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Contraceptive Method Usage among Women: A Comparative Analysis by Sociodemographic Factors

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Abstract

Background: Family planning services are a critical component of global health systems and are recognized as one of the most cost-effective strategies for preventing maternal mortality. However, many women of reproductive age worldwide lack access to these services, leading to millions of unintended pregnancies and unsafe abortions. This study aims to explore the association between women's sociodemographic factors and their choice of contraceptive methods in Kirkuk City, Iraq. **Methods:** A cross-sectional study was conducted at the family planning units of 10 Primary Health Care Facilities and Azadi Teaching Hospital in Kirkuk, Iraq. The study utilized a convenience sample of 500 married women. Data were collected using a structured questionnaire from November 1st, 2023, to January 1st, 2024.

Results: Most participants (25.6%) were aged 30-35, 32.2% had a bachelor's degree, 81% resided in urban areas, and 53.2% were homemakers. Contraceptive use was reported by 74.6% of participants, with the most commonly used methods being condoms (21.0%), natural withdrawal (16.0%), intrauterine devices (12.6%), and combination oral contraceptives (10.2%). Significant associations were found between contraceptive method choice and sociodemographic factors such as family income, number of family members, husband's education, and employment ($p < 0.001$). However, no significant associations were observed for age ($p = 0.122$), residence ($p = 0.414$), religion ($p = 0.122$), or women's education ($p = 0.943$).

Conclusion: This study highlights the influence of socioeconomic and familial factors on women's contraceptive choices in Kirkuk, Iraq. While income, family size, husband's education, and employment significantly impacted contraceptive use, factors such as age, residence, religion, and women's education did not. To enhance the effectiveness of family planning initiatives, it is crucial to incorporate socioeconomic, familial, and individual factors, ensuring that women have access to a variety of contraceptive options that meet their specific needs.

What is already known about the topic? Contraceptive method usage varies significantly based on sociodemographic factors such as age, education, income, and marital status. Typically, higher education and income levels are associated with increased use of modern contraceptives. Additionally, cultural and religious factors can influence contraceptive choices and access. Comparative analyses help identify disparities and target interventions to improve contraceptive access and education across different demographic groups.

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INTRODUCTION

Family planning is a crucial aspect of public health, encompassing individuals' or couples' methods and strategies to prevent unintended pregnancies, manage the spacing between births, and determine the desired number of children within a family (WHO, 2023). Effective use of birth control methods plays a significant role in reducing the incidence of unintended pregnancies, which globally accounted for 121 million cases between 2015 and 2019, representing 48% of all pregnancies during that period. These unintended pregnancies often lead to adverse outcomes, including impaired socioeconomic conditions, poor health, and complications from unsafe abortions, affecting women, children, and families both in the short and long term (Glasier et al., 2019; UNFPA, 2020).

A central component of family planning is the use of contraceptive methods, which have been proven to prevent unintended pregnancies, reduce the need for abortion, and lower the incidence of maternal mortality on a global scale (WHO, 2022). Contraception, as defined by the World Health Organization, involves "the practice of preventing pregnancy by means other than natural methods, including medical interventions, behavioral changes, and surgical procedures" (WHO, 2022). The 2022 global provider handbook published by the World Health Organization and Johns Hopkins Bloomberg School of Public Health (JHBSPH) lists various contraceptive methods, including oral pills, implants, injectables, patches, vaginal rings, intrauterine devices, condoms, male and female sterilization, lactational amenorrhea methods, withdrawal, and fertility awareness-based methods. Each

of these methods operates differently to prevent unwanted pregnancies, and their effectiveness can be measured by the number of pregnancies per 100 women using the method annually (WHO, 2022).

