

User Experience, Knowledge and Practice of Oral Contraceptive: A Study from Riyadh, Saudi Arabia

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Abstract

Background: Contraceptive pills continued to be one of the most common methods of contraception used by majority of women. Across all ages, women in their twenties are the most likely to use oral contraceptives (OCs). This study aimed to estimate the prevalence of use of OCs and assess the knowledge, behavior and practice of OCs among women living in Riyadh, Saudi Arabia. **Methods:** A cross-sectional survey of 477 Saudi women residing in Riyadh city of Saudi Arabia was conducted using a validated self-administered questionnaire. **Results:** This study had a high response rate of ~96%. The majority (76.4%) of the respondents were in the age group of 21-30 years and nearly half (52%) of the respondents were married. Most of the respondents (~78%) had good knowledge about OCs in relevance with pregnancy prevention, however only 31.6% females knew the use of OCs for menstrual cycle regulation. More than half of the respondents (57.1%) use OCs, of which 79.9% were married and 36.7% were regular users. Among the users, 62.1% use OCs as a contraceptive pill, 25.75% use OCs for menstrual cycle delay, 9.1% use OCs for therapeutic purposes, and 1.5% for some cosmetic purposes. The practice of OCs has been revealed by the users for delaying their periods during the religious Islamic Pilgrimage Hajj/Umrah (61.7%) and fasting month of Ramadan (31.1%). The majority (89%) of OC users observed at least one side effect, however a small population of OC users (7.2%) experienced many side effects. Married OC users reported significant weight gain (OR=2.4; p= 0.005) and headache (OR=1.86, p=0.045) in comparison with unmarried OC users. **Conclusions:** The present study warrants for systematic public educational programs for women's awareness regarding the use and practice of OCs and implementation of strict guidelines to regulate the use of OCs in a safe and proper manner to avoid ill effects on women's health.

Keywords: Oral contraceptives; Women's health; Gynecology; Fertilization; Pregnancy

Introduction

Contraceptives are methods used primarily to avoid fertilization or to interrupt pregnancy. These contraception methods include pills, intrauterine devices, injectables, implants, female sterilization, male sterilization, condoms, lactation amenorrhea, safe periods etc. [1,2] Each method has its own impact on one's physical health, psychological well-being and on mood. Earlier studies reported that women use contraceptives to prevent fertilization either for family planning, prevention of unwanted pregnancy, or child spacing. Also, there is a medical use for them which include, treating acne, hirsutism, menorrhagia, endometriosis, migraine, hyperandrogenism, premenstrual syndrome, polycystic ovarian syndrome and dysmenorrhea. [3-6]

Hormonal contraceptives have been most thoroughly studied for their possible effects on physical and psychological functioning followed by sterilization. Oral contraceptives (OCs) are one of the most popular and most effective reversible birth control forms. Combined pills and progestin-only pills are the two types of OCs, which are made of synthetic ovarian hormones. Previous report stated that contraceptive pill continued to be the commonest method of contraception used by a quarter of women worldwide. [7] In the past several years, the

prevalence of contraceptive use has shown a global rapid upsurge, for e.g., 72.8% women use in the year 2002 in USA; 29.6% in the year 2007 in Pakistan; 61.4% in the year 2007 in Indonesia; 27.7% in the year 2006 in Islamic Republic of Iran. [8,9] Across all age groups, women in their 20's are the most likely have been using oral contraceptives.

Notwithstanding, with globalization and improvement in literacy a significant change appears to have occurred in regard with OCs knowledge, attitude and practice. Women's knowledge and attitude towards OCs seemed to be dependent upon their family background, education and attitude. [10] Knowledge, attitudes and practices towards contraception doesn't depend upon the free availability of contraceptive method but rather on the socio-economic and educational level of women. [11] In a study from Australia, few women showed high level of confidence in knowledge about risks, benefits and side

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effects on the use of OCs.^[12] On the contrary, a study from Louisiana, USA, reported literacy is not associated with OC use, knowledge or adherence to practice.^[13] Likewise, a study from Pakistan also found less contraceptive use among women in rural areas despite having awareness about family planning.⁸ Surprisingly, a study reported that Kuwaiti women considering themselves to know enough about contraceptive pills, but on observation it was found that their knowledge was neither correct nor sufficient.^[14]

Past studies reported that OC using women had concerns of negative effects on their health and quantum of wrong beliefs were associated with OCs' side effects such as weight gain, which appeared to be related to fluid retention or constipation not actual weight gain.^[15-17] The incidence of cancer increases with OC use, which is true for breast cancer, but not for ovarian and uterine cancers, which have 50% incidence rate reduction.^[18] The use of OCs for cosmetic purposes, for e.g., acne and hirsutism treatment has been described earlier.^[19] However, nearly one-third of adolescent girls and ~14% of physicians believed that OCs actually causes acne and/or hirsutism. In fact, low-dose OC improves acne regardless of which product is used.

