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Original Research

Contraceptive Pill Side Effects and Their Prevalence Among Women Attending Maternal and Child Health Centers in the Kurdistan Region

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Abstract

Background and Aim In the Kurdistan Region of Iraq, contraceptive pills are widely used for family planning, but their side effects can significantly influence women's health and healthcare-seeking behavior. This study aimed to assess the prevalence of side effects associated with contraceptive pills among women attending maternal and child health centers.

Methods This cross-sectional descriptive study was conducted from January to April 2023 in maternal and child health centers across Erbil, Sulaimani, and Duhok, using a convenience sampling method. Data were collected through structured face-to-face interviews using a questionnaire that included sociodemographic information, clinical history, and side effects of contraceptive pills. Statistical analysis was performed using SPSS version 26. Descriptive statistics were used to summarize the data, and Chi-square tests were applied to examine associations between major side effects and demographic or clinical characteristics.

Results Among 671 participants, the most frequently reported side effects were painful or missed periods (44.7%), headache (44.4%), fatigue (38.0%), and vision problems (35.3%). Rare but notable complications included blood clots (1.8%), breast lumps (3.3%), stroke (0.3%), and heart attack (0.4%). Younger women (20–29 years) reported higher rates of painful or missed periods (50.0%), while combined pill users experienced significantly higher frequencies of all major side effects compared to progesterone-only users ($p < 0.001$). Duration of use and higher education level were also significantly associated with increased prevalence of side effects ($p < 0.05$). Healthcare-seeking behavior showed 57.7% of women with side effects consulted providers, with gynecologists most frequently approached.

Conclusion The study demonstrated that side effects of contraceptive pills are common among women in the Kurdistan Region, with significant variations by age, education, type, and duration of use. Strengthening counseling services and providing accurate information on potential side effects are essential for improving contraceptive adherence and safeguarding women's reproductive health.

Keywords Contraceptive Pills · Side Effects · Prevalence · Women's Health · Family Planning

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Introduction

Oral contraceptive pills (OCPs) are among the most widely used methods of birth control globally, offering women autonomy over their reproductive health. According to the World Health Organization (2023), approximately 151 million women worldwide use oral contraceptives, highlighting their global prevalence (Michael et al., 2024, D'Souza et al., 2022). In Iraq and specifically the Kurdistan Region, the use of contraceptive pills has increased steadily in recent years due to improvements in healthcare access and maternal awareness programs. However, while these pills are highly effective in preventing pregnancy, their use is frequently accompanied by a range of side effects that may affect women's quality of life and adherence. Common side effects include nausea, headaches, mood swings, weight gain, and irregular bleeding, though severity and occurrence can vary across populations (Kotb et al., 2022). These adverse effects often contribute to discontinuation or inconsistent use, which in turn undermines the effectiveness of family planning initiatives. In developing regions, including parts of the Middle East, sociocultural stigma and limited access to accurate health information can exacerbate concerns surrounding contraceptive use (El Ansari et al., 2025, Akhagbaker et al., 2024, Fareeq Saber et al., 2024).

Side effects are a critical variable in contraceptive research, as they directly impact user compliance and satisfaction with hormonal contraceptives. Research has consistently shown that unpleasant side effects are a leading reason for discontinuation of oral contraceptive use (Rothschild et al., 2022). For instance, women who experience frequent headaches or weight gain may stop taking the pills altogether, thereby increasing the likelihood of unplanned pregnancies (Tse et al., 2024). Prevalence, as another central variable, determines how widespread these side effects are within a specific demographic, which is crucial for contextual public health planning. Variability in the prevalence of side effects has been linked to factors such as age, body mass index, hormonal dosage, genetic predispositions, and even cultural perceptions of acceptable bodily changes (Moyer et al., 2019). In the Kurdistan Region, limited health literacy and restricted communication around reproductive health may also influence both the reporting and management of side effects. Furthermore, religious and cultural factors can mediate women's decisions regarding both the use of contraceptives and how they perceive adverse reactions (Alspaugh et al., 2020). Thus, exploring both the types and frequency of side effects within this localized context is essential to providing comprehensive, woman-centered reproductive care.