According to Colquitt and Martin (2017), contraceptive methods are categorized based on their effectiveness. Highly effective methods have a failure rate of 0.001–0.9 per 100 women annually, effective methods have a failure rate of 1.0–9, moderately effective methods have a failure rate of 10.1–19, and less effective methods have a failure rate of 20 or more per 100 women. In Iraq, the total fertility rate remains high at 4.2 children per woman, with a 12% unmet need for contraceptives, a figure that surpasses the average for Eastern Mediterranean countries. Iraq's contraceptive usage rate stands at 58%, which is below the global average of 63% and lower than neighboring countries such as Jordan (63%) and Tunisia (67%) (Alrawi, 2021).

Despite improvements in contraceptive use and awareness of unplanned pregnancies in Iraq, there remains a significant gap in knowledge and practice among women of childbearing age, particularly in Kirkuk. The limited use of immediate postpartum or post-abortion contraception highlights the need for enhanced access to these methods (Amin, 2019). Understanding the sociodemographic factors that influence contraceptive use and method selection among women is crucial for addressing these gaps. This study aims to explore the association between women's sociodemographic factors and their choice of contraceptive methods in Kirkuk, Iraq. Enhanced education, awareness campaigns, and comprehensive reproductive health services are essential strategies to

promote effective contraceptive use and method selection in this region.

METHOD

Study Design:

This study employed a descriptive cross-sectional design to investigate the association between women's sociodemographic characteristics and their selection of family planning methods among a sample of 500 married women of reproductive age in Kirkuk, Iraq.

Study Setting:

The research was conducted across multiple healthcare settings in Kirkuk, including family planning units within ten randomly selected healthcare institutions from Kirkuk's first and second sectors, Azadi Teaching Hospital, and private gynecological and obstetric clinics. This selection ensured a comprehensive representation of the population.

Sample and Sampling:

A sample of 500 married women aged 15 to 49 was selected using a non-probability convenience sampling method. The initial sample size was calculated using the following formula based on a cross-sectional study design: Using these parameters, the minimum required sample size was 384. However, to enhance the reliability and validity of the study, the sample size was increased to 500 participants.

Inclusion Criteria:

- Married women aged 15 to 49 years.

Exclusion Criteria:

- Pregnant women and those who have undergone a hysterectomy.

Data Collection Tools and Techniques:

Data collection occurred between November 1st, 2023, and January 1st, 2024. Structured questionnaires were employed to gather information from married women of reproductive age who

visited the selected healthcare facilities. The questionnaire comprised two sections: sociodemographic characteristics and contraceptive usage. Interviews were conducted face-to-face in the participants' native language, each lasting approximately 20 to 25 minutes.

Statistical Analysis:

Data were processed and analyzed using SPSS Version 27. Descriptive statistics, including frequencies and percentages, were used to summarize the sample characteristics and critical variables. Inferential statistical methods, specifically the Fisher-Freeman-Halton Exact Test, were applied to examine associations between categorical variables. A p-value of 0.05 or less was considered statistically significant.

RESULTS

Table 1 illustrates the sociodemographic characteristics of the study participants. Among the 500 married women surveyed, 25.6% were under 35. The majority (81%) resided in urban areas. Educational attainment varied, with the highest percentage (32.2%) of participants being college graduates. Regarding family size, 45.6% of respondents had 3-4 family members, indicating a typical family structure within the sample.

Figure 1 shows the distribution of participants based on their profession. The data reveals that a significant portion of the women (53.2%) were homemakers, while 31.8% were employed. A smaller percentage (14.2%) were privately hired. The illiteracy rate among the participants was notably low, at 13.6%.

Figure 2 displays the rate of contraceptive use among the study participants. Out of 500 women, 373 (74.6%) reported using some form of

contraception, while 127 women (25.4%) indicated that they did not use any contraceptive method.