As a result of OC's use the chances of delay in achieving a pregnancy has been reported in some studies, which is presumably due to lingered suppression of the hypothalamic-pituitary reproductive system. Despite the reproductive delay, there is no evidence that infertility is associated with or increased by the use of OCs.^[20]

Women bear all the responsibility for the regulation of fertility due to availability of limited methods for men like condom, withdrawal method, and vasectomy. The decision about the initiation and continuation of contraceptive use may lead to conflict between the partners; this in association with other social determinants can contribute to depression and anxiety in women. Some studies showed that OC users in contrast with non-users were found to have higher rates of depression, anxiety, fatigue, neurotic symptoms, sexual disturbances, compulsion anger, negative menstrual effects etc.^[21,22]

The entire Arabian Peninsula region including Saudi Arabia is deficient in pertinent data about OCs practice and knowledge among women and only scanty literature is available suffering with small sample size, lack of inclusion of important side effects, weak statistical correlations, etc. Although no actual data is available, but it has been noticeably seen in the Saudi society that some women use OCs irrationally for unnecessary delay of their menstrual period for various life events, such as honeymoon, vacations, swimming, sport event or some religious purpose. The conflict that must be faced in the Saudi society is the wrong practices done by women due to lack of knowledge about

this critical issue. To address this, few studies have been done in the recent past in the different regions/cities of the Saudi kingdom to draw the actual picture of the prevalence of OCs use and awareness among Saudi women, but failed to receive substantial scientific applaud.^[23-26] Keeping the aforesaid facts in view, the present study was aimed to estimate the prevalence of OCs' use, and assess the knowledge, behavior and practices of OCs among women living in Riyadh, Saudi Arabia.

Methods

Study design and population

A community based cross-sectional study was conducted to estimate the prevalence, knowledge, behaviors and practices of OCs use among women of Riyadh, Saudi Arabia. To cover this study a systematized questionnaire was developed by following the previously published reports with needful modifications. The dependent variable was the utilization of contraceptive method and the other factors were taken as independent variables. The study was implemented in two phases.

During the first pre-test phase, forty-six survey questionnaires were randomly distributed among women visiting to Riyadh Gallery (a major shopping mall of Riyadh). The survey questionnaire was checked and revised to overcome all obstacles faced during this pilot study. In the second phase, the self-administered typed survey questionnaire was distributed among 477 participating women visiting the different public malls of Riyadh city. The survey was conducted for six months during the period of February 2018 to July 2018. The selection of the study subjects (women of 14 to 50 reproductive years' age) was done using a cluster technique. Random sampling method was adopted to obtain the required number of the questionnaires. The city covered Sahara mall and Hayat mall in the Northern region, Panorama mall in the Western region, Granada mall in the Eastern region and Salam mall in the Southern region. These shopping-cum-entertainment malls were selected for the inclusion of the subjects because they are the biggest places where women and families gather from all over the city. Informed consent was obtained from every participant.

Survey questionnaire structure, data collection and analysis

Four investigators, AAA, BSA, ANA, and SAT participated in the survey questionnaire distribution and data collection. The pretested survey questionnaire was used to obtain the socio-demographic factors that related to the participants' knowledge and beliefs about OCs, as well as to evaluate their basic background and manner of use. The socio-demographic variables asked in the survey questionnaire for the

Table 1: Awareness of therapeutic uses of OCs in various groups (N=462) of Saudi women.