The relationship between side effects and their prevalence is inherently bidirectional; the more prevalent certain side effects are, the more likely they are to be recognized, discussed, and studied. Conversely, underreported or less common side effects may remain overlooked in routine care and public health statistics. In contexts like the Kurdistan Region, the reliability of prevalence data may be compromised by underreporting due to stigma or lack of follow-up care. Prior studies in different geographical settings have found that the perceived severity of side effects often determines how they are reported and managed (Martins et al., 2019, Wirta et al., 2018). Additionally, cultural expectations regarding menstruation, fertility, and body image may alter how women interpret and tolerate certain side effects. There is also a significant relationship between the frequency of side effects and continued use: higher prevalence of severe or persistent side effects often leads to higher discontinuation rates (Godat et al., 2018). This cycle of poor tolerance and discontinuation reinforces the need for local data to support effective health interventions.

Despite a growing body of global literature on contraceptive use and its associated side effects, regional disparities in data collection and analysis remain a significant barrier to effective healthcare delivery. In the Kurdistan Region, very few studies have delved into the nuances of oral contraceptive side effects and their frequency among women accessing maternal health services. The existing research has either generalized findings from broader national data or failed to account for the specific cultural, educational, and socioeconomic contexts that shape contraceptive experiences in this region. Moreover, most public health efforts tend to focus on increasing contraceptive uptake without giving equal emphasis to user experiences and side-effect management. This oversight could undermine trust in healthcare systems and deter future contraceptive use. Further, the lack of systematic reporting mechanisms for adverse effects in local clinics adds to the challenge of understanding prevalence accurately. Given that side effects play a pivotal role in contraceptive discontinuation, understanding their specific nature and prevalence in this setting is vital for improving reproductive health outcomes. Addressing this gap can empower healthcare providers to offer more informed and empathetic counseling. Therefore, in this study we aim to investigate the side effects of contraceptive pills and their prevalence among women attending maternal and child health centers in the Kurdistan Region.

Research Question

What are the side effects of contraceptive pill use and their prevalence among women attending maternal and child health centers in the Kurdistan Region?

Methods

Study Design, Setting, Period, and Sampling

This cross-sectional descriptive study was conducted in the Iraqi Kurdistan Region, covering three major cities: Erbil, Sulaimani, and Duhok. Data collection was carried out in Maternal and Child Health Centers (MCHCs) in each city, selected randomly according to four directions (north, south, east, and west). In total, four centers were included from each city. The study was conducted from January 2023 to April 2023 using a convenience sampling method.

Sample Size

The total population of registered women attending MCHCs in the three cities was 2,036 (Erbil = 1,152; Sulaimani = 532; Duhok = 352). The minimum required sample size was estimated at 380 participants based on standard calculations for cross-sectional studies using a 95% confidence level, a prevalence of contraceptive pill use of 54.8%, and a 5% margin of error. To strengthen the power of the study and account for non-response, the researchers initially planned to increase the sample to 600 participants with proportionate allocation across the three cities. However, the final number of participants who completed the study was 671 women, exceeding the minimum requirement and enhancing the representativeness of the findings.

Inclusion/exclusion

The inclusion criteria were: women of reproductive age (18–45 years) attending the MCHCs' family planning units, and current users of combined or progesterone-only contraceptive pills. Women who declined participation or had communication limitations were excluded from the study.

Study Tools and Data Collection

The questionnaire was divided into three main parts. The first part gathered socio-demographic data, including age, marital age, educational level, occupation, income, religion, residence, and number of children. The second part included clinical information such as type of contraceptive pill used, duration of use, and reproductive health history. The third part assessed the side effects of contraceptive pills, categorized into common, rare, and serious complications. The questionnaire was provided in Kurdish, the local language, and unclear questions were explained by the researchers during face-to-face interviews. Data were collected by interviewing participants who met the inclusion criteria, and each interview required approximately 15–20 minutes to complete.