Table 2 presents the types of family planning techniques used by the participants. The most commonly used method was condoms, chosen by 21.0% (n=105) of the women. The withdrawal method was the second most common, reported by 16.0% (n=80) of participants, followed by intrauterine devices (IUDs), which were used by 12.6% (n=63) of the women. Other methods included oral contraceptive pills containing combined hormones (COCP) at 10.2% (n=51), injections at 5.4% (n=27), progestin-only pills (POP) at 4.0% (n=20), skin patches (Implanon) at 3.8% (n=19), lactational amenorrhea methods (LAM) at 1.2% (n=6), and rhythm methods at a rate of 0.4% (n=2). Table 3 explores the association between women's sociodemographic factors and

their choice of family planning methods. The analysis reveals a statistically significant association ($p < 0.001$) between women's contraceptive choices and several factors, including occupation, husband's educational level, number of family members, and monthly family income. However, there was no statistically significant association between contraceptive method selection and women's age ($p = 0.122$), residence ($p = 0.414$), religion ($p = 0.122$), or educational attainment ($p = 0.943$).

These findings highlight that while certain sociodemographic factors strongly influence contraceptive choice, other variables such as age, residence, religion, and education level may not play a significant role in the selection of family planning methods among the women surveyed in Kirkuk, Iraq.

Table 1. Sociodemographic characteristics of the study participants (n=500)

Items		Freq.	%
Age	<20	5	1.0
	20 - <25	61	12.2
	25 - <30	120	24.0
	30 - <35	128	25.6
	35 - <40	110	22.0
	>=40	76	15.2
Residence	Rural	95	19.0
	Urban	405	81.0
Religion	Muslim	492	98.4
	Christian	8	1.6
	Illiterate	68	13.6
The educational level of women	Primary Graduated	95	19.0
	Secondary Graduated	87	17.4
	Institute Graduated	89	17.8
	College Graduated	161	32.2
	< 500000	61	12.2
	500000-750000	146	29.2
Monthly Family Income (Iraqi Dinar)	750000-1million	153	30.6
	>1million	140	28.0
Number of family members	1 - 2	49	9.8
	3 - 4	228	45.6
	5 - 6	176	35.2
	7 - 8	47	9.4
	Illiterate	52	10.4
	Primary Graduated	87	17.4
The educational level of the husband	Secondary Graduated	114	22.8
	Institute Graduated	87	17.4
	College Graduated	160	32.0

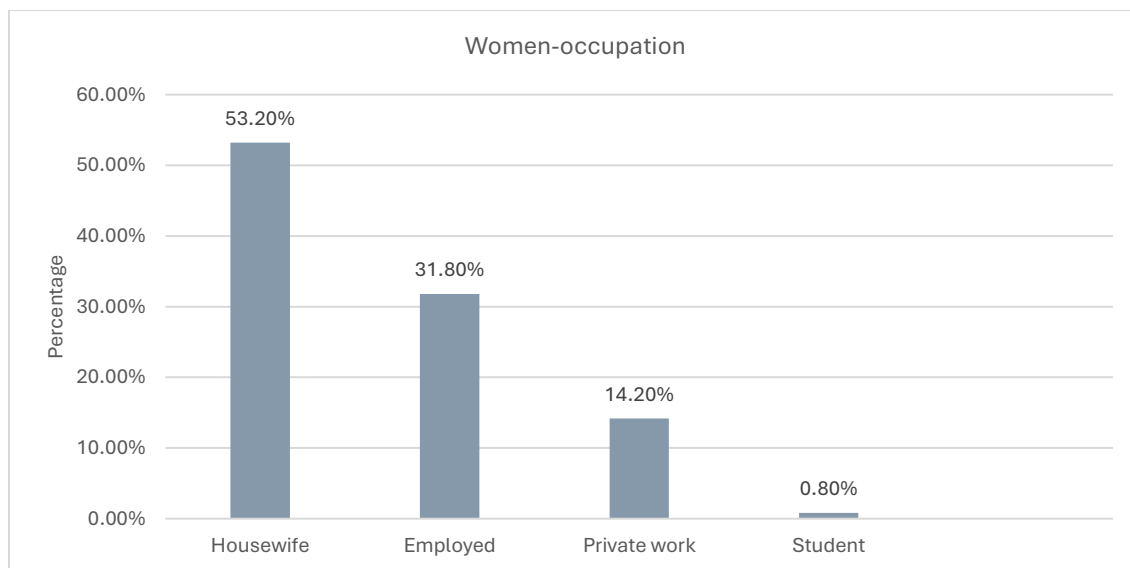


Figure 1. Distribution of participants by their occupation (n=500)

