



Knowledge, attitude, and use of oral contraceptive pills among Saudi women seen at the primary care clinics of Security Forces Hospital, Riyadh, Saudi Arabia

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Abstract

Background and Aim: A successful contraception requires sufficient knowledge of contraceptive's use and its side-effects. This study was conducted to determine the knowledge, attitude, practice and use of OCPs in a Saudi female population.

Methods: A survey questionnaire was distributed to Saudi women aged 18 to 49 years old who were using OCPs or have used OCPs, and who were attending the Primary Care Clinics of Security Forces Hospital, Riyadh, Saudi Arabia between May and December 2017.

Results: Of 285 women surveyed, 23.9% were on OCPs for <1 year, 53.6% for 1-3 years and 22.5% were on OCPs for ≥4 years. The mean total scores in knowledge was 2.07 for compliance (range: 0 – 5), 1.30 for knowledge of side effects (range: 0-6), and the overall knowledge was 3.36 (range of 0 – 11). There were 28.4% who have knowledge about compliance in taking OCPs, 14.4% have knowledge of the complications and side effects of OCPs, and 20.0% have knowledge of both compliance and side effects. There were no significant differences in the knowledge of compliance and side effects across different educational levels, however, women who have more children and those between 30-39 years old have better understanding of the use of OCPs.

Conclusion: Knowledge of correct use of OCP's and its side effects among Saudi women remains to be low. There is a need for health institutions and health care practitioners to intensify information campaigns and awareness programs on the use of OCP's and contraception.

Keywords: oral contraceptive pills, knowledge, use, side effects, compliance.

Introduction

Oral contraceptive pills (OCPs) are the most widely used method of contraception worldwide because of their accessibility and reversibility. Unfortunately, their efficacy is limited by

problems related to compliance, which is in turn related to knowledge about correct usage and the occurrence of adverse events^[1].

The use of OCPs has been widely advocated for varied reasons, from contraception to treating

menstrual irregularities and other gynecological problems. The percentage of women in the reproductive age usage of OCP's ranged from 2% among Italians up to 20% among Dutch women^[2]. The OCP is the leading method of contraception in the United States, used by over 10.7 million American women^[3]. In Japan, the use of OCP is approximately 1.97% of their female population^[4]. It has been shown from several previous studies that knowledge of contraception and the use of OCPs is directly link to a general positive attitude toward OCPs and contraception. Reasons why women have poor knowledge and use of OCPs include; women's no desire to go into contraception^[5], uselessness of the contraceptive pill or method^[6], and the side effects caused by OCPs^[4,6]. Studies also showed that despite the low knowledge of the mechanisms of action of OCPs, women want to know more information about OCPs^[7]. Moreover, knowledge of OCPs mechanism of action and side effects were mainly obtained from the physician, including knowledge of the side-effects like headache, mood swings, irritability and weight gain^[8]. The use of OCPs and the practice of contraception was found to be directly related to the number of pregnancies, age of marriage, and age at first pregnancy^[9]. Studies conducted in Saudi Arabia showed that poor knowledge and negative attitude of Saudi women regarding OCP were significantly associated with socio-demographic factors (including age, occupation, educational level, duration of OCP use) and the number of living children^[10-12]. The knowledge regarding contraceptive methods was poor in 68.3% Saudi women compared to 31.7% with good knowledge, and that 73% had a negative attitude toward contraception^[10]. Poor knowledge among Saudi women regarding OCPs was also attributed to inadequate information and idea on the contraceptive method and its side effects^[13]. Saudi women taking OCPs were found to have limited knowledge of its correct use regarding missing pills, vomiting, diarrhea and poor awareness of the effects of smoking with OCP use^[12].

One of the key tool in improving the populations' health is being knowledgeable and familiar with the correct use of OCPs. The use of contraceptives and even contraception has been scantily publicized. A report suggested that Muslim women use of contraception is not significantly different from non-Muslim women in the United States^[14]. However, that particular study stressed the need to further accurately identify factors and correlated pertaining to contraception and the use of OCPs among Muslim women. In this line, we conducted this study to evaluate the spectrum of knowledge, attitude, practice and use of OCPs in a Saudi female population, and determine the factors related to knowledge, attitude and use of OCPs.