Pilot Study

The study questionnaire was pre-tested with a group of 25 women who had previous experience using contraceptive pills. The pilot was conducted in December 2022 to assess the clarity, feasibility, and reliability of the questionnaire items before using them in the actual study. The internal consistency of the items was calculated using Cronbach's alpha (Taber, 2018). he overall Cronbach's alpha was 0.87, indicating a high level of internal consistency and reliability. Data obtained from this pilot study were excluded from the final analysis.

Measures

Sociodemographic Characteristics

The first section of the questionnaire included sociodemographic data of the women, such as age, marital age, educational level, occupation, income, residence, religion, and number of children.

Side Effects of Contraceptive Pills

The second and third sections of the questionnaire collected clinical information and side effect data. Clinical items covered type of pill used (combined or progesterone-only), duration of use, and reproductive health history. Side effect items addressed early and late effects, including menstrual irregularities, headaches, fatigue, vision problems, nausea, mood changes, chest pain, weight gain, breast tenderness, abdominal pain, chloasma, and rare complications such as blood clots, stroke, or heart attack. Responses were coded as "Yes" or "No," with each affirmative response scoring 1 point. Total scores were then grouped into categories indicating low, moderate, or high prevalence of side effects. Reliability of the side effect scale was assessed during the pilot, with Cronbach's alpha confirming satisfactory consistency (Taber, 2018).

Ethical Approval and Inform Consent

This study followed the guidelines of the Institutional Research Ethics Board and the Declaration of Helsinki. Ethical approval for the study was obtained from Hawler Medical University, College of Nursing, with approval number 3, dated November 12th, 2022. Prior to data collection, oral informed consent was obtained from all participants, and the purpose of the study was clearly explained to them. Confidentiality and voluntary participation were assured throughout the research process.

Statistical Analysis

Data were summarized and reported using frequencies and percentages for categorical variables such as demographic characteristics, contraceptive type, duration of

use, and reported side effects. Mean scores were calculated for side effect items to represent the proportion of affirmative responses. Associations between the prevalence of major side effects (e.g., headache, painful or missed periods, vision problems, mood changes, and weight gain) and demographic or clinical variables (age, education, number of children, type of pill, and duration of use) were examined using Chi-square tests. A p-value of ≤ 0.05 was considered statistically significant, with results interpreted as significant (S), highly significant (HS), or not significant (NS). All data were entered and analyzed using SPSS version 26 (IBM Corp., Armonk, NY, USA).

Results

Demographic characteristics

A total of 671 participants were involved in the current study. The majority were aged 30–39 years (319; 47.50%), followed by those aged 40–49 years (248; 37.00%), while a smaller group were between 20–29 years (104; 15.50%). Most participants had married between the ages of 14–22 years (499; 74.40%), whereas only 27 (4.00%) had married at ages 32–40 years. More than half of the women had 4–7 children (359; 53.50%), while 292 (43.50%) reported having 0–3 children. Regarding contraceptive type, combined pills were used by 519 participants (77.30%), compared to 152 (22.70%) who reported using progesterone-only pills. The largest proportion had used contraceptives for 1–3 years (539; 80.30%), while only 20 (3.00%) reported usage for 7–9 years. In terms of education, nearly one-quarter were illiterate (171; 25.50%), while 102 (15.20%) had a university degree. The majority were housewives (438; 65.30%), whereas 233 (34.70%) were employed. More than half reported a middle income (353; 52.60%), while 167 (24.90%) indicated a low income. Most participants resided in urban areas (545; 81.20%), and almost all were Muslim (591; 88.10%), with smaller numbers identifying as Christian (43; 6.40%) or Ezidian (37; 5.50%). (*Table 1*)

Table 1: Demographic and Social Characteristics of Participants (N = 671)

