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OPEN ACCESS Original Article

Utilization of Contraception Methods and Side Effects among Women Attending the Maternal and Child Healthcare Centers in Mukalla City, Hadhramout, Yemen

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ABSTRACT

Background: One of the main methods of family planning involves the use of contraceptives to reduce the chance of pregnancy.
Objective: The present study was designed to evaluate the utilization of contraception methods and the side effects among women attending the maternal and child healthcare (MCH) centers in Mukalla city, Hadhramout, Yemen.
Methods: A cross-sectional study was conducted from April to May 2022 among 422 women who were attending the maternal and child healthcare (MCH) centers in Mukalla city and using a contraception method. The data was collected by face-to-face interview and by using structured questionnaires. The data was analyzed by using SPSS version 24 software.
Results: Data were analyzed from 422 participants: 210 oral contraceptive pill users, 108 Implanon users, 81 intrauterine device users, and 23 injectable users. Most of the women (49.5%) were using oral contraceptive pills for birth control. A total of 78.7% of participants experienced at least one side effect, of which hair loss (48.6%), abnormal vaginal bleeding (44.4%), amenorrhea (43.5%), and mood swings (37.0%) were most common. Survey results showed a significant association between side effects and duration of contraception use ($p < 0.05$).
Conclusion: The study revealed a high prevalence of modern contraceptive use among women, accompanied by a notable incidence of side effects. Addressing the impact of these adverse effects through population-based research and individualized counseling is crucial to enhance adherence, satisfaction, and sustained contraceptive use.

Keywords: family planning, contraception methods, side effects, oral contraceptives, intrauterine device, Mukalla, Hadhramout, Yemen.

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INTRODUCTION

Reproductive Health (RH) is an integral right of everyonefor the attainment of the highest standard of physical and mental health [1]. The fact that family planning programs can affect contraceptive behavior and fertility positively is widely accepted [2]. One of the main methods of family planning involves the use of contraceptives [3]. Contraception is defined as an intervention that reduces the chance of pregnancy after sexual intercourse [4]. Contraceptive use is of paramount importance to women's health [5]. According to a report from 2013, an estimated 99% of women who have ever had sexual intercourse used at least one contraceptive method in their lifetime [5, 6]. Therefore, it's a common practice among women during their childbearing period [7].

A study conducted in Sana'a indicated that Yemeni women seeking healthcare generally exhibit good knowledge and positive attitudes toward family planning (FP) for child spacing and smaller family size. However, FP utilization remains low compared with other Arab countries, largely due to sociocultural barriers and male-dominated decision-making. Enhancing male involvement and engaging religious leaders in FP awareness initiatives are crucial to improving acceptance and use. Additionally, targeted education and communication programs for illiterate women are essential to promote informed adoption of modern contraceptive methods [8]. Another study conducted in Aden, Yemen, reveals good overall knowledge and attitudes, but gaps in practice and method-specific awareness persist. Targeted interventions addressing cultural and educational barriers may strengthen FP utilization and improve maternal and child health outcomes. Family planning programs should enhance male involvement, reduce socioeconomic barriers, and counter misconceptions through culturally tailored health campaigns. Further qualitative research is warranted to explore factors influencing FP behaviors [9].

Reversible contraceptive methods are typically grouped as hormonal (such as progestin-only pills or estrogen-progestin patches) or nonhormonal (condoms, diaphragms) and long-acting (such as intrauterine devices [IUDs]) or short-acting (such as pills) [4]. In addition, it may be classified into modern and traditional methods [3]. Traditional methods include withdrawal, breastfeeding, and the rhythm method, whereas modern methods include condoms, hormonal contraceptives, intrauterine contraceptive devices (IUDs), implants, and contraceptive surgery [10].

Promoting the use of modern contraceptive methods remains a key strategy in reducing maternal mortality [11]. A 2021 study among 825 Kenyan women reported that 44% used implants, 43% injectables, 7% intrauterine devices (IUDs), and 6% oral contraceptive pills [12]. The development of oral contraceptives began in the mid-1950s, with the U.S. Food and Drug Administration (FDA) approving Enovid in 1957 for menstrual disorders and later, in 1960, for birth control [13]. Currently, more than 100 million women worldwide use oral contraceptive pills, which are classified into combined estrogen–progesterone, progesterone-only, and extended-use formulations, with the combined pill being the most common [14–16]. Intrauterine contraception has also evolved, with the copper IUD (ParaGard) introduced in 1988 and the hormonal IUD (Mirena) approved in 2000 [13]. These reversible methods offer long-term contraception through either copper-induced spermicidal effects or gradual hormonal release [17]. The injectable contraceptive Depo-Provera was approved by the U.S. Food and Drug Administration (FDA) for use in the United States in 1992. Injectable formulations such as depot medroxyprogesterone acetate (DMPA) and norethisterone enanthate (NET-EN) contain synthetic progestins that mimic the activity of the natural hormone progesterone, thereby preventing ovulation and providing effective contraception. In 2006, the FDA also approved the use of contraceptive implants, consisting of small, flexible plastic rods approximately the size of a matchstick, which continuously release a progestin to provide long-acting reversible contraception [18].

