



Quality of Life among Yemeni Women Utilizing Intrauterine Devices and Oral Contraceptives in Selected Primary Healthcare Centers in Sana'a City, Yemen

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ABSTRACT

Background: Various contraceptive methods are available, with intrauterine devices (IUDs) and oral contraceptive pills (OCPs) being the most widely used for fertility reduction. However, underlying health conditions may compromise the safety and effectiveness of these methods. Family planning programs primarily target women, but their impact on women's quality of life (QoL) has received limited attention. This study aimed to evaluate the influence of IUDs and OCPs on the QoL of Yemeni women attending primary healthcare (PHC) centers in Sana'a City and to examine the associations between these factors.

Methods: A cross-sectional study was conducted in 2024 among 354 married women aged 14–49 years attending selected PHC centers in Sana'a City. A multi-stage cluster sampling technique was applied, where three districts were randomly selected, followed by the selection of nine PHC centers. Then, eligible women were proportionally allocated to centers and selected via systematic random sampling. Sociodemographic and contraceptive-related data were collected using a structured questionnaire, and the Arabic version of the WHO QoL Instrument (WHOQOL-BREF) was used to evaluate the influence of contraceptive use on women's QoL across physical, psychological, social, and environmental domains. QoL scores were computed for physical, psychological, social, and environmental domains, categorized as high (> median) or low (≤ median). Associations between QoL and women's characteristics were examined using the chi-square test, with statistical significance set at a P-value of <0.05.

Results: Among the participants, 56.8% used oral contraceptive pills (OCPs), predominantly combined estrogen–progesterone formulations (45.8%), while 11% used progesterone-only pills; the remaining 43.2% used IUDs. Age was significantly associated with method choice ($P < 0.001$), as OCPs were more frequently used by women <30 years (47.5% for combined and 59% for progesterone-only OCPs), whereas IUDs were predominant among those ≥30 years (71.2%). A significant association was also found between women's level of education and the type of contraceptive used ($P = 0.007$), where illiteracy was more common among IUD users (17.6%), compared to the high literacy rates among the users of combined OCPs (89.5%) and progesterone-only OCPs (100%). Regarding QoL, the median overall score was 2.68 (range: 1.07–3.71), with nearly equal proportions of women reporting low (50.3%) and high (49.7%) QoL. Domain-specific analysis revealed the lowest perceived QoL in the environmental domain (median 3.00; 62.7% low), while the physical domain had the highest median (3.75), though more than half (55.4%) still reported low QoL. Similarly, more than half of women showed low QoL in the psychological (54.8%)



and social (54.5%) domains. Illiteracy (OR = 3.9, 95% CI: 1.87–8.21; $P < 0.001$) and rural residence (OR = 2.1, 95% CI: 1.02–4.45; $P = 0.038$) were significantly associated with low QoL.

Conclusion: Both OCPs and IUDs are linked to low QoL among Yemeni women, particularly in the environmental domain, with no significant difference between methods. Illiteracy and rural residence show a significant influence on the well-being of women using contraceptives, underscoring the need for family planning programs to be integrated with policies that address poverty, education, and healthcare access to improve women's overall QoL.

Keywords: Intrauterine devices ▪ Oral contraceptives ▪ Quality of life ▪ Yemen

1. Introduction

According to the World Health Organization (WHO), contraceptive methods are devices, medications, or procedures used to prevent pregnancy through various mechanisms, such as inhibiting ovulation, blocking sperm, or preventing implantation of a fertilized egg.⁽¹⁾ However, selection of methods depends on health, age, pregnancy desires, sexual activity, family history, and past contraceptive use.⁽¹⁾ Quality of Life (QoL) measures the overall well-being of a population or individual, encompassing physical and mental health, environment, education, income, safety, and social belonging. QoL refers to the degree to which individuals can enjoy meaningful life opportunities,⁽²⁾ including physical, social, psychological and environmental aspects.⁽²⁾ Contraceptive methods can be classified by effectiveness into three categories: less effective methods, such as condoms, withdrawal, and fertility awareness; moderately effective methods, such as oral contraceptive pills (OCPs), vaginal rings, and contraceptive injections; and highly effective methods, such as intrauterine devices (IUDs), implants, and sterilization.⁽¹⁾ These methods vary in reversibility and mechanism of action, including barrier protection, hormonal suppression of ovulation, and long-acting reversible contraception.⁽³⁾