Groups	To prevent pregnancy			To regulate monthly period			To treat acne		
	No n (%)	Yes n (%)	χ^2 (p)	No n (%)	Yes n (%)	χ^2 (p)	No n (%)	Yes n (%)	χ^2 (p)
OC user	37 (14.0)	227 (86.0)	24.37	177 (67.0)	87 (33.0)	0.52	255 (96.6)	9 (3.4)	0.30
OC not user	66 (33.3)	132 (66.7)	(0.0001)	139 (70.2)	59 (29.8)	(0.470)	193 (97.5)	5 (2.5)	(0.583)
Marital status									
Married	32 (11.9)	238 (88.1)	40.90	200 (74.1)	70 (25.9)	9.68	262 (97.0)	8 (3.0)	0.01
Unmarried	71 (37.0)	121 (63.0)	(0.0001)	116 (60.4)	76 (39.6)	(0.002)	186 (96.9)	6 (3.1)	(0.920)
Housewife	18 (10.7)	150 (89.3)	25.46	129 (76.8)	39 (23.2)	8.76	165 (98.2)	3 (1.8)	1.46
Working	26 (22.2)	91 (77.8)	(0.0001)	76 (65.0)	41 (35.0)	(0.013)	113 (96.6)	4 (3.4)	(0.482)
Student	59 (33.3)	118 (66.7)		111 (62.7)	66 (37.3)		170 (96.0)	7 (4.0)	
Education									
Elementary	11 (21.6)	40 (78.4)	0.401	38 (74.5)	13 (25.5)	3.94	50 (98.0)	1 (2.0)	3.13
High school	37 (24.0)	117 (76.0)	0.819	112 (72.7)	42 (27.3)	(0.139)	152 (98.7)	2 (1.3)	(0.208)
Graduate	55 (21.4)	202 (78.6)		166 (64.6)	91 (35.4)		246 (95.7)	11 (4.3)	
Age group									
≤20 years	40 (36.7)	69 (63.3)	17.08	64 (58.7)	45 (41.3)	6.18	108 (99.1)	1 (0.90)	2.16
>20 years	63 (17.8)	290 (82.2)	(0.0001)	252 (71.4)	101 (28.6)	(0.010)	340 (96.3)	13 (3.7)	(0.119)

present analysis included age, marital status (categorized as married, unmarried, separated), nationality, place of residence, educational level, current employment status, husband's employment status,

average monthly income, number of children. In addition, the survey questionnaire included a series of true/false statements and multiple response questions to evaluate the knowledge of women regarding

Table 2: Awareness of OCs' benefits and side effects among Saudi women.