The side effects influence the acceptability and continuation of hormonal contraceptives, and there are many studies reporting women experience side effects. The side effects of OCS were reported in a study done for Egyptian women; the most frequent complications found among them were depression, breast pain, inflammation, weight gain, and abnormal vaginal secretions (63.7%, 57.7%, 56.6%, and 56.3%), respectively [15]. The side effects reported by some users of IUD contraceptives were changes in bleeding patterns (especially in the first 3 to 6 months), including prolonged and heavy monthly

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bleeding, irregular bleeding, and more cramps and pain during monthly bleeding. They may also contribute to anemia if a woman already has low iron blood stores before insertion and the IUD causes heavier monthly bleeding (uncommon). Pelvic inflammatory disease (PID) may occur if the woman has chlamydia or gonorrhea at the time of IUD insertion (rare) [18]. The side effects of implants in a studydone in Mukalla were a change of menstruation cycle, weight gain, mood change, fatigue, and headache, reported by 65.6%, 59.9%, 45.8%, 41.1%, and 40.1% of women, respectively [19]. The most common side effects of injectables include initially prolonged and irregular menses, weight gain, dizziness, abdominal bloating, decreased libido, and loss of bone mineral density (reversible) [20].
However, there are no published studies about the side effects of contraceptive methods among childbearing-aged women in Mukalla, Hadhramout governorate; therefore, this study was aimed at evaluating the utilization of contraception methods and the side effects among women attending the maternal and child healthcare (MCH) centers in Mukalla city during 2022.

METHODS

Study Design

A cross-sectional study was conducted to evaluate the utilization of contraception methods and side effects among women who attended the maternal and child healthcare (MCH) centers in Mukalla city, Hadhramout, from April to May 2022.

Study Area

This study was carried out at the maternal and child healthcare (MCH) centers in Mukalla city in Hadhramout. There are twenty-two governmental healthcare centers in Mukalla City. Six centers were selected randomly by lottery, which were
1. Al-Mustaqbal healthcare center.
2. Al-Salam healthcare center.
3. Bajo'man healthcare center.
4. Hadhramout University healthcare center.
5. Khalf healthcare center.
6. 30 November healthcare center.

Study Population

The study population comprised women of childbearing age using contraceptives.

Sample Size Estimation

Calculation of sample size was based on the following formula:

$n = \frac{Z^2(Pq)}{D^2}$ [19]

n = sample size required.
p = proportion of the characteristic in the population. (p = 50% = 0.5)
Z =confidence level = (95%) = 1.96
Q =1-p = (1-0.5) =0.5
d = precision or error allowable (d = 5%) = 0.05
$n = (1.96)^2 \times 0.5 \times 0.5 / (0.05)^2 = 384.16$

- The sample size required = (384) women.
- Add 10% (38) to avoid any sample bias. Finally, the final sample size of the study was (422) women.
- Percentage of women in each MCH center in Mukalla city:

$$\frac{\text{Number of women in each selected MCH center}}{\text{Total number of women in all 6 selected centers}} \times 100$$

- Therefore, the sample size required from the each MCH center were:

$$\frac{\text{Percentage of women in each selected MCH center}}{100} \times \text{Sample size (422)}$$

Study Variables

Various contraceptive methods are measured in this study, including oral contraceptive pills, intrauterine devices (IUDs), Implanon—a type of contraceptive implant that serves as a long-acting reversible contraceptive (LARC) by releasing etonogestrel to inhibit ovulation and thicken cervical mucus for up to three years—and injectable contraceptives. The side effects associated with the use of these contraceptive methods includeweight gain or increased appetite, breast tenderness, abnormal vaginal bleeding, vaginal discharge, amenorrhea, hypertension, osteoarthritis, mood swings, uterine cramping, facial acne, dizziness, diarrhea, nausea, hair loss, headache, pelvic pain, and excessive body hair growth, among others. The duration of contraceptive use varies among individuals and may be categorized as less than one year, between one and two years, between two and three years, or more than three years.

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Inclusion and Exclusion Criteria

Inclusion Criteria

Married women of childbearing age who use contraceptive methods and attend MCH centers in Mukalla City.

Exclusion Criteria

Married women in the childbearing period who are:

- Not use contraception methods or use traditional methods.
- Use a contraception method with chronic disease (e.g., DM, HTN, Cardiac disease, etc.).
- Refuse interviewing for any reason.

Data Collection Methods and Tools

Data were collected through structured questionnaires administered to women using contraceptives at MCH centers in Mukalla City.

Ethical Consideration

Approval of the project and the study was obtained from the Department of Community Medicine in the College of Medicine and Health Sciences at Hadhramout University (HUCOM) (CM/REC38). In addition, informed agreement was obtained from management of centers that were included in this study. Informed consent was taken from all subjects. We provided enough information about current research and its objectives to the participants, then the information was collected from women after their agreement, with their right to agree or withdraw, ensuring that the information will be kept in the strictest confidence and used only for scientific purposes and for the benefit of the community.

Data Analysis

The data was analyzed by using the Statistical Package for Social Science (SPSS version 24) software program. The Shapiro test was used to analyze the normal distribution of the variables. Descriptive statistical tools (frequencies, percentages, mean, and standard deviation) were determined for obtained data. A chi-square test was performed to see the significance of the association for categorical variables. The statistical analysis was conducted at a 95% confidence level, and a p-value < 0.05 was considered statistically significant.