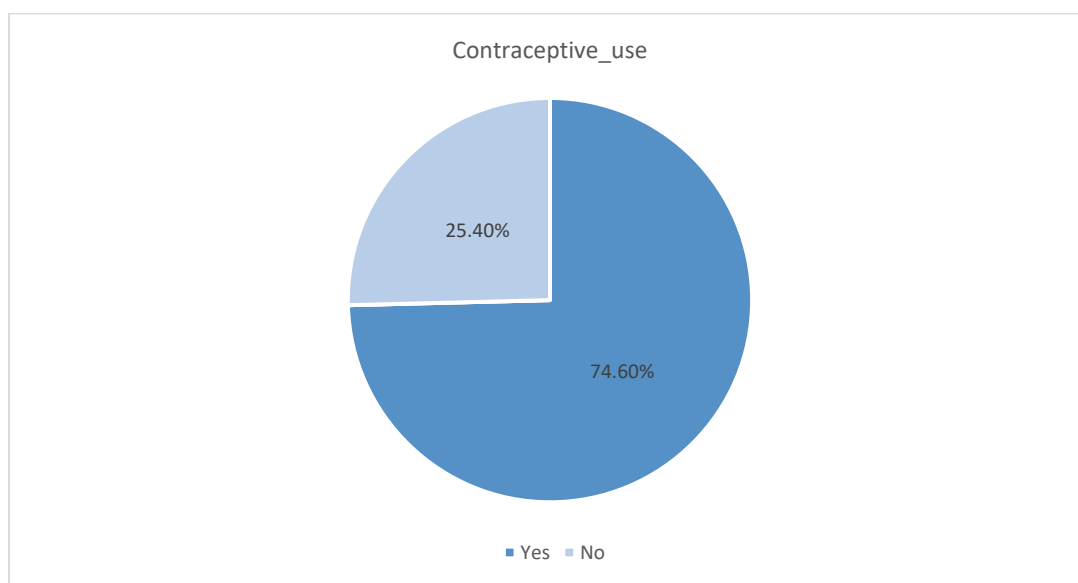


Figure 2. Contraceptive use among study participants (n=500)

Table 2. Women's choice of family planning methods (n=373)

What is the contraceptive method that you are currently using?	Freq.	%
Condom	105	21.0
Natural (withdrawal)	80	16.0
Intrauterine device (IUD)	63	12.6
Oral pill (COCP)	51	10.2
Injection	27	5.4
Oral pill (POP)	20	4.0
Skin patch (Implanon)	19	3.8
LAM (breastfeeding)	6	1.2
Rhythm method	2	0.4
Total	373	74.6

Table 3. Association between women's sociodemographic factors and their choices of family planning methods (n=373)