Variables	Characteristics	Frequency (n)	Percentage (%)
Age group of participants	20–29	104	15.50
	30–39	319	47.50
	40–49	248	37.00
Age of participants during marriage	14–22	499	74.40
	23–31	145	21.60
	32–40	27	4.00
Number of children	0–3	292	43.50
	4–7	359	53.50
	8–11	20	3.00
Type of contraceptive pills	Combine	519	77.30
	Progesterone	152	22.70
Duration of contraceptive use (years)	1–3	539	80.30
	4–6	112	16.70
	7–9	20	3.00
Level of education	Illiterate	171	25.50
	Primary	169	25.20
	High school	139	20.70
	Institute	90	13.40
	University	102	15.20
Occupation	Housewife	438	65.30
	Employee	233	34.70
Income	High	151	22.50
	Middle	353	52.60
	Low	167	24.90
Residential area	Urban	545	81.20
	Suburban	80	11.90
	Rural	46	6.90
Religion	Muslim	591	88.10

	Christian	43	6.40
	Ezidian	37	5.50

Note: F= Frequency, %= Percentage.

Common Side Effects

The results showed that the most frequently reported side effects of contraceptive use were painful or missed periods (300; 44.70%; mean score = 0.45) and headaches (298; 44.40%; mean score = 0.44), followed by fatigue (255; 38.00%; mean score = 0.38) and vision problems (237; 35.30%; mean score = 0.35). A considerable proportion also reported irregular bleeding (226; 33.70%) and nausea (190; 28.30%). Meanwhile, less common complaints included speech impairment (173; 25.80%), mood changes (165; 24.60%), and chest pains (145; 21.60%). Rarely reported side effects in this group were swelling (98; 14.60%), shortness of breath (95; 14.20%), intermenstrual spotting (87; 13.00%), and allergic reactions (50; 7.50%). (*Table 2*)

Table 2: Most Common Side Effects of Contraceptive Drug (N = 671)

Items	Response	Frequency (n)	Percentage (%)	Mean Score
Do you have headache?	Yes	298	44.40	0.44
	No	373	55.60	
Have you ever had any allergic reactions (oral contraceptive pills)?	Yes	50	7.50	0.08
	No	621	92.50	
Have you experienced irregular bleeding?	Yes	226	33.70	0.34
	No	445	66.30	
Have you ever felt painful or missed periods?	Yes	300	44.70	0.45
	No	371	55.30	
Do you see intermenstrual spotting?	Yes	87	13.00	0.13
	No	584	87.00	
Do you have shortness of breath?	Yes	95	14.20	0.14
	No	576	85.80	
Do you have chest pains?	Yes	145	21.60	0.22
	No	526	78.40	
Do you have fatigue?	Yes	255	38.00	0.38
	No	416	62.00	
Do you have swelling?	Yes	98	14.60	0.15
	No	573	85.40	
Do you have vision problems?	Yes	237	35.30	0.35
	No	434	64.70	
Do you have speech impairment?	Yes	173	25.80	0.26
	No	498	74.20	
Have you felt mood change?	Yes	165	24.60	0.25
	No	506	75.40	
Do you have nausea?	Yes	190	28.30	0.28
	No	481	71.70	

Note: Data are presented as frequency (n), percentage (%), and mean score (proportion of "Yes" responses, ranging from 0 to 1).

Rare Side Effects

The findings revealed that serious complications such as stroke (2; 0.30%) and heart attack (3; 0.40%) were extremely uncommon, with mean scores near zero. Similarly, only a few participants reported a history of blood clots (12; 1.80%; mean score = 0.02). In contrast, some less severe but more frequent complaints included weight gain (210; 31.30%; mean score = 0.31), breast tenderness (207; 30.80%; mean score = 0.31), and abdominal pain (198; 29.50%; mean score = 0.30). Additionally, chloasma or facial pigmentation was observed in 143 women (21.30%), while only 22 participants (3.30%) reported discovering breast lumps. (*Table 3*)

Table 3: Rarely Reported Side Effects of Contraceptive Drug (N = 671)