Contraception has many benefits, including reducing maternal morbidity and mortality by preventing unintended pregnancies, enabling pregnancy spacing, and mitigating risks associated with early childbearing, such as preterm birth and

neonatal mortality. While some barrier methods protect against sexually transmitted diseases (STDs), they also empower people, enhance education and slow population growth.⁽⁴⁾ Beyond pregnancy prevention, contraceptives offer non-contraceptive benefits, such as reduced dysmenorrhea and premenstrual symptoms, and hormonal contraceptives lower the risks of endometrial and ovarian cancer.⁽⁵⁾

Hormonal contraceptives may be associated with adverse effects, including nausea, weight gain, and cardiovascular risks like blood clots. On the other hand, barrier methods may increase urinary tract infection (UTI) risks or cause spermicide-related irritation.⁽⁶⁾ In addition to health-related concerns, some women refuse contraception due to various reasons, including individual attitudes, social and religious norms, partner/family opposition, and limited knowledge. Geographic barriers disproportionately affect rural populations, while financial constraints hinder access for adolescents and low-income groups. Addressing these barriers is critical to improving contraceptive uptake and reproductive health outcomes.^(3,4)

Studies revealed family planning is vital for improving maternal health and enhancing women's QoL. Understanding the outcome of common contraceptive methods, such as contraceptive pills and IUDs, on women's QoL is essential. In Yemen, prior studies have focused on contraceptive knowledge, attitude, use and barriers,^(5,7) but none have evaluated their impact on QoL. Therefore, this study aimed to evaluate the influence of contraceptive pills



and IUDs on Yemeni women's QoL in Sana'a City and the association between these factors.

2. Methods

2.1. Study design, population and setting

A cross-sectional study was conducted among women of reproductive age recruited from the female waiting areas of selected primary healthcare (PHC) centers in Sana'a City in 2024. Women were included if they were married, aged 14–49 years, and current users of either OCPs or IUDs for at least three months. Those who used other contraceptive methods, had chronic diseases, or had mental conditions affecting the QoL were excluded.

2.2. Sample size and sampling method

A sample size of 352 women was calculated using Epi Info software, version 7.0 (CDC, Atlanta, GA, USA), based on the following assumptions: an estimated population of 12,363 married women aged 15–49 years,⁽⁸⁾ a contraceptive use prevalence of 38% among married women in Yemen,⁽⁷⁾ with a confidence level of 95%, a margin of error of 5%, and a design effect of 1. However, 354 women were included.

A multi-stage cluster sampling method was employed. In the first stage, three districts (Maeen, Al Sabeen, and Al Tahrir) were randomly selected from the ten districts of Sana'a. In the second stage, nine PHC centers (three centers per district) were randomly selected from a list of 120 PHC centers in the study districts. In the third stage, the calculated sample size was proportionally allocated across the nine centers, where participants were selected via systematic random sampling by enrolling every sixth eligible woman attending the selected centers.

2.3. Data collection

A structured interviewer-administered questionnaire using a five-point Likert scale was employed for collecting data, comprising two sections. The first

section, developed by the researchers following a comprehensive literature review, included women's characteristics (age, contraceptive type, education, occupation, employment, and residence). The second section was adopted from the Arabic version of the WHO QoL Instrument (WHOQOL-BREF),⁽⁹⁾ with a cultural adaptation. The instrument was used to evaluate the influence of contraceptive use on women's QoL across four domains: physical, psychological, social, and environmental. The questionnaire was reviewed by three experts (two specializing in community medicine and one in gynecology) to assess its validity. The reliability of the questionnaire was confirmed to be acceptable (Cronbach's alpha coefficient of 0.85) through a pilot study involving 23 women.