Items		Types of contraceptive methods currently used									P-Val ue	
		Frequency (%)										
		Oral pill (COC P)	Oral pill (PO P)	IUD	Injec tion	Skin patch (Implan on)	Cond om	Natural (withdra wal)	LAM (breastfee ding)	Rhyt hm meth od	Total	(Sig)
age	20 - <25	5(1)	-	5(1)	1(0)	1(0)	9(2)	6(2)	-	-	27(7)	0.12 2
	25 - <30	11(3)	6(2)	16(4)	1(0)	7(2)	21(6)	12(3)	2(1)	-	76(20)	(NS)
	30 - <35	18(5)	6(2)	19(5)	9(2)	4(1)	25(7)	24(6)	2(1)	-	107(29)	+
	35 - <40	11(3)	7(2)	8(2)	6(2)	5(1)	35(9)	21(6)	2(1)	2(1)	97(26)	
	>=40	6(2)	1(0)	15(4)	10(3)	2(1)	15(4)	17(5)	-	-	66(18)	
Residen ce	Rural	8(2)	1(0)	10(3)	3(1)	2(1)	25(7)	10(3)	-	-	59(16)	0.41 4
	Urban	43(1 2)	19(5)	53(1 4)	24(6)	17(5)	80(21)	70(19)	6(2)	2(1)	314(8 4)	(NS) +
Religion	Muslim	50(1 3)	20(5)	62(1 7)	27(7)	19(5)	101(2 7)	79(21)	6(2)	2(1)	366(9 8)	0.12 2
	Christi an	1(0)	-	1(0)	-	-	4(1)	1(0)	-	-	7(2)	(NS) +
Women Educati onal level	Illiterat e	12(3)	6(2)	9(2)	5(1)	4(1)	17(5)	7(2)	-	-	60(16)	0.94 3
	Primar y Gradua ted	13(3)	-	8(2)	6(2)	6(2)	22(6)	14(4)	-	-	69(18)	(NS)
	Second ary Gradua ted	5(1)	2(1)	5(1)	7(2)	6(2)	15(4)	17(5)	2(1)	-	59(16)	+

	Institute Graduated	5(1)	3(1)	21(6)	6(2)	3(1)	21(6)	12(3)	-	-	71(19)	
	College Graduated	16(4)	9(2)	20(5)	3(1)	-	30(8)	30(8)	4(1)	2(1)	114(31)	
Monthly Family Income (Iraqi Dinar)	< 50000	10(3)	1(0)	5(1)	5(1)	2(1)	12(3)	5(1)	-	2(1)	42(11.3)	<0.001
	50000-75000	16(4)	3(1)	14(4)	10(3)	-	39(10)	31(8)	-	-	113(30.3)	(HS)
	75000-1million	12(3)	3(1)	18(5)	3(1)	3(1)	38(10)	22(6)	6(2)	-	105(28.1)	+
	>1million	13(3)	13(3)	26(7)	9(2)	14(4)	16(4)	22(6)	-	-	113(30.3)	
Number of family members	1 - 2	2(1)	-	-	-	-	-	3(1)	-	-	5(1.3)	<0.001
	3 - 4	26(7)	9(2)	21(6)	7(2)	6(2)	49(13)	35(9)	4(1)	-	157(42.1)	(HS)
	5 - 6	17(5)	8(2)	31(8)	9(2)	12(3)	50(13)	34(9)	2(1)	2(1)	165(44.3)	+
	7 - 8	6(2)	3(1)	11(3)	11(3)	1(0)	6(2)	8(2)	-	-	46(12.3)	
Husband Educational level	Illiterate	6(2)	-	2(1)	5(1)	8(2)	13(3)	2(1)	-	-	36(10)	0.007
	Primary Graduated	13(3)	6(2)	7(2)	6(2)	5(1)	9(2)	14(4)	1(0)	-	61(16)	(HS)
	Secondary Graduated	11(3)	1(0)	16(4)	7(2)	4(1)	20(5)	22(6)	2(1)	-	83(22)	+
	Institute Graduated	3(1)	2(1)	11(3)	5(1)	2(1)	17(5)	24(6)	-	-	64(17)	
	College Graduated	18(5)	11(3)	27(7)	4(1)	-	46(12)	18(5)	3(1)	2(1)	129(35)	
Women Occupation	Employed	16(4)	6(2)	24(6)	-	1(0)	40(11)	27(7)	2(1)	-	116(31)	<0.001
	Housewife	31(8)	12(3)	35(9)	21(6)	13(3)	45(12)	31(8)	4(1)	2(1)	194(52)	(HS)
	Student	2(1)	-	1(0)	-	-	-	-	-	-	3(1)	
	Private work	2(1)	2(1)	3(1)	6(2)	5(1)	20(5)	22(6)	-	-	60(16)	+

Fisher-Freeman-Halton Exact Test, N.S = Non-Significant at $P > 0.05$,

S = Significant at $P \leq 0.05$, H.S = Highly Significant at $P \leq 0.01$.