Items	Groups	Agree n (%)	Disagree n (%)	Don't know n (%)	χ ² (p)
The pills are used to have a nice clear skin	OC user	53 (20.1)	133 (50.4)	78 (29.5)	8.51 (0.014)
	OC not user	27 (13.6)	88 (44.4)	83 (41.9)	
	Married	53 (19.6)	132 (48.9)	85 (31.5)	4.27 (0.118)
	Unmarried	27 (14.1)	89 (46.4)	76 (39.6)	
	Elementary	6 (11.8)	27 (52.9)	18 (35.3)	5.01 (0.287)
	High school	22 (14.3)	81 (52.6)	51 (33.1)	
OC cause weight gain	Graduates	52 (20.2)	113 (44.0)	92 (35.8)	18.84 (0.0001)
	OC user	159 (60.2)	54 (20.5)	51 (19.3)	
	OC not user	95 (48.0)	29 (14.6)	74 (37.4)	31.66 (0.0001)
	Married	172 (63.7)	51 (18.9)	47 (17.4)	
	Unmarried	82 (42.7)	32 (16.7)	78 (40.6)	4.32 (0.364)
	Elementary	2 (43.1)	12 (23.5)	17 (33.3)	
Headache is a known side effect of OC use	High school	82 (53.2)	29 (18.8)	43 (27.9)	45.16 (0.0001)
	Graduates	150 (58.4)	42 (16.3)	65 (25.3)	
	OC user	189 (71.6)	20 (7.6)	55 (20.8)	86.93 (0.0001)
	OC not user	84 (42.4)	15 (7.6)	99 (50.0)	
	Married	206 (76.3)	19 (7.0)	45 (16.7)	1.97 (0.749)
	Unmarried	67 (34.9)	16 (8.3)	109 (56.8)	
OC use causes abdominal pain and nausea	Elementary	34 (66.7)	2 (2.9)	15 (29.4)	41.88 (0.0001)
	High school	90 (58.4)	13 (8.4)	51 (33.1)	
	Graduates	149 (58.0)	20 (7.8)	88 (34.2)	43.50 (0.0001)
	OC user	140 (53.0)	57 (21.6)	67 (25.4)	
	OC not user	56 (28.3)	35 (17.7)	107 (54.0)	2.96 (0.564)
	Married	140 (51.9)	62 (23.0)	68 (25.2)	
Using OC relives menstrual pain	Unmarried	56 (29.2)	30 (15.6)	106 (55.2)	35.36 (0.0001)
	Elementary	23 (45.1)	12 (23.5)	16 (31.4)	
	High school	60 (39.0)	35 (22.7)	59 (38.3)	38.82 (0.0001)
	Graduates	113 (44.0)	45 (17.5)	99 (38.5)	
	OC user	91 (34.5)	81 (30.7)	92 (34.8)	51.01 (0.0001)
	OC not user	26 (13.1)	55 (27.8)	117 (59.1)	
Severe bleeding is a side effect of OC use	Married	92 (34.1)	86 (31.9)	92 (34.1)	35.58 (0.0001)
	Unmarried	25 (13.0)	50 (26.0)	117 (60.9)	
	Elementary	13 (25.5)	16 (31.4)	22 (43.1)	3.13 (0.535)
	High school	35 (22.7)	47 (30.5)	72 (46.8)	
	Graduates	69 (26.8)	73 (28.4)	115 (44.7)	22.24 (0.0001)
	OC user	163 (61.7)	45 (17.0)	56 (21.2)	
Long duration use of OC can cause infertility	OC not user	69 (34.8)	24 (12.1)	105 (53.0)	12.21 (0.002)
	Married	158 (58.5)	48 (17.8)	64 (23.7)	
	Unmarried	74 (38.5)	21 (10.9)	97 (50.5)	0.898 (0.925)
	Elementary	24 (47.1)	10 (19.6)	17 (33.3)	
	High school	77 (50.0)	27 (17.5)	50 (32.5)	14.22 (0.001)
	Graduates	131 (51.0)	32 (12.5)	94 (36.6)	
Using the pills once in a while doesn't cause side effects	OC user	81 (30.7)	119 (45.1)	64 (24.2)	19.89 (0.0001)
	OC not user	48 (24.2)	61 (30.8)	89 (44.9)	
	Married	83 (30.7)	115 (42.6)	72 (26.7)	5.23 (0.264)
	Unmarried	46 (24.0)	65 (33.9)	81 (42.2)	
	Elementary	14 (27.5)	20 (39.2)	17 (33.3)	19.89 (0.0001)
	High school	40 (26.0)	59 (38.3)	55 (35.7)	
Using the pills once in a while doesn't cause side effects	Graduates	75 (29.2)	101 (39.3)	81 (31.5)	19.89 (0.0001)
	OC user	91 (34.5)	114 (43.2)	59 (22.3)	
	OC not user	43 (21.7)	83 (41.9)	72 (36.4)	5.23 (0.264)
	Married	94 (34.8)	119 (44.1)	57 (21.1)	
	Unmarried	4 (20.8)	78 (40.6)	74 (38.5)	5.23 (0.264)
	Elementary	20 (39.2)	22 (43.1)	9 (17.6)	
Using the pills once in a while doesn't cause side effects	High school	41 (26.6)	70 (45.5)	43 (27.9)	5.23 (0.264)
	Graduates	73 (28.4)	105 (40.9)	79 (30.7)	

OCs. The participants were divided into subgroups according to their level of OCs knowledge. The evaluation scale adopted was, the participants who answered four or less out of thirteen questions were considered to have low knowledge. The participants who answered five to eight questions have medium or moderate knowledge whereas, the participants who scored nine to thirteen were considered as good. The survey questionnaire also asked women about the reasons of using OCs. Some pertinent questions regarding the participants' behavior in relevance with OCs use were also asked. At the end, a series of true/false questions pertaining to the possible complaints of side effects OCs use by the participants were included.

Inclusion and exclusion criteria

All women of child bearing age (14-50 years) including women using OC for therapeutic or cosmetic purposes and pregnant women were included as participant. Young (pre-menarche) and postmenopausal women were excluded straightaway. In case of a family of eligible respondents, only one member was chosen randomly to participate in the study due to the possible expected similarity in the behavior and knowledge.

Statistical analysis

The data collection was followed by tabulation in MS Excel file and

data-extrapolation for the meaningful results. All the statistical analysis involved in this study was performed by using SPSS software program (SPSS Version 22, SPSS Inc., Chicago, IL, USA). The data were expressed as frequencies, percentages, and means. The comparison between the groups was made by using cross tabs, Chi square and p-values.

Results

A total of 477 questionnaires were distributed among women of Riyadh city, of them 462 (96.8%) responded with filled questionnaires. Fifteen subjects were excluded because of incomplete responses or incompatibility with the pre-set inclusion criteria of this study. The mean (SD) age of the participants was 34 (2.5) and menarche age was 12 (2.34) years. The majority of females were more than 20 years of age (76.4%) and more than half were married (58.4%). About 20% of females had 4-6 children and only 5% females had more than 6 children. The majority of women participants have at least high school level education (89%), of them 38.3% were students and 25.3% were working outside the home.