2.4. Data analysis

Data were analyzed using IBM SPSS Statistics, version 23 (IBM Corp., Armonk, NY, USA). Categorical variables were presented as frequencies and percentages, and continuous variables were expressed as the mean and standard deviations (SD). QoL scores across the four domains were calculated by summing item responses (scored 1–5 per item), with higher scores indicating minimal disruption and better QoL.⁽⁹⁾ QoL was categorized as high if the scores exceeded the median value and low if they were equal to or below the median. Associations between women's QoL and their characteristics were analyzed using the chi-square test, reporting the odds ratios (ORs) and their corresponding 95% confidence intervals (CIs). The significance level was set at a *P*-value of <0.05.

3. Results

3.1. Characteristics of participating women

Table 1 shows that the mean age of women included in this study was 31.3±6.9, with most women aged 30 years and older (59.3%). Most women had secondary



education (33.3%), followed by those having primary education (27.1%) and university education (20.1%). However, illiterate women represented 12.4% of women, and 7.1% could only read and write. The majority of women were unemployed (84.7%) and residents in urban areas (89.8%). In terms of contraceptive use, 56.8% of women used OCPs. Of these, the majority (45.8%) used combined estrogen-progesterone formulations, while 11% used progestin-only pills and 43.2% used IUDs.

Table 1: Characteristics of women included in the study*

Characteristics	n	(%)
Age (years)		
Mean \pm SD: 31.3 ± 6.9		
<30	144	(40.7)
≥ 30	210	(59.3)
Level of education		
Illiterate	44	(12.4)
Read and write	25	(7.1)
Primary education	96	(27.1)
Secondary education	118	(33.3)
University education	71	(20.1)
Employment status		
Employed	54	(15.3)
Unemployed	300	(84.7)
Residence		
Urban	318	(89.8)
Rural	36	(10.2)
Type of contraceptives used		
Combined OCPs	162	(45.8)
Progesterone-only OCPs	39	(11.0)
IUDs	153	(43.2)

*The total number of women included in the study was 354. SD, standard deviation; IUDs, intrauterine devices; OCPs, oral contraceptive pills.

Table 2: Association of contraceptive types used with women's characteristics attending PHC centers in Sana'a City, Yemen (2024)*

Characteristics	Type of contraceptives used n (%)			P-value
	Combined OCPs (N = 162)	Progesterone-only OCPs (N = 39)	IUDs (N = 153)	
Age (years)				
<30	77 (47.5)	23 (59.0)	44 (28.8)	<0.001
≥ 30	85 (52.5)	16 (41.0)	109 (71.2)	
Level of education				
Illiterate	17 (10.5)	0 (0.0)	27 (17.6)	0.007
Literate	145 (89.5)	4 (100.0)	126 (82.4)	
Employment status				
Employed	24 (14.8)	6 (15.4)	24 (15.6)	0.970
Unemployed	138 (85.2)	33 (84.6)	129 (84.4)	
Residence				
Urban	143 (88.3)	35 (89.7)	140 (91.5)	0.630
Rural	19 (11.7)	4 (10.3)	13 (8.5)	

PHC, primary healthcare; OCPs, oral contraceptive pills; IUDs, intrauterine devices.

3.2. Association of contraceptive types used with women's characteristics

Table 2 shows that age was significantly associated with the type of contraceptive method used by women attending PHC centers in Sana'a ($P < 0.001$), where combined OCPs (47.5%) and progesterone-only OCPs (59%) were more frequently used by women aged <30 years, while IUDs were more frequently used by women ≥ 30 years (71.2%). A significant association was also found between women's level of education and the type of contraceptive used ($P = 0.007$), where illiteracy was more common among IUD users (17.6%), compared to the high literacy rates among the users of combined OCPs (89.5%) and progesterone-only OCPs (100%). In contrast, no significant associations were observed for employment status ($P = 0.970$) or residence ($P = 0.630$), as most users across all contraceptive types were unemployed and living in urban areas.