DISCUSSION

The study findings revealed that most respondents (25.6%) were between 30 and 35 years old. Understanding the age distribution is crucial for tailoring family planning interventions to different age groups. This finding aligns with a study conducted in the Qaladzi area, Iraq, in 2020, where 31% of participants were aged 31–36 (Parzhin & Sanna, 2022). However, it contrasts with research conducted in Kirkuk City in 2019, which found that the most significant proportion of women were aged 25–30, followed by those over 35 (Ahmed et al., 2019). These findings underscore the importance of considering reproductive health and family planning services for women in their twenties and thirties, given the distinct needs and challenges related to childbirth and contraception within this age group.

The study also highlighted that a significant proportion of participants were housewives (53.2%, $n=266$), with employed women comprising 31.8% ($n=159$). This finding emphasizes women's substantial responsibilities and contributions in the domestic sphere. This is consistent with a study conducted in Indonesia in 2020, which found that most women were homemakers (Laksono et al., 2020). The data also indicated that a considerable portion of households fell into the middle-income range, with 30.6% ($n=153$) earning between 750,000 and 1 million Iraqi Dinar (ID) and 29.2% ($n=146$) earning between 500,000 and 750,000 ID. This suggests a modest level of economic stability among the studied population, which can influence decisions about reproductive health and access to healthcare services. This finding aligns with a 2020 study conducted in Iraq, including the Kurdistan Region, which found that socioeconomic factors significantly impact women's access to family planning services, particularly for those from lower-income families who may lack knowledge about available methods (Tull, 2020).

Family size distribution data revealed that the most significant proportion of families (45.6%, $n=228$) consisted of 3–4 members, followed by 35.2% ($n=176$) with 5–6

members. This information is crucial for understanding household dynamics and their potential influence on women's reproductive health decisions. Larger family sizes may pose challenges related to financial resources, healthcare access, and the ability to make informed family planning choices. A 2022 survey in Nigeria corroborated these findings, showing that spouses of fewer than 50% of respondents had a favorable view of family planning and expressed a desire for larger families (Ajala et al., 2022).

Among the 500 married women of reproductive age, 74.6% ($n=373$) reported using various contraceptive methods, while 25.4% ($n=127$) did not. This finding is supported by studies conducted in Saudi Arabia and Iraq in 2021, which reported contraceptive use prevalence rates of 66.5% and 58%, respectively (Alenezi & Haridi, 2021; Alrawi, 2021). The rates are comparable to those in Western countries such as France (63.4%), Italy (55.6%), and the USA (61.4%) (Nations, 2020).

The most frequently reported contraceptive method was condoms (21.0%), followed by natural contraception methods such as withdrawal (16.0%, $n=80$). The high usage of condoms may be attributed to their dual role in preventing both pregnancy and sexually transmitted infections (STIs), along with their accessibility and widespread awareness (Beksinska et al., 2020). This finding aligns with research conducted in Nigeria in 2019, which found that the most commonly used contraceptive methods among women attending family planning clinics were condoms, withdrawal, and oral contraceptive pills (Imam & Khan, 2019). The relatively high use of the withdrawal method suggests that many participants favor this strategy due to its convenience, lack of required supplies or clinic visits, safety, absence of known adverse effects, and non-interference with breastfeeding (Wiesner, 2020). Additionally, 12.6% ($n=63$) of participants reported using intrauterine devices (IUDs), 10.2% ($n=51$) used combination oral contraceptive pills (COCP), 5.4% ($n=27$) used injections, and 4.0% ($n=20$) used progestin-only pills (POP). These findings

differ from a study conducted in Kirkuk on displaced women, which reported that 50% of the sample population used contraceptive pills, while approximately 20% used an IUD (Mustafa, 2019). The relatively lower utilization of these methods in this study may be influenced by availability, cost, side effects, and personal preferences (Angdembe et al., 2022).