Methods

A cross-sectional descriptive study using a survey questionnaire was conducted among Saudi women aged 18 to 49 years old who visited the Primary Care Clinics of Security Forces Hospital, Riyadh, Saudi Arabia between May and December 2017. All Saudi women who were using OCPs or have used OCPs for contraception and those who consented were included in the study. Women who used OCPs for other reasons aside from contraception, pregnant women, post-menopausal women, women who have undergone hysterectomies, and non-Saudi women were excluded from the study.

The survey questionnaire was done in the Arabic language. A validation test was done among 10 respondents to determine the understandability of the questions and the repeatability of the responses. Cronbach's alpha was 0.9.

Sample size was calculated using the formula, $n = \frac{z^2 p(1-p)}{d^2}$, where n=sample size, z=z statistic for the level of confidence, p= expected prevalence and d= allowable error. This formula assumes that "p" and "d" are decimal values. Using simple random sampling with margin of error at 5% and the confidence level at 95%, the calculated sample size is 264.

Data collection was done using the questionnaire and collected data was encoded into a Statistical Package for Social Sciences (SPSS) version 22.0 (SPSS Inc., Armonk, NY, USA). Numbers and percentages are used to summarize categorical/qualitative variables, whereas numeric/quantitative / continuous data is summarized by means and standard deviations for normal data and medians and inter quartile ranges for skewed data. Comparison between groups for categorical variables was done using the Chi-square test. T test was used for comparison between groups for quantitative variables for two groups and analysis of variance (ANOVA) or Kruskal-Wallis H test for three or more groups. P values <0.05 was considered statistically significant.

Results

The study population included 285 Saudi women, 118 (41.5%) were 30 – 39 years old, 131 (45.9%) were educated (more than high school level), and 210 (73.7%) were housewives. There were 68 women (23.9%) who were on OCPs for <1 year, 153 (53.6%) for 1-3 years and 64 (22.5%) for ≥ 4 years. (Table 1)

Table 2 shows the responses to questions about compliance to taking OCPs. More than half of the respondents (54.0%) claimed that they will take the OCP as soon as they remember when they forgot to take the pill in less than 12 hours, whereas 186 (65.3%) respondents responded that they will skip the missed pill when they forgot to take the pill for more than 12 hours. Majority of the respondents (n=256, 89.8%) claimed that they will do nothing when they vomit within 2 hours after taking the tablet, whereas 272 (95.4%) will also do nothing if they have diarrhea more than 12 hours after taking the pill. There were 207 respondents (95.4%) who claimed to have read the package insert before taking OCPs.

Table 3 shows the responses to questions about their knowledge on some specific side effects of using OCPs. There were few respondents who knew of the side effects; 36.1% for weight gain or increase in appetite, 18.9% for facial acne,

pimples and body hair, 5.6% for diarrhea, 34.4% for nausea, 26.1% for tender and sore breasts and 8.8% for abnormal vaginal bleeding.

There were no significant differences in the responses with regards to age, to question about what they do when they forget to take the pill whether less than 12 hours ($p=0.647$), or more than 12 hours ($p=0.992$). Age was also not a significant factor with the responses to vomiting within 2 hours ($p=0.198$), diarrhea more than 12 hours ($p=0.983$), and knowledge of OCP side effects including weight gain ($p=0.891$), diarrhea ($p=0.426$), nausea ($p=0.655$), tender sore breasts ($p=0.166$), and abnormal vaginal bleeding ($p=0.645$). However, there were significantly more respondents aged between 30 and 39 years old who knew about facial acne, pimples and body hair side effects of OCP compared to other age groups (26.7% versus 17.9% in 20,29 years old and 9.2% in ≥ 40 years old, $p=0.028$). Respondents who have more children have better knowledge on what to do when they forgot to take the pills more than 12 hours compared to women who have 1 -2 children and those with >4 children ($p=0.036$), and also have better knowledge of facial acne, pimples and body hair as side-effects of OCPs ($p=0.012$). Otherwise, there were no significant differences in the responses to questions on compliance and other side effects across different number of children groups ($p>0.05$). (Table 4)