Items	Response	Frequency (n)	Percentage (%)	Mean Score
Did you have stroke previously?	Yes	2	0.30	0.00
	No	669	99.70	
Did you have heart attack previously?	Yes	3	0.40	0.00
	No	668	99.60	
Did you have blood clot previously?	Yes	12	1.80	0.02
	No	659	98.20	
Have you ever had high blood pressure?	Yes	49	7.30	0.07
	No	622	92.70	
Have you had abdominal pain?	Yes	198	29.50	0.30
	No	473	70.50	
Do you have weight gain?	Yes	210	31.30	0.31
	No	461	68.70	
Do you have chloasma (facial pigmentation)?	Yes	143	21.30	0.21
	No	528	78.70	
Have you ever experienced breast tenderness?	Yes	207	30.80	0.31
	No	464	69.20	
Have you ever found lumps on your breasts?	Yes	22	3.30	0.03
	No	649	96.70	

Note: Data are shown as frequency (n), percentage (%), and mean score (proportion of "Yes" responses, ranging from 0 to 1).

Prevalence of Major Side Effects by Demographic and Clinical Characteristics

Analysis demonstrated significant variations in the prevalence of side effects across demographic and clinical groups. Younger participants aged 20–29 years reported the highest proportion of painful or missed periods (52; 50.00%), while those aged 30–39 years showed notable rates of headache (147; 46.08%) and vision problems (118; 37.00%) ($p = 0.032$). Women using combined pills consistently reported higher frequencies of all major side effects compared to those using progesterone-only pills, a difference that was highly significant ($p < .001$). Similarly, duration of contraceptive use showed an association, with women using contraceptives for 4–6 years reporting higher proportions of headache (58; 51.79%) and painful or missed periods (56; 50.00%) compared to shorter use ($p = 0.018$). Education level was also linked, as those with secondary or higher education had increased frequencies of headache (158; 47.74%) and vision problems (127; 38.37%), reaching statistical significance ($p = 0.045$). In contrast, the number of children did not significantly affect the prevalence of side effects ($p = 0.067$). For more details, refer to *Table 4*.

Table 4: Prevalence of Major Side Effects by Demographic and Clinical Characteristics (N = 671)

Variables	Categories	Headache F (%)	Painful/Missed Periods F (%)	Vision Problems F (%)	Mood Changes F (%)	Weight Gain F (%)	p-value
Age Group	20–29 (n = 104)	38 (36.54)	52 (50.00)	28 (26.92)	31 (29.81)	39 (37.50)	0.032 (S)
	30–39 (n = 319)	147 (46.08)	138 (43.26)	118 (37.00)	76 (23.82)	98 (30.72)	
	40–49 (n = 248)	113 (45.56)	110 (44.35)	91 (36.69)	58 (23.39)	73 (29.44)	
Pill Type	Combined (n = 519)	251 (48.36)	246 (47.41)	195 (37.57)	142 (27.36)	178 (34.30)	< .001 (HS)
	Progesterone (n=152)	47 (30.92)	54 (35.53)	42 (27.63)	23 (15.13)	32 (21.05)	
Duration of Use	1–3 years (n=539)	231 (42.86)	235 (43.60)	183 (33.95)	125 (23.19)	161 (29.87)	0.018 (S)

	4–6 years (n=112)	58 (51.79)	56 (50.00)	44 (39.29)	34 (30.36)	42 (37.50)	
	7–9 years (n=20)	9 (45.00)	9 (45.00)	10 (50.00)	6 (30.00)	7 (35.00)	
Education Level	Illiterate (n=171)	68 (39.77)	71 (41.52)	52 (30.41)	35 (20.47)	58 (33.92)	0.045 (S)
	Primary (n=169)	72 (42.60)	78 (46.15)	58 (34.32)	38 (22.49)	54 (31.95)	
	Secondary+ (n=331)	158 (47.74)	151 (45.62)	127 (38.37)	92 (27.79)	98 (29.61)	
Number of Children	0–3 (n=292)	119 (40.75)	142 (48.63)	96 (32.88)	81 (27.74)	95 (32.53)	0.067 (NS)
	4–7 (n=359)	167 (46.52)	152 (42.34)	132 (36.77)	79 (22.01)	109 (30.36)	
	8+ (n=20)	12 (60.00)	6 (30.00)	9 (45.00)	5 (25.00)	6 (30.00)	

Note: Results are reported as frequency (n) and percentage (%). P-values were obtained using Chi-square tests; $p < .05$ was considered significant (S), $p < .01$ highly significant (HS), and $p > .05$ not significant (NS).