Pilot of Study (Pre-test)

Before data collection, the questions in the questionnaire were pretested. The interviews were conducted on 12 participants to check understanding and applicability of the structured questionnaire.

RESULTS

A total of 422 women of reproductive age participated in this cross-sectional study. The mean age of the study participants was 28.6 (±5.9), ranging from 18 to 46 years. Most of the respondents, 161 (38.5%), were in the age group 24 to 29 years and had a primary and secondary school education (35.1%). The majority of the study sample had 1 to 2 children (53.6%). 384 of the respondents (91.0%) live in urban areas. More than half of the participants, 339 (80.3%), were housewives (Table 2).

Table 1: Distribution of sample size among maternal and child healthcare centers

MCH centers	Total number of women attended the centers in 2021	Percentage %	Sample size
Al-Mustaqbal healthcare center	507	8	34
Al-Salam healthcare center	2959	46	194
Bajo'man healthcare center	317	5	21
Hadhramout University healthcare center	1884	30	127
Khalf healthcare center	73	1	4
30-November healthcare center	614	10	42
Total	6354	100	422

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Table 2: Socio-Demographic Characteristics of Participant Women, (n=422)

	Overall	**Oral**	**IUD**	**Implanon**	**Injection**
n/(%)	422 (100%)	210 (49.5%)	81 (19%)	108 (26%)	23 (5.5%)
Age (mean ± SD)	28.6±5.9	27.8±5.3	29.8±5.4	28.0±5.3	31.7±5.4
Age Group					
(18-23)	85 (20.2%)	47 (22.3%)	10 (12.3%)	23 (21.2%)	4 (17.3%)
(24-29)	161 (38.5%)	83 (39.5%)	28 (34.5%)	42 (38.8%)	10 (43.4%)
(30-35)	121 (28.5%)	50 (23.8%)	27 (33.3%)	34 (31.4%)	7 (30.4%)
(36-42)	43 (9.9%)	20 (9.5%)	11 (13.5%)	8 (7.4%)	0 (0%)
(>43)	12 (2.9%)	10 (4.7%)	5 (6.1%)	1 (0.9%)	2 (8.6%)
Education Level					
Illiterate	31 (7.3%)	18 (8.5%)	2 (4.4%)	6 (5.6%)	7 (30.4%)
Primary School	148 (35.1%)	78 (37.1%)	35 (30%)	37 (34.3%)	5 (21.4%)
Secondary School	148 (35.1%)	69 (32.8%)	27 (43.3%)	37 (34.3%)	5 (21.4%)
University	88 (20.9%)	40 (19.0%)	17 (22.3%)	25 (23%)	6 (26.3%)
Postgraduate	7 (1.7%)	5 (2.3%)	0 (0%)	3 (2.8%)	0 (0%)
Residency					
Urban	384 (91.0%)	188(89.5%)	76(94.4%)	96(88.9%)	20(71.4%)
Rural	38 (9.0%)	22(10.4%)	5(5.6%)	12(11.1%)	3(28.6%)
Number Of Children					
None	4 (.9%)	4 (1.9%)	0 (0%)	0 (0%)	0 (0%)
(1-2)	226 (53.6%)	120 (57.1%)	40 (44.4%)	63 (58.3%)	11 (57.1%)
(3-4)	132 (31.3%)	58 (27.6%)	35 (38.9%)	34 (31.5%)	6 (21.4%)
(>4)	60 (14.2%)	28 (13.3%)	15 (16.7%)	11 (10.2%)	6 (21.4%)
Occupation					
Housewife	339 (80.3%)	171 (81.4%)	66 (82.2%)	82 (75.9%)	18 (71.4%)
Worker in health field	35 (8.3%)	20 (9.5%)	5 (5.6%)	12 (11.1%)	0 (0%)
Worker in non-health field	48 (11.4%)	19 (9.0%)	10 (12.2%)	14 (13%)	5 (28.6%)

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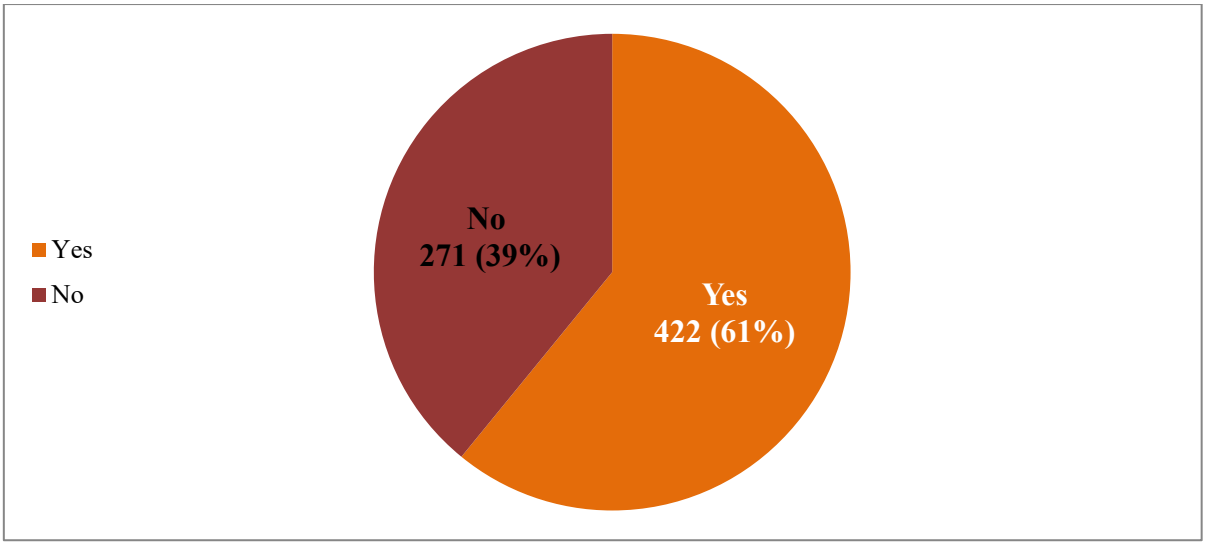