3.3. Overall and domain-specific QoL among women using contraceptive methods

Table 3 shows that the median overall score of QoL among participating women was 2.68, with scores ranging from 1.07 to 3.71. Overall, 50.3% of women demonstrated low QoL and 49.7% demonstrated high QoL. Domain-specific analysis revealed that the environmental domain had the lowest perceived QoL, with a median of 3.00 and 62.7% of women reporting low environmental QoL. Conversely, the physical domain had the highest median QoL score of 3.75; however, more than half of the women (55.4%) still reported low physical QoL. The psychological domain had a median score of 3.20, with 54.8% of women showing low psychological QoL. Likewise, the social domain had a median score of 3.50, with 54.5% of women showing low social QoL.

Table 3: Overall and domain-specific QoL of women attending PHC centers in Sana'a City, Yemen (2024)*

QoL domain	Median score (range)	Low QoL n (%)	High QoL n (%)
Overall	2.68 (1.07–3.71)	178 (50.3)	176 (49.7)
Physical domain	3.75 (1.75–4.88)	196 (55.4)	158 (44.6)
Psychological domain	3.20 (1.20–5.00)	194 (54.8)	160 (45.2)
Social domain	3.50 (1.00–4.83)	193 (54.5)	161 (45.5)
Environmental domain	3.00 (1.25–4.75)	222 (62.7)	132 (37.3)

* The total number of women was 354. QoL, quality of life; PHC, primary healthcare.

3.4. Association between women's characteristics and their low QoL

Table 4 shows that illiteracy of women was significantly associated with their low QoL, where illiterate women were almost four times more likely to have a low QoL compared to literate women (OR = 3.9, 95% CI = 1.87–8.21; $P < 0.001$). Likewise, residence was significantly associated with low QoL, where women living in rural areas were about twice as likely to have low QoL compared to those in urban settings (OR = 2.1, 95% CI = 1.02–4.45; $P = 0.038$). In contrast, age, employment status, and the type of contracep-

tive method did not show statistically significant associations with low QoL.

Table 4: Association of low QoL of women attending PHC centers in Sana'a City, Yemen, in 2024 with their characteristics

Variable	N	Low QoL n (%)		
		n (%)	OR (95% CI)	P-value
Age (years)				
<30	144	64 (44.4)	Reference	
≥30	210	114 (54.3)	1.5 (0.97–2.27)	0.069
Level of education				
Literate	310	144 (46.5)	Reference	
Illiterate	44	34 (77.3)	3.9 (1.87–8.21)	<0.001
Employment status				
Employed	54	21 (38.9)	Reference	
Unemployed	300	157 (52.3)	1.7 (0.95–3.15)	0.069
Residence				
Urban	318	154 (48.4)	Reference	
Rural	36	24 (66.7)	2.1 (1.02–4.45)	0.038
Type of contraceptive method				
IUDs	153	79 (51.6)	Reference	
OCPs	201	99 (49.4)	0.9 (0.60–1.38)	0.657

QoL, quality of life; PHC, primary healthcare; IUDs, intrauterine devices; OCPs, oral contraceptive pills.

4. Discussion

To the best of our knowledge, this study is the first to assess Yemeni women's QoL in Sana'a City in relation to the use of OCPs and IUDs. The use of OCPs by more than half of women in this study is consistent with a study conducted in Saudi Arabia, where OCPs were reported among 55.6% of women attending PHC centers in Riyadh.⁽¹⁰⁾ Conversely, a study from Jordan revealed a higher prevalence of IUD use (21%) compared to 8% for OCPs.⁽¹¹⁾ Such variations likely reflect differences in availability and accessibility, as OCPs are generally easier to obtain in urban areas, more convenient to use, and often favored for their reversibility and privacy. Some studies elsewhere have shown continued use of traditional methods,^(12–14) while others have examined reasons for the non-use of modern contraceptives.⁽¹⁵⁾