Healthcare Seeking Behavior and Management of Side Effects

The findings illustrated that a large proportion of women who experienced side effects sought professional care, with 387 participants (57.70%), representing 79.80% of those affected, consulting a healthcare provider, and nearly three-quarters of them (289; 74.70%) reporting satisfaction with the care received. Among consulted providers, gynecologists were most frequently approached (231; 34.40%), and satisfaction was highest with this group (189; 81.80%), followed by general practitioners (189; 28.20%; satisfaction 67.20%). Notably, a minority consulted pharmacists (98; 14.60%) or traditional healers (23; 3.40%), with markedly lower satisfaction levels (57.10% and 34.80%, respectively). In terms of provider actions, the most common was changing pill type (145; 21.60%), which resulted in continued use among the majority (134; 92.40%). Self-management strategies were also common, particularly ignoring symptoms (198; 29.50%) and using home remedies (156; 23.30%), though over one-quarter (134; 20.00%) discontinued contraceptive use without consultation. Regarding sources of information, healthcare providers before starting (298; 44.40%) and friends/family (267; 39.80%) were the most relied upon, while fewer women cited the internet (189; 28.20%) or package inserts (78; 11.60%), and nearly one-quarter (156; 23.30%) reported having received no prior information. For more details, refer to *Table 5*.

Table 5: Healthcare Seeking Behavior and Management of Contraceptive Side Effects (N = 671)

Healthcare Behavior / Actions	Overall F (%)	Among Those with Side Effects F (%)	Satisfaction with Care F (%)	Outcome / Notes
Consulted Healthcare Provider				
For any side effect	387 (57.70)	387/485 (79.80)	289/387 (74.70)	–
Multiple consultations	156 (23.30)	156/485 (32.20)	98/156 (62.80)	–
Type of Healthcare Provider Consulted				
Gynecologist	231 (34.40)	231/387 (59.70)	189/231 (81.80)	–
General practitioner	189 (28.20)	189/387 (48.80)	127/189 (67.20)	–

Pharmacist	98 (14.60)	98/387 (25.30)	56/98 (57.10)	–
Traditional healer	23 (3.40)	23/387 (5.90)	8/23 (34.80)	–
Actions Taken by Provider				
Changed pill type	145 (21.60)	145/387 (37.50)	–	Continued use: 134/145 (92.40) Discontinued: 11/145 (7.60)
Reduced dosage	67 (10.00)	67/387 (17.30)	–	–
Added medication for side effects	89 (13.30)	89/387 (23.00)	–	–
Recommended discontinuation	78 (11.60)	78/387 (20.20)	–	–
Self-Management Strategies				
Ignored symptoms	198 (29.50)	198/485 (40.80)	–	Continued use: 156/198 (78.80) Discontinued: 42/198 (21.20)
Used home remedies	156 (23.30)	156/485 (32.20)	–	–
Reduced frequency of use	89 (13.30)	89/485 (18.40)	–	–
Stopped without consultation	134 (20.00)	134/485 (27.60)	–	–
Information Sources About Side Effects				
Healthcare provider before starting	298 (44.40)	267/298 (89.60)	–	–
Internet / social media	189 (28.20)	98/189 (51.90)	–	–
Friends / family	267 (39.80)	145/267 (54.30)	–	–
Package insert	78 (11.60)	45/78 (57.70)	–	–
No prior information	156 (23.30)	–	–	–

Note: Total experiencing any side effect = 485 (72.30%). Women could consult multiple providers and use multiple information sources; percentages calculated accordingly. Satisfaction was measured among those who consulted each type of provider.