Awareness of OCs for therapeutic applications among Saudi women

Table 1 represents the knowledge of the participants about the use

Table 3: Demographic information of OC users and non-users.

Demographic information	Participants n (%)	OC user n (%)	OC not user n (%)	χ ² (p)
Total participants	462	264 (57.1)	198 (42.9)	--
Marital status				
Married	270 (58.4)	211 (79.9)	59 (29.9)	117.05
Unmarried	192 (41.6)	53 (20.1)	139 (70.2)	(0.0001)
Number of child				
0	219 (47.4)	66 (25.0)	153 (77.3)	124.37
1 to 3	129 (27.9)	104 (39.4)	25 (12.6)	(0.0001)
4 to 6	92 (19.9)	77 (29.2)	15 (7.6)	
>6	22 (4.8)	17 (6.4)	5 (2.5)	
Income (SAR)				
< 5000	73 (15.8)	45 (17.0)	28 (14.1)	5.70(0.127)
500-10000	201 (43.5)	116 (43.9)	85 (42.9)	
10001-15000	98 (21.2)	61 (23.1)	37 (18.7)	
>15000	90 (19.5)	42 (15.9)	48 (24.2)	
Education				
Elementary	51 (11.0)	35 (13.3)	16 (8.1)	3.42
High school	154 (33.3)	83 (31.4)	71 (35.9)	(0.181)
Graduate	257 (55.6)	146 (55.3)	111 (56.0)	
Working status				
House wife	168 (36.4)	125 (47.3)	43 (21.7)	97.89
Workers	117 (25.3)	89 (33.7)	28 (14.1)	(0.0001)
Students	177 (38.3)	50 (18.9)	127 (64.1)	
Age group				
≤20 years	109 (23.6)	27 (10.2)	82 (41.4)	61.04
>20 years	353 (76.4)	237 (89.8)	116 (58.6)	(0.0001)

Table 4: OCs' use in terms of User's marital status: Married vs. unmarried females.

	Married n (%)	Unmarried n (%)	χ ² , p
Prevent pregnancy	131 (62.1)	0 (0)	147.79
Prevent pregnancy & delayed period	37 (17.5)	0 (0)	0.0001
Prevent pregnancy for therapeutic	5 (2.4)	0 (0)	
Delayed period	21 (10.0)	47 (88.7)	
Delayed period for therapeutic	4 (1.9)	3 (5.7)	
Cosmetic uses	3 (1.4)	1 (1.9)	
Other therapeutic	10 (4.7)	2 (3.8)	

Table 5: Side effects of OCs among the OC users of Riyadh, Saudi Arabia.

Items	OC user	No n (%)	Yes n (%)	OR	95%CI	p
Did you gain weight with OC use?	Always	34 (35.1)	63 (64.9)	1.51	0.90-2.53	0.117
	When needed	75 (44.9)	92 (55.1)	1		
	Married	78 (37.0)	133 (63.0)	2.4	1.30-4.43	0.005
Do the pills cause you headache?	Unmarried	31 (58.5)	22 (41.5)	1		
	Always	41 (42.3)	56 (57.7)	1.14	0.69-1.89	0.609
	When needed	76 (45.5)	91 (54.5)	1		
Do the pills cause you sever bleeding?	Married	87 (41.2)	124 (58.8)	1.86	1.01-3.41	0.045
	Unmarried	30 (56.6)	23 (43.4)	1		
	Always	57 (58.8)	40 (41.2)	1		
Do the pills cause you abdominal pain?	When needed	97 (58.1)	70 (41.9)	1.02	0.61-1.70	0.914
	Married	127 (60.2)	84 (39.8)	1		
	Unmarried	27 (50.9)	26 (49.1)	1.45	0.79-2.66	0.223
Do the pills cause you nausea?	Always	56 (57.7)	41 (42.3)	1.04	0.63-1.73	0.879
	When needed	98 (58.7)	69 (41.3)	1		
	Married	124 (58.8)	87 (41.2)	1		
Do the pills cause you any leg pain?	Unmarried	30 (56.6)	23 (43.4)	1.09	0.60-2.00	0.775
	Always	58 (59.8)	39 (40.2)	1.03	0.62-1.71	0.912
	When needed	101 (60.5)	66 (39.5)	1		
Do the pills cause you any leg pain?	Married	128 (60.7)	83 (39.3)	1		
	Unmarried	31 (58.5)	22 (41.5)	1.09	0.60-2.01	0.772
	Always	71 (73.2)	26 (26.8)	1		
Do the pills cause you any leg pain?	When needed	120 (71.9)	47 (28.1)	1.07	0.60-1.87	0.814
	Married	148 (70.1)	63 (29.9)	1.83	0.87-3.87	0.113
	Unmarried	43 (81.1)	10 (18.9)	1		