Figure 1: Distribution of Current Use of Contraception Methods in 2022

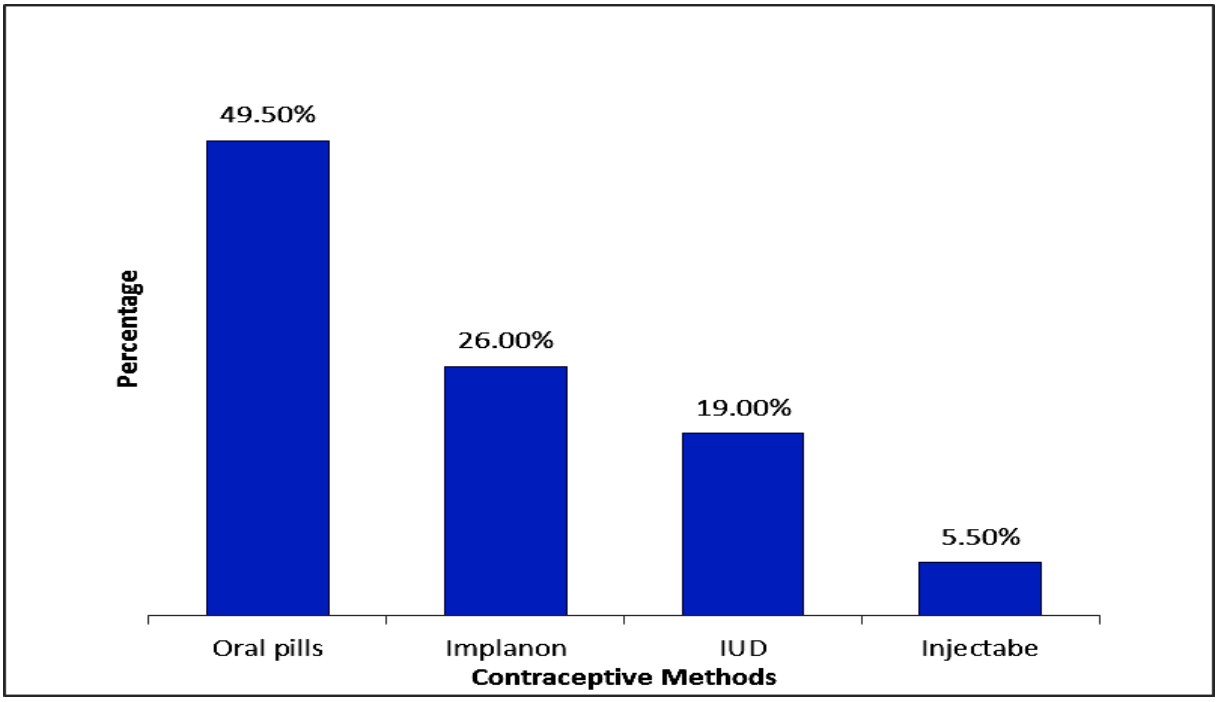

Figure 2: Prevalence of Contraceptive Methods Used by the Respondents

The results of Figure 2 reveal that the most common contraceptive method used was oral contraceptive pills among women [210 (49.5%)], followed by the Implanon [108 (26%)] and then the IUD method and injection, respectively [81 (19%) and 23 (5.5%)].

Table 3 presents the duration of contraceptive use among women according to the method utilized. Overall, the largest proportion of participants (44.3%) had used contraception for less than one year, followed by 29.6% who had used it for one to two years, 12.3% for two to three years, and 13.8% for more than three years. When analyzed by method, oral contraceptive users showed the highest proportion of short-term use, with more than half (52.5%) reporting less than one year of use. Similarly, the majority of injection users (78.1%) had used this

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method for less than one year, suggesting that injectables are commonly adopted for short-term contraception. In contrast, IUD users demonstrated a tendency toward long-term use, with 33.5% reporting use for more than three years and 34.5% for one to two years. This aligns with the known long-acting nature of IUDs.

Among Implanon users, most (39.8%) reported use for less than one year, while 24% had used it for two to three years, reflecting its typical duration of effectiveness (up to three years). Only a small proportion (5.6%) had used Implanon for more than three years. Overall, these findings suggest that short-term use (<1 year) predominates across most contraceptive methods, particularly for oral and injectable forms, whereas long-term use is more common among IUD users. This pattern may reflect differences in method availability, user preference, and provider counseling on long-term versus short-term contraceptive options.