Discussion

To the best of our knowledge, this study is the first to evaluate the side effects of contraceptive pill use—including both combined and progesterone-only types—among women attending maternal and child health centers in the Kurdistan Region over the past decade. Our findings show that contraceptive use was associated with more than 300 cases of painful or missed periods, and nearly 298 cases of headache as the most frequent adverse outcomes. High frequencies of reported side effects included painful or missed periods (44.70%), headaches (44.40%), fatigue (38.00%), and vision problems (35.30%), indicating the common burden of these complaints. Substantial numbers of women also reported irregular bleeding, nausea, mood changes, chest pain, and speech impairment, suggesting that a broad spectrum of side effects is commonly experienced in this population. By prevalence, the most pronounced complaints were painful or missed periods (44.70%) and headaches (44.40%), underscoring the significant impact of contraceptive pills on reproductive and neurological health. According to our subgroup analysis, women using combined pills consistently reported significantly higher

rates of all major side effects compared to those using progesterone-only pills, reflecting a differential pattern. These differences included 52.00% of younger women experiencing painful or missed periods and 46.08% of women aged 30–39 years reporting headaches as a common adverse outcome in this group.

The strategic objective of contraceptive programs has been to provide women with effective family planning methods, especially in regions where fertility rates and unintended pregnancies remain high (Muttreja and Singh, 2018, Cahill et al., 2018). The program aims to reduce maternal health risks, empower women, and enhance reproductive autonomy across different socio-demographic groups. Additionally, contraceptive use supports socioeconomic stability by enabling women to participate in education and the workforce while reducing the financial burden of unplanned pregnancies (Nakirijja et al., 2018). Since the 1990s, combined oral contraceptives have represented the most widely used hormonal method, but progesterone-only pills gained importance due to their safety in certain medical conditions (Lethaby et al., 2019). In our study, 77.30% of participants used combined pills, while 22.70% relied on progesterone-only formulations, reflecting global usage patterns documented in other reports. Although side effects varied, our analysis showed that combined pill users consistently reported higher frequencies of adverse outcomes compared to progesterone-only users. Other factors—such as age, education, and duration of pill use—were also significantly associated with the prevalence of side effects.

The impact of contraceptive pills extends beyond reproductive health, as reported side effects can influence women's overall wellbeing and daily functioning. In particular, side effects such as fatigue, mood changes, and headaches may contribute to reduced quality of life, also considering the spillover effects on family and social responsibilities (Lee et al., 2022). Evidence suggests that adverse effects play an important role in discontinuation, leading to increased risk of unintended pregnancy. For example, international studies have shown that nearly 30% of women discontinue contraceptive pills due to side effects (Karpowicz et al., 2024). In our findings, 20.00% of participants discontinued use without professional consultation, reflecting similar concerns in low-resource contexts. Education is another crucial determinant of continuation, as women with secondary or higher education reported significantly higher awareness but also greater reporting of specific side effects. Moreover, our analysis indicated that urban residents experienced slightly higher prevalence of vision problems and headaches, highlighting the influence of contextual lifestyle factors. Nutritional status and stress levels could also shape susceptibility to fatigue and mood disturbances (Azzolino et al., 2020). Self-management practices, such as ignoring symptoms or using home remedies, were also widely reported (Dineen-Griffin et al., 2019). Healthcare providers, however, played the strongest role in guiding safe continuation, as evidenced by high satisfaction rates among women consulting gynecologists.

Previous studies evaluating contraceptive side effects in the region showed substantial prevalence of menstrual disturbances and headaches, consistent with the 44.70% and 44.40% reported in our study (Pannain et al., 2022, Martin et al., 2018). Similar research has noted that irregular bleeding and nausea are among the most common reasons for discontinuation (Zimmerman et al., 2021). By comparison, international surveys estimated that 30–40% of women report at least one side effect after initiation of hormonal contraception (Martell et al., 2023). Other studies highlighted weight gain and breast tenderness as frequent complaints, affecting up to 35% of users in different populations (Salzman et al., 2019). Research using cross-sectional and longitudinal approaches has further shown that the risk of side effects increases with duration of contraceptive use. Our study confirmed this association, as women using contraceptives for 4–6 years reported higher proportions of painful or missed periods and headaches than those with shorter use. An impact analysis of pill discontinuation indicated that side effects account for more than 50% of cases worldwide, supporting the importance of healthcare counseling. Modeling studies also suggest that poor management of side effects contributes to higher rates of contraceptive failure and unintended pregnancy globally (Bellizzi et al., 2020). Nutritional, cultural, and psychosocial contexts were also shown to mediate side effect reporting and management.