The duration of use of OCPs was significantly longer among women who have intermediate/ high school / diploma level of education ($p=0.009$), and the educated women have significantly read the package inserts of OCPs compared to the uneducated and those with primary education ($p=0.013$). There were no significant differences in the knowledge of compliance and side effects across different educational levels ($p>0.05$). On the other hand, women who were employed and working as healthcare professionals and other jobs significantly skip the missed pill when they forget to take the pill >12 hours ($p=0.015$), Women who were in the healthcare profession significantly

knew that nausea is a side-effect of OCPs compared to other occupation groups ($p=0.001$). There were no other significant differences in the knowledge of compliance to use of OCPs and the side-effects in the use of OCPs across the different occupational groups ($p>0.05$). (Table 5)

The mean total score in knowledge of compliance was 2.07 ± 0.82 (range: 0 – 5), whereas the mean total score in knowledge of side effects was $1.30 \pm$

1.26 (range: 0 – 6). The mean total knowledge score for both compliance and side effects was 3.36 ± 1.57 (range of 0 – 11). Overall, there were 81 (28.4%) women who have knowledge about compliance in taking OCPs, 41 (14.4%) have knowledge of the complications and side effects of OCPs, and 57 (20.0%) have knowledge of both compliance and side effects.

Table 1 Demographic characteristics of 285 adults Saudi women who were taking OCPs at a primary care center in Security Forces Hospital, Riyadh, Saudi Arabia

Demographic variables	subgroups	n	%
Age, in years	<20	1	0.4
	20-29	89	31.3
	30-39	118	41.5
	≥ 40	76	26.8
Educational level	Uneducated	16	5.6
	Primary	31	10.9
	intermediate	24	8.4
	High school	83	29.1
	Diploma	15	5.3
	Bachelor	105	36.8
Occupation	Postgraduate(Masters, PhD)	11	3.9
	Student	11	3.9
	Housewife	210	73.7
	Employed healthcare professional	18	6.3
Number of children	Employed Other	46	16.1
	0	29	10.2
	1-2	82	28.8
	3-4	77	27.0
Contraceptive type	>4	97	34.0
	Diane	24	8.5
	Marfelon	90	32.0
	Gynera	95	33.8
Duration of contraception	Yasmin	55	19.6
	Other	17	6.0
	<1 year	68	23.9
	1 year	50	17.5
	2 year	58	20.4
	3 years	45	15.8
	≥ 4 years	64	22.5

Table 2 Responses to questions about compliance to use of OCPs among 285 adults Saudi women who were taking OCPs at a primary care center in Security Forces Hospital, Riyadh, Saudi Arabia.

Questions	Choices	n	%
Forgot to take the pill <12 hours	Skip the missed pill and take that days pill as scheduled	130	45.6
	Take it as soon as you remember even if that meant taking 2 pills in the same day*	154	54.0
Forgot to take the pill >12 hours	Use extra protection (eg. condoms)for the next 7 days	1	0.4
	Skip the missed pill and take that days pill as scheduled*	186	65.3
	Take as soon as you remember even if that meant taking 2 pills in the same day	90	31.6
	Use extra protection (eg. condoms)for the next 7 days	9	3.2
Vomit within 2 hrs after taking the pill	Nothing	256	89.8
	Take an extra pill*	29	10.2
Diarrhea >12 hrs after taking the pill	Nothing	272	95.4
	Take another tablet once diarrhea is resolved*	13	4.6
Read the package insert	Yes*	207	72.6
	No	78	27.4

* - desired response

Table 3 Responses to questions about their knowledge of side-effects of OCPs use among 285 adults Saudi women who were taking OCPs at a primary care center in Security Forces Hospital, Riyadh, Saudi Arabia.