The study also found no significant association between age and the selection of contraceptive methods ($p = 0.122$), suggesting that age may not significantly influence women's contraceptive choices. This finding contrasts with studies conducted in Bangladesh and Ethiopia, which found that age does impact contraceptive use among women of childbearing age, with younger women (15-19 years) more likely to use these methods than older women (40-49 years) (Gebre & Edossa, 2020; Haq et al., 2017). The lack of association in this study may be linked to perceptions of reproductive capacity or experiences with menopause (Kraft et al., 2022).

Similarly, there was no significant association between contraceptive choice and residence in either rural or urban areas ($p=0.414$), indicating that women's contraceptive choices are consistent regardless of their location. This finding contrasts with a 2022 Nigerian study, which found that urban women were less likely to use modern contraceptives due to concerns about side effects and cultural beliefs (Ayinmoro & Fayehun, 2022). The discrepancy may be due to varying socioeconomic and cultural contexts across different countries (Islam et al., 2017).

Additionally, the study found no significant relationship between women's educational level and their choice of contraceptive methods ($p=0.943$). This finding aligns with a 2018 study in Ghana, which reported no relationship between education and contraceptive use (Benson et al., 2018). However, it contrasts with a 2021 study in Iraq that found a clear relationship between education and the use of modern contraceptive methods (Al-Neyazy, 2021).

Notably, the study revealed significant associations between contraceptive method selection and factors such as family income ($p<0.001$), family size ($p<0.001$), and women's employment status ($p<0.001$). Among the 373 contraceptive users, 60.6% had monthly incomes between 500,000 and over 1 million IDs, suggesting that income influences contraceptive choice. Wealthier women had access to a broader range of contraceptive options, including more expensive or continuous methods. In contrast, lower-income women may have opted for less costly methods due to limited resources. These findings are consistent with research conducted in Nigeria and Rwanda, which found a positive association between contraceptive use and family wealth (Habyarimana & Ramroop, 2018; Solanke, 2017).

Furthermore, family size was significantly associated with contraceptive method selection, with larger families (5-6 members) preferring methods such as condoms and withdrawal, while smaller families (3-4 members) opted for long-acting methods like IUDs and injections. Financial constraints or cultural norms may influence larger families' preference for long-acting methods. This finding is inconsistent with studies conducted in Burundi, Kenya, Rwanda, Tanzania, Uganda, and Ethiopia, which found that women with more children were more likely to use modern contraceptive methods (Bakibinga et al., 2016; Negash et al., 2023).

Lastly, women's employment status was significantly associated with their choice of contraceptive methods. Among the 373 contraceptive users, 52% were homemakers, and 31% were employed. Homemakers predominantly chose oral tablets and IUDs, while working women favored condoms and natural methods. These findings align with research conducted in Rwanda in 2018, which found that employed women were more likely to use certain forms of contraception compared to unemployed women (Habyarimana & Ramroop, 2018).

Conclusions

This comparative analysis sheds light on the demographic characteristics and contraceptive choices of women in Kirkuk, Iraq. While factors such as age, residence, religion, and women's educational level did not significantly influence contraceptive choices, variables like income, family size, husband's education, and employment status played a crucial role. These findings highlight the need for individualized family planning strategies that consider socioeconomic factors, family dynamics, and personal circumstances to provide women with a range of contraceptive options that meet their needs. The study also emphasizes the importance of understanding the role of socioeconomic and demographic factors in promoting family planning and contraceptive use.

Ethical Considerations and Compliance with Ethical Guidelines

Ethical approval for this study was obtained from the scientific committee of the College of Nursing, Kirkuk University. The Kirkuk Health Directorate granted written permissions, and official correspondences were sent to Azadi Teaching Hospital and the first and second Kirkuk sectors to obtain their approval for data collection. Throughout the study, the researcher maintained strict confidentiality and anonymity of the participants.

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Author Contributions

- Study concept: HYM & SMA
- Writing the original draft: HYM
- Data collection and analysis: HYM
- Reviewing the final edition: All authors

Disclosure Statement

The authors declare no conflict of interest.

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