and medical (therapeutic/cosmetic) implications of OCs. About 78% of females were aware about the OCs use in pregnancy prevention, of them majority were OCs users, married, housewives, graduates, and belong to the age >20 years (all $p < 0.0001$). However, only 31.6% of women knew that OCs can be used in the regulation of monthly periods, of them majority was unmarried, students, graduates, and age less than 20 years of age ($p < 0.022$). The knowledge of OCs for the treatment of acne (cosmetic purpose) was very poor (3%) among women. Only postgraduate females reported some knowledge of OCs use in the treatment of acne ($p = 0.0001$).

Awareness of OCs' benefits and side effects among users

Table 2 demonstrates the participants' basic knowledge of OCs' benefits and side effects. The mean knowledge score was 50.2%. The participants' knowledge score was in the order of 'headache (59.1%)', 'weight gain (55%)', 'sever bleeding (50.2%)', 'abdominal pain and nausea (42.4%)', 'pills used once in a while doesn't cause side effects (29%)', 'infertility after long use (27.9%)', 'relief from menstrual pain (25.3%)' and 'increase skin beauty (17.3%)'. The awareness of OC users reflected in terms of knowledge score was significantly high for all the items in comparison with the non-users (all $p < 0.05$). Likewise, married females' knowledge score was significantly higher than unmarried females (all $p < 0.05$) with the exception of insignificant knowledge for the item 'nice and clear skin' ($p = 0.118$). The educational level of women didn't significantly affect their knowledge of OCs in terms of benefits and side effects applicable to all the pertinent items.

Practice of OCs and its relevance with demographical, marital and social status of the users

The demographic status of OC users and non-users included in this study has been shown in Table 3. A total of 264 (57.1%) participants reported the use OCs, of them 36.7% females were regular OC users. Among the OCs users, majority were married (79.9%), housewives (47.3%), and belong to the age > 20 years (89.8%). Among the OC users, the majority of married women used it for the prevention of

pregnancy (62.1%), both to prevent pregnancy as well as to delayed the period (17.5%), and to delay period only (10.0%), whereas unmarried females used it for delaying their monthly period (88.7%) ($p = 0.0001$) [Table 4]. OC users revealed that they use the 'contraceptive pill' with the consultant of doctor (38.1%), pharmacist (10.4%) or the recommendation of family and/or friends (4.3) or from the information available over the internet (12.3%), and other resources (14.3%). The users of OCs [those who (irrespective of marital status) delayed their period without any therapeutic/cosmetic purpose] also stated that they mostly used the 'pill' during the religious Islamic Pilgrimage Hajj or Umrah (61.7%), followed by religious Islamic annual (a month long fasting period) event Ramadan (31.1%), and other functions (6%).

Perceived side effects of OCs among the users

Table 5 shows the side effects perceived by the users of OCs participated in this study. Most of the users perceived at least one side effect of OC use, however only 7.2% perceived all the six side effects, i.e., weight gain, headache, severe bleeding, abdominal pain, nausea, and leg pain. A significant number of married women reported weight gain (OR=2.4; 95% CI, 1.30-4.43; $p = 0.005$) and headache (OR = 1.86; 95% CI=1.01-3.41; $p = 0.045$) in comparison with the unmarried females. A good amount of women also reported severe bleeding (41.7%), abdominal pain (41.4%), and nausea (39.8%), of them majority were unmarried. About 30% of married and 20% of unmarried women reported leg pain ($p = 0.113$). Both types, regular and irregular OC users perceived sever bleeding, abdominal pain, nausea and leg pain. The regular OC users perceived more weight gain (OR=1.51) and headache (OR=1.14) in comparison with the irregular OC users.