Knowledge of side effects of OCPs	choices	n	%
Weight gain and increase in appetite	Yes	103	36.1
	No	182	63.9
Facialacne, pimples, bodyhair	Yes	54	18.9
	No	231	81.1
Diarrhea	Yes	16	5.6
	No	269	94.4
Nausea	Yes	98	34.4
	No	187	65.6
Tendersorebreast	Yes	74	26.1
	No	209	73.9
Abnormal vaginalbleeding	Yes	25	8.8
	No	260	91.2

Table 4 Responses to questions on compliance and knowledge of side effects according to age groups and number of children

Questions	Responses	Number of children					P values	Age groups				P values
		0 (n=29)	0 (n=29)	1-2 (n=82)	3-4 (n=77)	>4 (n=97)		<20 (n=1)	20-29 (n=89)	30-39 (n=118)	≥40 (n=76)	
Forgot to take the pill <12 hours	Skip the missed pill	16 (55.17)	16 (55.17)	36 (43.9)	34 (44.16)	44 (45.36)	0.690	-	45 (50.56)	48 (40.68)	36 (47.37)	0.647
	Take as soon as you remember	13 (44.83)	13 (44.83)	46 (56.1)	42 (54.55)	53 (54.64)		1 (100)	44 (49.44)	69 (58.47)	40 (52.63)	
	Use extra protection	0 (0)	0 (0)	0 (0)	1 (1.3)	0 (0)		-	-	1 (0.85)	-	
Forgot to take the pill > 12hours	Skip the missed pill	19 (65.52)	19 (65.52)	52 (63.41)	53 (68.83)	62 (63.92)	0.036	1 (100)	57 (61.04)	76 (64.41)	51 (67.11)	0.992
	Take as soon as you remember	6 (20.69)	6 (20.69)	28 (34.15)	23 (29.87)	33 (34.02)		-	29 (32.58)	38 (32.2)	23 (30.26)	
	Use extra protection	4 (13.79)	4 (13.79)	2 (2.44)	1 (1.3)	2 (2.06)		-	3 (3.37)	4 (3.39)	2 (2.63)	
Vomit within 2 hours of intake	Nothing	24 (82.76)	24 (82.76)	74 (90.24)	71 (92.21)	87 (89.69)	0.556	1 (100)	75 (84.27)	110 (93.22)	69 (90.79)	0.198
	Take an extra pill	5 (17.24)	5 (17.24)	8 (9.76)	6 (7.79)	10 (10.31)		-	14 (15.73)	8 (6.78)	7 (9.21)	
Diarrhea >12 hours after intake	Nothing	28 (96.55)	28 (96.55)	79 (96.34)	71 (92.21)	94 (96.91)	0.464	1 (100)	85 (95.51)	113 (95.76)	72 (94.74)	0.983
	Take another tablet once diarrhea is resolved	1 (3.45)	1 (3.45)	3 (3.66)	6 (7.79)	3 (3.09)		-	4 (4.49)	5 (4.24)	4 (5.26)	
Have read the package insert	Yes	20 (68.97)	20 (68.97)	55 (67.07)	62 (80.52)	70 (72.16)	0.273	-	63 (70.79)	86 (72.88)	57 (75.0)	0.389
Weight gain, increase in appetite	Yes	7 (24.14)	7 (24.14)	31 (37.8)	28 (36.36)	37 (38.14)	0.556	-	33 (37.08)	42 (35.59)	27 (35.53)	0.891
Facial acne, pimples, body hair	Yes	8 (27.59)	8 (27.59)	14 (17.07)	22 (28.57)	10 (10.31)	0.012	-	16 (17.98)	31 (26.27)	7 (9.21)	0.028
Diarrhea	Yes	4 (13.79)	4 (13.79)	4 (4.88)	5 (6.49)	3 (3.09)	0.170	-	8 (8.99)	5 (4.24)	3 (3.95)	0.426
Nausea	Yes	14 (48.28)	14 (48.28)	24 (29.27)	23 (29.87)	37 (38.14)	0.192	-	34 (38.2)	37 (31.36)	27 (35.53)	0.655
Tender, sore breast	Yes	9 (32.14)	9 (32.14)	14 (17.07)	24 (31.17)	27 (28.13)	0.157	-	17 (19.32)	30 (25.64)	26 (34.21)	0.166
Abnormal vaginal bleeding	Yes	1 (3.45)	1 (3.45)	6 (7.32)	7 (9.09)	11 (11.34)	0.561	-	6 (6.74)	9 (7.63)	9 (11.84)	0.645