Table 3: Duration of Using Contraception Methods in Years, (n=422)

Years of using contraceptive method	Overall	Oral	IUD	Implanon	Injection
<1 Year	187 (44.3%)	110 (52.5%)	17 (20.9%)	43 (39.8%)	18 (78.1%)
(1-2) Years	125 (29.6%)	60 (29.5%)	28 (34.5%)	33 (30.6%)	3 (14.3%)
(2-3)Years	52 (12.3%)	16 (7.6%)	9 (11.1%)	26 (24%)	1 (0.5%)
>3Years	58 (13.8%)	24 (10.4%)	27 (33.5%)	6 (5.6%)	1 (7.1%)
Total	**422 (100%)**	**210 (100%)**	**81 (100%)**	**108 (100%)**	**23 (100%)**

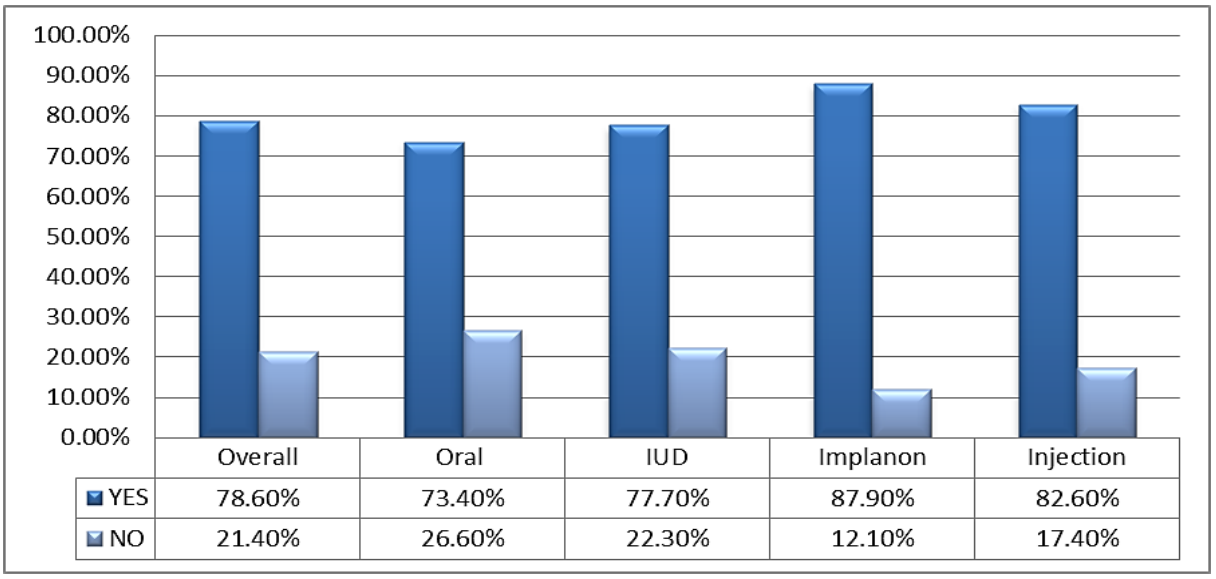

Figure 3: Prevalence of Side Effects among Women Using Contraception Methods.

This obvious figure 3 shows that more than two-thirds [332 (78.60%)] of women reported having at least one side effect related to contraceptive use.

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Table 4: Frequency and Percentage of the Side Effects in Each Contraceptive Method, (n=422)

Side effects	Oral *n*= (210)		IUD *n*= (81)		Implanon *n*= (108)		Injectable *n*= (23)	
Weight gain	36	17.1%	4	4.9%	29	26.8%	4	17.4%
Tender or Sore breasts	7	3.3%	2	2.4%	11	10.1%	0	0%
Abnormal vaginal bleeding	13	6.1%	35	43.2%	48	44.4%	8	34.7%
Vaginal discharge	18	8.5%	31	38.3%	21	19.4%	3	13.0%
Amenorrhea	16	7.6%	0	0%	40	37.0%	10	43.5%
Hypertension	14	6.6%	0	0%	6	5.5%	1	4.3%
Osteoarthritis	17	8.0%	3	3.7%	18	16.6%	4	17.4%
Mood swing	78	37.0%	4	4.9%	42	38.8%	6	26.1%
Uterine cramping	13	6.2%	18	22.2%	9	8.3%	1	4.3%
Facial acne pimples	21	10.0%	0	0%	3	2.7%	0	0%
Dizziness	29	13.8%	6	7.4%	19	17.5%	2	8.7%
Diarrhea	1	0.5%	0	0%	1	0.9%	0	0%
Nausea	25	11.9%	1	1.2%	10	9.2%	2	8.7%
Hair loss	102	48.6%	7	8.6%	45	41.6%	7	30.4%
Headache	45	21.4%	4	4.9%	14	12.9%	5	21.7%
Pelvic pain	15	7.1%	24	29.6%	9	8.3%	3	13.0%
Body hair growth	9	4.3%	1	1.2%	2	1.8%	0	0%
Others	29	13.8%	14	17.2%	25	23.1%	1	4.3%

The analysis of side effects for each method showed that the most common encountered side effects were hair loss [102 (48.6%)], mood swings [78 (37.0%)], and headache [45 (21.4%)] with utilizing oral contraceptive pills. Almost 88% of the participants who use the Implanon method experienced side effects; abnormal vaginal bleeding [48 (44.4%)], hair loss (45 [41.6%]), and mood swings [42 (38.8%)] were most common.