Discussion

In the past several years, the prevalence of contraceptive use has shown a rapid upsurge, in which OC pills is the commonest method. [8,9] Without proper information and indiscriminate use of OCs may lead to some major health hazards. Keeping this in view, the present was focused for evaluating the prevalence of OCs' use and awareness among women living in Riyadh city of Saudi Arabia, and their attitude

towards OCs' practice. In the present study, more than half of the population under study despite their marital status, age, occupation, and educational level used OC at least once in their life (57%). This finding was congruent with the previous reports in which OC users were found in the range of 40 to 70.2%.^[23,24] The highest percentage of women using OCs were found in the age group of above 20 years, which is very obvious as women in this age group tend to be married (90%), thus using OCs is expected for many possible reasons such as family planning, birth control, child-spacing etc. We found that the majority of the respondents were aware of the use of OCs in pregnancy prevention which might be due to their interaction on this topic with their colleagues, friends, family members etc., via television, internet search, social media, and social campaigns etc., and their familiarity with the medication (i.e., brand name of OC pill).

Also, as expected the participants of age group below 20 years were not using OCs as they were mostly unmarried, knowing that these females belong to Saudi society (where Islamic Sharia law is applicable), wherein any type of premarital sexual relationship is completely forbidden and comes under major sin. So, there was limited usage of OCs in that age group. Women with more than 6 children were lowest users of OCs possibly family planning might not be their interest. This is in contrast with highest OC users' response where they reported family planning is the main interest for OC practice. The probable reason for this difference is either women with 6 or more children already attained or about to reach to a mature age with limited ovulation or reached to a menopausal age, thereby less use of OCs. We also noticed that women with more than 4 children reported less use of OCs, thus had lesser knowledge about it. This indicates that either they may be less concerned about their reproductive health or not interested in family planning. Whereas, women having 0-3 children reported highest OCs' use and bear highest knowledge, which reflected their choice of family planning and awareness about OCs prolong use. Remarkably, housewives scored higher percentage among OC using women in comparison with working women with no clear reasons, which is in contrast with previously published local study that reported higher OC use by working females than housewives.^[23] However, few of the predictable reasons of more OC use among housewives are awareness via internet, television, and women's social gatherings etc.

The survey findings also indicated that around 60% women identified the use of OCs mainly for the prevention of pregnancy; whereas remaining 40% considered the use OCs for other health benefits such as relief from menstrual pain, treatment of acne, and menstrual cycle (monthly period) regulation. The inadequate knowledge about OCs' use among Saudi women also suggests the increased health risk which is possibly related to the long or irrational use of OCs, use of OCs at very young age, and especially before the first child birth. It was noticed that the knowledge about OCs use varied among different age groups and it was highest (91%) among women above age 20 years possibly because of more experience and familiarity with it. In terms of marital status, the married women had a higher knowledge (75%) in comparison with the unmarried females. This is logical, as married women in Islamic country practice OCs more often for birth control because they are sexually active thus have more experience and consequently more knowledge. A good percentage of the respondents mentioned the use of OCs for non-contraceptive purposes. Among them, a modest percentage of women who had the knowledge that OCs can be used for purposes other than preventing pregnancy give a clue that the presence of an indication to use OCs for purposes other than preventing pregnancy might be responsible for such knowledge among this population. The major reason of non-contraceptive use of OCs by Saudi women found was delaying the menstrual cycle (periods) for religious purposes/events like Hajj and Umrah or Ramadan.

While comparing the participants' education and knowledge about OCs' use, the results appeared non-significant which is possibly due to

unequal number of participants in each group. In terms of occupation, working women were more knowledgeable about the use of OCs than housewives. Unexpectedly, health workers employed in healthcare related fields failed to show good knowledge. For non-healthcare workers and housewives, as they reported more use of OCs thus they got more experienced and accordingly they had more knowledge about the practice of OCs.

In behavior assessment, about one third (~29%) participating women reported daily use of OCs on 'same time' daily, which reflected their awareness of correct 'timing' usage of OCs. However, in case of missing a 'pill', nearly half of the women (45%) responded to take it as soon as they remember it, which is good as long as they remember it hastily. But, they didn't know that the missed 'pill' must be taken within the time duration of 12 hours to maintain its effectiveness. Hence, this finding shows a dearth of specific knowledge of the 'time frame' for the effective use of OCs. At the same time, a considerable proportion (47%) of participating women reported that they consulted with their physicians about the risks, benefits and side effects of OCs prior to using it. While, a small portion (13%) of the participating women asked pharmacists before the use; this is a good indication that a good percentage of Saudi women are concerned about their health and they are ready to enquire about correct information. This result is completely against the findings published earlier, where the most common sources of information were either friends or internet that supports the awareness of Saudi population.^[24] On the contrary, 75 participants purchased OCs in the form of over-the-counter (OTC) drug from commercial pharmacies without consulting a physician, which may put this group at many risks, such as improper OCs use due to deficient knowledge, failure of contraception due to unwise discontinuation of OCs, increase in the rate of side effects especially in the high risk groups (for e.g., hypertensive, diabetics, heart disease patients etc.), in which some OC brands are contraindicated. Moreover, these enhanced rates underestimate the problem, as difficulties with OCs often lead to discontinuation and in many cases, subsequent unintended pregnancy, which may further affect their mental and physical health.