Table 5 Responses to questions on compliance and knowledge of side effects according to levels of education and occupation

Questions	Responses	Occupation					Level of education			
		Student n=11	Housewife n=210	Health care n=18	Other n=46	P values	Uneducated/ Primary n=47	Intermediate/ High school /Diploma n=122	Bachelor / Postgraduate n=116	P values
Forgot to take the pill <12 hours	Skip the missed pill	3 (27.27)	101 (48.1)	9 (50.0)	17 (36.96)	0.676	24 (51.06)	56 (45.9)	50 (43.1)	0.695
	Take as soon as you remember	8 (72.73)	108 (51.43)	9 (50.0)	29 (63.04)		23 (48.94)	65 (53.28)	66 (56.9)	
	Use extra protection	-	1 (0.48)	-	-		-	1 (0.82)	-	
Forgot to take the pill > 12hours	Skip the missed pill	5 (45.45)	139 (66.19)	12 (66.67)	30 (65.22)	0.015	36 (76.6)	77 (63.11)	73 (62.93)	0.233
	Take as soon as you remember	6 (54.55)	67 (31.9)	3 (16.67)	14 (30.43)		11 (23.4)	42 (34.43)	37 (31.9)	
	Use extra protection	-	4 (1.9)	3 (16.67)	2 (4.35)		-	3 (2.46)	6 (5.17)	
Vomit within 2 hours of intake	Nothing	8 (72.73)	191 (90.95)	15 (83.33)	42 (91.3)	0.191	46 (97.87)	106 (86.89)	104 (89.66)	0.106
	Take an extra pill	3 (27.27)	19 (9.05)	3 (16.67)	4 (8.7)		1 (2.13)	16 (13.11)	12 (10.34)	
Diarrhea >12 hours after intake	Nothing	10 (90.91)	202 (96.19)	18 (100)	42 (91.3)	0.326	47 (100)	115 (94.26)	110 (94.83)	0.255
	Take another tablet once diarrhea is resolved	1 (9.09)	8 (3.81)	-	4 (8.7)		-	7 (5.74)	6 (5.17)	
Have read the package insert	Yes	9 (81.82)	147 (70.0)	14 (77.78)	37 (80.43)	0.416	26 (55.32)	94 (77.05)	87 (75)	0.013
Weight gain, increase in appetite	Yes	6 (54.55)	70 (33.33)	7 (38.89)	20 (43.48)	0.326	16 (34.04)	40 (32.79)	47 (40.52)	0.439
Facial acne, pimples, body hair	Yes	3 (27.27)	36 (17.14)	5 (27.78)	10 (21.74)	0.554	5 (10.64)	28 (22.95)	21 (18.1)	0.179
Diarrhea	Yes	1 (9.09)	11 (5.24)	2 (11.11)	2 (4.35)	0.689	-	9 (7.38)	7 (6.03)	0.169
Nausea	Yes	4 (36.36)	65 (30.95)	14 (77.78)	15 (32.61)	0.001	13 (27.66)	45 (36.89)	40 (34.48)	0.527
Tender, sore breast	Yes	2 (18.18)	50 (24.04)	7 (38.89)	15 (32.61)	0.341	14 (30.43)	31 (25.62)	29 (25)	0.766
Abnormal vaginal bleeding	Yes	1 (9.09)	18 (8.57)	-	6 (13.04)	0.425	6 (12.77)	12 (9.84)	7 (6.03)	0.334

Discussion

The use of OCPs has always been a very interesting subject matter for researchers. In this particular instance, a report such as this study coming from Saudi Arabia becomes much more interesting because of the uniqueness of the population due to its cultural and Islamic beliefs that comes together with scientific inputs of contraception whether for medical and for other valid reasons.