The major side effects of intrauterine devices were represented: abnormal vaginal bleeding [35 (43.2%)], vaginal discharge [31 (38.3%)], and pelvic pain [24 (29.6%)].

Whereas amenorrhea [10 (43.5%)], abnormal vaginal bleeding [8 (34.7%)], and hair loss [7 (30.4%)] were noted as the most frequent side effects found among injectable contraception users (Table 4).

The occurrence of side effects and duration of oral contraceptive pill consumption were analyzed and revealed a significant association between the main three side effects (abnormal vaginal bleeding, vaginal discharge, and amenorrhea) and the duration of consumption (p= 0.000, p= 0.000, and p= 0.001, respectively). The occurrence of these side effects was the highest among those women who consumed OCP for less than 1 year. Also nausea and pelvic pain (p=0.037 and p=0.003) were significantly higher in 1 to 2 years of consumption, while the facial acne pimples and hair loss (p=0.000) were significantly associated with 2 to 3 years of use. And during at least 3 years of use, mood swings, uterine cramping, and headaches (p= 0.005, p= 0.016, and p= 0.003, respectively) were reported among those women who are consuming the OCP (Table 5).

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Table 5: Association between the Duration of Oral Contraceptive Use and Reported Side Effects

Side effects	< 1Year (n= 110)	1-2 Years (n= 60)	2-3 Years (n= 16)	>3 Years (n= 24)	P-value
Weight gain	10 (9.0%)	14 (23.3%)	5 (31.3%)	7 (29.2%)	0.951
Tender or Sore breasts	4 (3.6%)	0 (0%)	1 (6.3%)	2 (8.3%)	0.180
Abnormal vaginal bleeding	11 (10%)	2 (3.3%)	0 (0%)	0 (0%)	0.000
Vaginal discharge	10 (9.0%)	4 (6.7%)	1 (0.6%)	3 (5.1%)	0.000
Amenorrhea	12 (10.9%)	4 (6.7%)	0 (0%)	0 (0%)	0.001
Hypertension	5 (4.5%)	7 (11.6%)	0 (0%)	2 (8.3%)	0.109
Osteoarthritis	8 (7.2%)	6 (10%)	1 (6.3%)	2 (8.3%)	0.210
Mood swing	38 (34.5%)	25 (41.7%)	4 (25%)	11 (45.8%)	0.005
Uterine cramping	3 (2.7%)	6 (10%)	0 (0%)	4 (16%)	0.016
Facial acne pimples	9 (8.1%)	6 (10%)	4 (25%)	2 (8.3%)	0.000
Dizziness	14 (12.7%)	9 (15%)	2 (12.5%)	4 (16.7%)	0.731
Diarrhea	1 (0.9%)	0 (0%)	0 (0%)	0 (0%)	0.992
Nausea	9 (8.1%)	11 (18.3%)	1 (6.7%)	4 (16.7%)	0.037
Hair loss	47 (42.7%)	33 (55%)	9 (56.2%)	13 (54.2%)	0.000
Headache	22 (20%)	11 (18.3%)	1 (6.7%)	11 (45.8%)	0.003
Pelvic pain	4 (3.6%)	12 (35%)	1 (6.7%)	6 (25%)	0.002
Body hair growth	3 (2.7%)	3 (5%)	1 (6.7%)	2 (8.3%)	0.075
Others*	16 (14.5%)	9 (15%)	1 (6.7%)	3 (12.5%)	0.167

*Others include: weight loss, , insomnia, anemia and fatigue. The significant was considered at P value <0.05.
anxiety

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Table 6: Association between the Duration of Implanon Use and Reported Side Effects

Side effects	< 1 Year (n= 43)	1-2 Years (n= 33)	2-3 Years (n= 26)	3 Years > (n= 6)	P-value
Weight gain	8 (18.6%)	10 (30.3%)	8 (30.7%)	3 (50%)	0.002
Tender or Sore breasts	1 (2.3%)	3 (9%)	6 (23%)	1 (16.6%)	0.002
Abnormal vaginal bleeding	22 (51.1%)	14 (42.4%)	10 (38.4%)	2 (33.3%)	0.000
Vaginal discharge	10 (23.2%)	5 (15.1%)	4 (15.3%)	2 (33.3%)	0.503
Amenorrhea	9 (20.9%)	18 (54.5%)	11 (42.3%)	2 (33.3%)	0.000
Hypertension	4 (9.3%)	1 (3.03%)	1 (3.8%)	0 (0%)	0.753
Osteoarthritis	5 (11.6%)	6 (18.1%)	6 (23%)	1 (16.6%)	0.007
Mood swing	14 (32.5%)	15 (45.4%)	9 (34.6%)	4 (66.6%)	0.037
Uterine cramping	1 (2.3%)	3 (9%)	5 (19.2%)	0 (0%)	0.568
Facial acne pimples	1 (2.3%)	2 (6%)	0 (0%)	0 (0%)	0.129
Dizziness	5 (11.6%)	5 (15.1%)	7 (26.9%)	2 (33.3%)	0.128
Diarrhea	0 (0%)	0 (0%)	1 (3.8%)	0 (0%)	0.429
Nausea	3 (6.9%)	2 (6%)	5 (19.2%)	0 (0%)	0.922
Hair loss	14 (32.5%)	15 (45.4%)	24 (92.3%)	2 (33.3%)	0.396
Headache	7 (16.2%)	1 (3.03%)	5 (19.2%)	1 (16.6%)	0.290
Pelvic pain	3 (6.9%)	2 (6%)	4 (15.3%)	0 (0%)	0.163
Body hair growth	0 (0%)	1 (3.03%)	1 (3.8%)	0 (0%)	0.470
Others*	9 (20.9%)	7 (21.2%)	8 (30.7%)	1 (16.6%)	0.028

*Others include: weight loss, anemia, fatigue and local pain. The significant was considered at P value <0.05.