Overall, women using either OCPs or IUDs exhibited low QoL scores in all domains, with an overall low QoL prevalence of 50.3%, indicating that women using contraceptives in Sana'a face considerable



challenges across multiple areas of well-being. These may stem from a combination of factors, including high unemployment, limited education, the ongoing conflict, weak healthcare infrastructure, and cultural barriers that constrain women's autonomy and access to services. In contrast, a study from Saudi Arabia reported that women using OCPs and IUDs had a generally good QoL.⁽¹⁶⁾

Among the four domains assessed, most women (62%) reported low QoL in the environmental domain, followed by approximately 50% of women reporting low QoL in other domains. The low environmental QoL likely reflects Yemen's difficult living conditions and underdeveloped infrastructure. Likewise, the relatively low QoL in other domains highlights multidimensional stressors such as restricted mobility, poor mental health, and limited social support. The present study showed a significant association between women's illiteracy and their low QoL, underscoring the importance of education in enhancing health awareness and contributing to women's well-being. Furthermore, women residing in rural areas were nearly twice as likely to report low QoL compared to those in urban settings, which is likely attributed to inequities in healthcare access, socioeconomic challenges, and environmental disadvantages.

The present study found no statistically significant association between women's QoL and the type of contraceptive method. In contrast, previous studies have reported that IUDs and injectable contraceptives are often linked to higher QoL, largely due to their long-acting nature, minimal user involvement, and high efficacy.^(16–22) This inconsistency may be attributed to context-specific factors in Yemen, including limited access to follow-up care, post-insertion complications, and cultural perceptions of IUD use. Some studies have linked OCP use to adverse outcomes, such as mood disturbances and dissatisfaction related to daily

intake requirements.^(11–26) Conversely, other studies have highlighted potential benefits, reporting improved QoL when OCPs are prescribed for the management of polycystic ovarian syndrome or for the prevention of uterine fibroids.^(27, 28)

This study provides insights into the impact of using contraceptive methods on the QoL among Yemeni women using a validated instrument (WHOQOL-BREF). Nevertheless, it has a number of limitations that should be considered. First, the cross-sectional design of the study limits the ability to establish a cause-and-effect relationship between women's use of contraceptives and QoL. Second, the collection of self-reported data on QoL may have introduced recall and social desirability biases. Third, the study was restricted to PHC centers in Sana'a City, and the findings may not be representative of women in rural or conflict-affected areas with more limited access to reproductive health services.

5. Conclusion

Both OCPs and IUDs are linked to low QoL among Yemeni women across all well-being domains, particularly the environmental domain, with no significant difference between the two methods. Illiteracy and rural residence play a stronger role in shaping women's well-being than the choice of a contraceptive method. These findings highlight the need for family planning programs to be integrated with policies that address poverty, education, and equitable access to healthcare in order to improve women's overall QoL.

Acknowledgments

The authors thank the administrations of PHC centers for their help and support. They also thank the women participating in the study.

Ethical approval and consent

The Research Ethics Committee of the Faculty of Medicine and Health Sciences, University of Sciences and



Technology in Sana'a, Yemen, approved the study (Ethical Clearance No.: 1447/0063/UREC/UST). Permission was also obtained from the administrations of the health offices for the targeted PHC centers. Before administering the questionnaire, women were informed of the study's purpose and asked to provide verbal consent for voluntary participation. The participants were informed that they could decline, withdraw, or skip any questions without consequence. The data were kept confidential and used solely for research purposes.

Conflict of Interest

The authors declare no conflict of interest associated with this article.

Funding

None.

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Mutahar D, Mahdi A, Ahmed H, Raweh T, Al-Refaei F, Kasem M, Al-Awar W. Quality of Life among Yemeni Women Utilizing Intrauterine Devices and Oral Contraceptives in Selected Primary Healthcare Centers in Sana'a City, Yemen. UST J Med Sci. 2025;3:10. <https://doi.org/10.59222/ustjms.3.10>



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