In this study, we have shown that 20.0% of our respondents have knowledge about compliance and side-effects on the use of OCP's. This is significantly lower than the previous studies that have been conducted in Saudi Arabia^[10-12]. Similarly though, in accordance with the previous studies conducted in Saudi Arabia, we also believe that the poor knowledge of contraception and use of OCPs are attributed to lack of information on the use and side-effects of OCPs among Saudi women^[10-13]. Culture and tradition

of a Saudi family dictates their desire to have larger number of children. However, with the advancement of technology and an increasing number of Saudi working women and career-focused women, there has been an observed increase in the use of OCPs in Saudi Arabia over the last decades, not only for birth-spacing but also for better child care, maternal health and also allowing women to take a career^[15]. Our study showed that $\frac{3}{4}$ of our study population were already on OCPs even before we conducted the study, indicating that around 3 in every 4 Saudi women who are on OCP's would probably be on OCP's for years. In fact, there seems to be a higher usage of OCPs and high practice of contraception among Saudi women compared to the study conducted recently among women staff of King Saud University, wherein 53.4% of the surveyed women use contraceptives^[16].

Furthermore, the current study conforms with previous studies that have shown the increase in

use of OCP's among the educated and those in the 30 – 40 years old women despite their traditional and religious societies ^[16,17].

On the contrary, despite a larger number of women claimed used of OCP's in this study, their knowledge on compliance and side-effects were very poor. Although in some studies, about half of the women taking OCP's reportedly miss taking their OCP's once or twice a month due to perceived behaviors and concerns about OCP^[18]. In fact, almost half of our surveyed women would even skip the missed pill and take that day's pill as scheduled (Table 2). Another particular point to consider is that, despite 72.6% of the women surveyed read the package insert, there were still a significant number of women taking the wrong action pertaining to compliance such as when they forget to take the pill in <12 hours or > 12 hours. (Table 2). Poor compliance can also be due to failure to understand what was written in the package insert of OCPs ^[19].

This study suggests an association between compliance and attitude towards taking OCP. Of the 285 surveyed women, 130 (45.6%) will skip the missed pill and take that day's pill as scheduled if they forgot to take the pill <12 hours, and 90 (31.6%) will still take the pill as soon as they remember even if that meant taking 2 pills in the same day (Table 2). Correct responses were seen among women with greater number of children, women in the older age groups (30-39 years old), and those with higher level of education (Table 4 and 5). Overall, the results of this study showed lower knowledge of compliance and side effects in the use of OCPs compared to a similar study done by Al-Shaikh et al in 2012 ^[12], though both studies showed limited knowledge of the correct use of missed OCP's and its side effects.

Despite our results indicating poor and limited knowledge of use of OCP's and its side effects, we were not able to document whether these women have received counseling or have undergone reproductive health seminars that may change their perception, attitude and even

knowledge of the use, compliance and side effects of OCPs. Furthermore, the survey nature of the study may have limited us to understand the in-depth level of knowledge and practice of OCP use in this population. We recommend conducting larger studies with similar purpose including OCP behavior, and probably an interventional study that will highlight the benefit of counseling and seminar on the attitude, behavior and knowledge of women toward OCP use and its side effects.

Conclusion

Knowledge of correct use of OCP's and its side effects among Saudi women remains to be low. There is a need for health institutions and health care practitioners to intensify information campaigns and awareness programs on the use of OCP's and contraception starting at the grassroots level, making sure that women and their family understand the correct use of OCP's and obtain the utmost benefit from contraception and OCP's.