Among the most frequent side effects experienced by Implanon users, abnormal vaginal bleeding was significantly related to use duration less than 1 year (p=0.000). Whereas in the 1 to 2 years of use, amenorrhea had the highest rate proportion (p=0.000). Also, tender or sore breasts, osteoarthritis, and others were statistically significant (p= 0.002, p= 0.007, and p= 0.028, respectively) in the duration of 2 to 3 years of use, while weight gain and mood swings (p= 0.002 and p= 0.037, respectively) showed significant association with the duration of use of more than 3 years.

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Table 7: Association between the Duration of Intrauterine Device (IUD) Use and Reported Side Effects

Side effects	< 1 Year (n= 17)	1-2 Years (n= 28)	2-3 Years (n= 9)	3 Years > (n= 27)	P-value
Weight gain	0 (0%)	2 (7.1%)	0 (0%)	2 (7.4%)	0.001
Tender or Sore breasts	0 (0%)	1 (3.5%)	1 (3.5%)	0 (0%)	0.283
Abnormal vaginal bleeding	9 (52.9%)	11 (39.3%)	2 (22.2%)	13 (48.1%)	0.000
Vaginal discharge	9 (52.9%)	11 (39.3%)	3 (33.3%)	8 (29.6%)	0.000
Amenorrhea	0 (0%)	0 (0%)	0 (0%)	0 (0%)	____
Hypertension	0 (0%)	0 (0%)	0 (0%)	0 (0%)	____
Osteoarthritis	0 (0%)	1 (3.5%)	0 (0%)	2 (7.4%)	0.036
Mood swing	0 (0%)	1 (3.5%)	2 (22.2%)	1 (3.7%)	0.000
Uterine cramping	2 (11.7%)	9 (32.1%)	2 (22.2%)	5 (18.5%)	0.000
Facial acne pimples	0 (0%)	0 (0%)	0 (0%)	0 (0%)	____
Dizziness	1 (5.8%)	4 (14.2%)	0 (0%)	1 (3.7%)	0.082
Diarrhea	0 (0%)	0 (0%)	0 (0%)	0 (0%)	____
Nausea	1 (5.8%)	0 (0%)	0 (0%)	0 (0%)	0.006
Hair loss	2 (11.7%)	2 (7.1%)	0 (0%)	3 (11.1%)	0.002
Headache	1 (5.8%)	2 (7.1%)	0 (0%)	1 (3.7%)	0.000
Pelvic pain	2 (11.7%)	9 (32.1%)	3 (33.3%)	10 (37.0%)	0.000
Body hair growth	0 (0%)	0 (0%)	0 (0%)	1 (3.7%)	0.331
Others*	2 (11.7%)	4 (14.2%)	2 (22.2%)	6 (22.2%)	0.809

*Others include: anemia. The significant was considered at P value <0.05.

The side effects of the IUD method were also associated with the usage duration. Abnormal vaginal bleeding and vaginal discharge (p=0.000), nausea (p=0.006), and hair loss (0.002) were related to less than 1 year of use, whereas the uterine cramping and headache are associated with 1 to 2 years (p=0.000), and the mood swing (p=0.000) was statistically associated with the 2- to 3-year duration.

Weight gain, osteoarthritis, and pelvic pain (p=0.001, p=0.036, and p=0.000, respectively) were associated with duration for more than 3 years of use (Table 7).

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Table 8: Association between the Duration of Injection Use and Reported Side Effects

Side effects	< 1 Year (n= 18)	1-2 Years (n= 3)	2-3 Years (n= 1)	3 Years > (n= 1)	P-value
Weight gain	4 (22.2%)	0 (0%)	0 (0%)	0 (0%)	0.995
Tender or Sore breasts	0 (0%)	0 (0%)	0 (0%)	0 (0%)	_____
Abnormal vaginal bleeding	7 (38.8%)	1 (33.3%)	0 (0%)	0 (0%)	0.249
Vaginal discharge	3 (16.6%)	0 (0%)	0 (0%)	0 (0%)	0.576
Amenorrhea	6 (33.3%)	2 (66.6%)	1 (100%)	1 (100%)	0.000
Hypertension	1 (5.5%)	0 (0%)	0 (0%)	0 (0%)	0.885
Osteoarthritis	3 (16.6%)	1 (33.3%)	0 (0%)	0 (0%)	0.222
Mood swing	5 (27.7%)	0 (0%)	1 (100%)	0 (0%)	0.609
Uterine cramping	1 (5.5%)	0 (0%)	0 (0%)	0 (0%)	0.370
Facial acne pimples	0 (0%)	0 (0%)	0 (0%)	0 (0%)	_____
Dizziness	2 (11.1%)	0 (0%)	0 (0%)	0 (0%)	0.503
Diarrhea	0 (0%)	0 (0%)	0 (0%)	0 (0%)	_____
Nausea	2 (11.1%)	0 (0%)	0 (0%)	0 (0%)	0.954
Hair loss	5 (27.7%)	1 (33.3%)	1 (100%)	0 (0%)	0.428
Headache	4 (22.2%)	0 (0%)	1 (100%)	0 (0%)	0.454
Pelvic pain	2 (11.1%)	1 (33.3%)	0 (0%)	0 (0%)	0.888
Body hair growth	0 (0%)	0 (0%)	0 (0%)	0 (0%)	_____
Others*	0 (0%)	1 (33.3%)	0 (0%)	0 (0%)	0.109

