017). Assessment of utilization of long acting reversible contraceptive and associated factors among women of reproductive age in Harar city, Ethiopia. *Pan African Medical Journal*, 28, 1–8. <https://doi.org/10.11604/pamj.2017.28.222.13475>
- [63] Waithaka, M. W., Gichangi, P., Thiongo, M. (2020). Assessing the magnitude of and factors associated to demand for long acting reversible and permanent contraceptive methods among sexually active women in Kenya. Down loaded from: <https://doi.org/10.1101/2020.11.12.20230383>
- [64] Sileo, K. M., Wanyenze, R. K., Lule, H., & Kiene, S. M. (2015). Determinants of family planning service uptake and use of contraceptives among postpartum women in rural Uganda. *International Journal of Public Health*, 60(8), 987–997. <https://doi.org/10.1007/s00038-015-0683-x>