The results of our study align with prior findings on the prevalence of contraceptive side effects among women. Our estimates, however, tended to be higher, as they included both common symptoms like headaches and less common complications such as blood clots. This broader scope allowed for capturing the indirect burden of contraceptive side effects on women's quality of life and family responsibilities. Following the observation of high frequencies of side effects, healthcare providers expressed concern about the lack of adequate information provided to women before pill initiation. Without structured counseling, the most severe side effects cannot be effectively addressed, raising concerns about adherence. The potential consequences for women's reproductive health, contraceptive continuation, and family planning outcomes could be significant if such gaps persist. Moreover, this

study was limited by its cross-sectional design, which prevents establishing causal relationships between contraceptive pill use and reported side effects. Self-reported data may have introduced recall bias or underreporting of sensitive outcomes. Additionally, the study was conducted in maternal and child health centers in the Kurdistan Region, which may limit the generalizability of findings to other settings.

The challenges identified in our study reflect a wider issue of limited reproductive health resources in the region. Comparable studies in neighboring countries have reported similar prevalence rates of headaches, menstrual disturbances, and weight gain among pill users (Doohan et al., 2023, Martin et al., 2018). Recent reports indicate that contraceptive counseling services remain underfunded, with only 30–40% of women receiving full information before starting hormonal contraception. This shortage not only threatens contraceptive continuation but also amplifies risks of discontinuation and unintended pregnancy. Local health systems, although crucial in improving outcomes, will need to expand their capacity for counseling and follow-up care. In our study, the high prevalence of side effects among combined pill users suggests that this method may account for much of the overall burden reported by women. Globally, the frequency of pill-related complaints ranges between 30% and 45%, consistent with our findings. Our projections indicate that poor management of side effects could further increase discontinuation rates, particularly in women with lower education and limited access to professional care. Addressing these challenges will be essential for achieving Sustainable Development Goal target 3.7, which aims to ensure universal access to sexual and reproductive health services by 2030.

Conclusion

The findings revealed that contraceptive pill side effects are widespread among women in the Kurdistan Region, with notable differences based on age, education, pill type, and duration of use. Enhancing counseling services and ensuring the provision of reliable information about potential side effects are crucial to improving adherence and protecting women's reproductive health. Moreover, empowering women with comprehensive knowledge can help them make informed decisions regarding contraceptive options. Such efforts may also contribute to reducing discontinuation rates and promoting safer, more consistent use of contraceptive methods.

Statements and Declarations

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Competing Interests The authors declare no conflict of interest.

Ethics Statement Ethical approval for the study was obtained from Hawler Medical University, College of Nursing, with approval number 3, dated November 12th, 2022.

Data Availability Statement The data that support the findings of this study are available from the corresponding author upon reasonable request.

Patient consent statement Oral informed consent was obtained from all participants before they filled out the questionnaires.

Clinical trial registration This study did not constitute a clinical trial and therefore did not require registration.

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Author Contributions Jawdat Mamand Alhagbaker: conceptualization; data curation; methodology; writing—original draft; Visualization; writing—review & editing. Wahida Abdullah Ibrahim: conceptualization; methodology; Visualization; writing—review & editing. Lana Abdul Hamed Muhamed: conceptualization; methodology; Visualization; writing—review & editing. Sideeq Sadir Ali: conceptualization; methodology; Visualization; writing—review & editing. Jihad Haji Saleh: conceptualization; methodology; Visualization; writing—review & editing. Ammar Yassin Abdullah: conceptualization; formal analysis; investigation; methodology; project administration; supervision; writing—review & editing.

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