*Others include: weight loss. The significant was considered at P value <0.05.

The use of injectable users for more than 2 years shows a significant association between this duration and the amenorrhea side effect (p= 0.000).

DISCUSSION

Studies show that higher levels of female education correlate with reduced fertility rates, as educated women tend to delay marriage and childbirth and are more likely to use contraceptives effectively [22]. For decades, the concept of unmet need for contraception has been integral to international family planning policy, programs, and research [23]. Physiological side effects associated with the use of contraception have been hypothesized to result from a mismatch between a woman's endogenous hormonal levels and the dosage of contraceptives [24, 25]. This study was performed to evaluate the utilization of contraception methods and the side effects among women attending the maternal and child healthcare (MCH) centers in Mukalla city.

In the current study, we found that oral contraception was the most common method used by 49.5%, followed by Implanon, IUD, and injectable (26%, 19%, and 5.5%, respectively). Similar findings were found in a study conducted in the UK in which they found the most common method was oral contraception, at 21.8% [26]. In contrast, a study reported in Kenya the most common methods were using implants (44%), injectables (43%), IUDs (7%), and oral contraceptives (6%), and in Uganda most of the women were using injectables (56.8%), followed by implants (31.9%) [12, 27].

In terms of side effects, the results of this study found that the most common side effects with using oral contraception were hair loss, mood swings, and headaches (48.6%, 37%, and 21.4%, respectively). This contrasts with studies done in Egypt, indicating that the most common side effect was depression (63.7%), followed by weight gain (56.6%) [15]. In addition to that, a study that has been done in Saudi Arabia, with a sample size of 345 women on oral contraceptives, found that the most commonly encountered side effects were mood swings (303 [61.1%]) and weight gain or increased appetite (209 42.2%)] [28].

Based on the implant method, Nilptchploy and Taneepanichkul [29] reported abnormal vaginal bleeding in 43.5% of women and amenorrhea in

40.2% [29]. This finding is observed in a similar study that showed abnormal vaginal bleeding occurred in 44.4% of women and amenorrhea in 37%. In contrast, the major side effects of Implanon reported in Turkish women were amenorrhea (41.25%) and frequent and infrequent bleeding (23.75%) [30]. The study results reveal that abnormal vaginal bleeding, vaginal discharge, and pelvic pain (43.2%, 38.3%, and 29.6%, respectively) were the highest in the IUD method. This finding is comparable to a study that has been done in North America [31].

The results of the present study found that amenorrhea, abnormal vaginal bleeding, and hair loss (43.5%, 34.7%, and 30.4%, respectively) were the highest in the injectable method. These findings are different from many studies done, which showed that prolonged and irregular bleeding menses were experienced by 90% of users in Uganda [20]. Whereas in America, weight gain and headache were the most common side effects related to the injectable method [32].

The chi-square test that was used to analyze our outcomes showed that there is a significant association between abnormal vaginal bleeding, vaginal discharge, amenorrhea, nausea, pelvic and facial acne pimples, hair loss, mood swings, uterine cramping, and headache and the duration of oral contraceptive use ($p < 0.05$). These findings contrast the result revealed in a Saudi Arabia study, which indicated the association between duration and decrease of libido ($p = 0.010$) [28]. Uganda's study reveals that after 24 months of use, women develop amenorrhea. These findings are consistent with our study outcomes about the injectable method [20]. The study presents some limitations. In which there were no published studies done about the association between the side effects and duration of use for implants and intrauterine devices (IUDs), so we suggest the researcher do more studies about these subjects.

CONCLUSION

This study highlights the distinct side effect profiles associated with different contraceptive methods. While oral contraceptive pills were the most prevalent method, they were most associated with hair loss. In contrast, implant and IUD users most frequently experienced abnormal vaginal bleeding, and injectable users reported amenorrhea. The significant association between side effects and the duration of use underscores the importance of considering time when counseling patients.

Recommendations

Greater attention should be directed toward understanding the specific impact of contraceptive side effects on women's contraceptive behavior, particularly through the use of population-based data. Providing individualized care that emphasizes comprehensive information and counseling about common side effects is essential to enhance informed decision-making and adherence. Moreover, healthcare professionals play a critical role in ensuring that women are adequately informed about the benefits and potential risks of all available contraceptive methods, recognizing that contraceptive needs may vary throughout different stages of a woman's life.

Conflict of Interest

The authors declare that there is no conflict of interest.

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