References

1. Iftikhar R, Aba Al Khail BA. Knowledge about missed contraceptive pills among married women at King Abdulaziz University Hospital. Patient Preference and Adherence 2015;9: 401-411
2. Bezemer ID, Verhamme KM, Gini R, Mosseveld M, Rijnbeek PR, Trifiro G. et al. Use of oral contraceptives in three European countries: a population-based multi-database study. Eur J Contracept Reprod Health Care. 2016;21(1):81-7
3. Mosher WD, Jones J. Use of contraception in the United States: 1982 – 2008. Vital and Health Statistics Series 23. Data from the National Survey of Family Growth. 2010;29:1-44
4. Yoshida H, Sakamoto H, Leslie A, Takahashi O, Tsuboi S, Kitamura K. Contraception in Japan: current trends. Contraception. 2016;93(6):475-7
5. Along AB, Niotang PN, Kenfack B, Yakum MN, Mbu ER. Knowledge of

- women in family planning and future desire to use contraception: a cross sectional survey in Urban Cameroon. BMC Res Notes. 2016;18:9:347. doi: 10.1186/s13104-016-2155-7.
6. Naqnsseu JR, Nchinda EC, Katte JC, Nchaqnouot FM, Nquetsa GD. Assessing the knowledge, attitude and practice of family planning among women living in the Mbouda health district, Cameroon. Reprod Health. 2015;12:92. doi: 10.1186/s13104-016-2155-7
 7. Peyman N, Oakley D. Married Iranian women's knowledge, attitude and sense of self-efficacy about oral contraceptives: Focus group discussion. J Reprod Health. 2011;12(4):281-8
 8. BardaweelSK, Akour AA, Kilani MV. Current knowledge, attitude, and patterns of oral contraceptives utilization among women in Jordan. BMC Women's Health. 2015;15:117
 9. Shahpoorian F, Kashanian M, Shakhani Z, Sheikhansari N. Contraceptive use in women under 20 years of age: A study in Iran. J Obstet Gynaecol. 2014;34(7):625-9
 10. Almansour R, Sabra A, Hafez A. Contraception: Knowledge, Attitude and Practice with Special Emphasis on Contraceptive Pills among Saudi Women at Al-Khobar City, Eastern Saudi Arabia. Egyptian Journal of Community Medicine. 2012; 30(2):1-13
 11. Ahmadi, FQJ, Alqahtani SM, Asiri RMA, Alshehri NSA. Assessment of women ' Knowledge regarding compliance and safety of oral contraceptive pills'. International Journal of Advanced Research (IJAR).2016;4(11):2133-2140
 12. Alshaikh G, Alshaikh M, Mohmoud M, AljodheyH. Knowledge on adherence and safety of the oral contraceptive pill in Saudi women. Saudi Medical Journal.2012;33(6):665-70
 13. ElgharbawyRM, Ahmed AS, Alsuhaibani RA. Awareness, Prevalence and Determinants of BirthControl Methods Use among Women in Saudi Arabia. International Archives of Medicine. 2015;8(245):1-11
 14. Budhwani H, Anderson J, Hearld KR. Muslim women's use of contraception in the United States. Reprod Health. 2018;15(1):1. doi: 10.1186/s12978-017-0439-6.
 15. AlSheeha M. Awareness and use of contraceptives among Saudi women attending primary care centers in Al-Qassim, Saudi Arabia. Int J Health Sci (Qassim). 2010;4(1):11-21
 16. Khraif R, Abdulsalaam A, Al-mutairi A, Elsegaey I, Aljumah A. Dynamics of contraceptive use: A study of King Saud University women staff, Riyadh. Middle East Fertility Society Journal. 2017;22(1):18-26
 17. Roudi-Fahimi F, Kent MM. Challenges and opportunities – the population of the Middle East and North Africa. Pppl Bull. 2007;62(2):1-21
 18. Molloy GJ, Graham H, McGuinness H. Adherence to the oral contraceptive pill: a cross-sectional survey of modifiable behavioural determinants. BMC Public Health. 2012;12:838
 19. Cooling H. Improving compliance with combined oral contraception. Trends in Urology Gynecology and Sexual Health. 2007;12(2):20-22.