The practice of contraceptives is completely free among the Saudi Arabian population who obtain a different variety of contraceptive health service. Additionally, the contraceptives (including OCs) are available as OTC drug in the kingdom.^[23] The prevalence of excessive and indiscriminate use of OCs among Saudi women is high possibly due to its availability as OTC drug, where no prescription is needed, however in other countries like USA, OCs are still under the umbrella of prescription drug, with the exception of certain emergency contraception drugs (for e.g., Plan B One-Step - a progestin-only 1.5 mg levonorgestrel pill). As per Food and Drug Administration laws and regulations, prescription drugs should only be switched to OTC status if they are safe for self-administration, effective when self-administered, treat a condition or address a concern that is self-diagnosable, and can carry labels that are easily understood and tailored for self-administration. However, this availability of OCs as OTC drug in the kingdom might augment the underestimation of the realistic practice of OCs. However, the use of OCs of the studied women participants was slightly lower (57.1%) than the world reported rates (63.1%) and also lowers than those reported in developed countries (67.4%). Possibly, the thinking that children are blessings from the God is possibly the leading reason for the refusal of contraceptives (incl. OCs) use among some Saudi females, which reflects the impact of the religious culture on their lives.

In this study, more than half of the participating women perceived weight gain. The weight gain score mentioned in this study dealt with participants' self-reported perception, it was neither related to the baseline weight nor related to the difference between the reported and measured weights at baseline. Only scanty reports are available

that compared the body weight gain in OC users and non-users/base line and they reported inconsistent and contradictory result. Some studies reported small amount of body weight gain due to OC use.^[27-29] whereas, some reports did not find any body weight gain as compared to the placebo control or non-user control group.^[30-32] None of the studies were able to establish a clear link between OCs use and weight gain among the users. In many prospective studies, baseline body mass index (BMI), percent fat, percent water, and waist-to-hip (WHR) ratio did not significantly changed in the OC users after six cycles^[31,33,34] Few studies reported typical weight gain around 0.4 kg to 0.72 kg in OC users from the base line.^[30,33,35] In another study, OC users lost weight from the base line over six cycles.^[34] Bonny et al., found that non-obese adolescence OC user girl's weight gain was 2.8 kg, whereas obese OC user weight gains was only 0.2 kg after 18 month of study.^[36] Likewise, in the current study a small portion of the participants reported weight gain as a side effect of OC use. However, a recent Cochrane review concluded that there is insufficient evidence to determine the effect of OCs practice on weight, and that no large effect is apparent.^[32] Hence, it is not possible to state that OC users will surely gain more weight than non-users. The discussion of these findings is of special attention because of the widespread belief among women that the use of OCs causes weight gain.

Headache is a general side effect among OC users as reported elsewhere. Similarly, in the present study more than 50% of OC users reported headache and the results were consistent with the previous study in which more than 50% subjects perceived pain during three active-pill weeks.^[37] The frequency of headache varied in different study group.^[38] A study reported 36% headache at baseline,^[39] whereas another study reported ~2% of women perceive headache.^[40] The background prevalence of headache is high in the population of women particularly in the fertile age group, therefore it is difficult to evaluate actual headache frequency associated with OC use. A systematic review reported that, regardless of cause, headache occurring in association with OC use tended to improve despite continued OC use.^[41]

The outcomes of the present survey-based study reveal that complete awareness and comprehensive information about the general features of OCs is less and misleading among Saudi women. The prevalence of distorted information about OCs is quite high among the users. In general, the Saudi women have positive attitude towards the practice of OCs, but most of them misused it for other non-essential reasons. Despite the widespread availability of OCs as OTC drug in the kingdom from last few decades, the method is still underused or misused. This shows the immediate need of effective counseling and standard education especially for OC users, those who use OCs (without medical consultation) for reasons other than birth control. Also, compliance strategies for longer use of OCs with standard regimen must be provided along with mandatory medical consultation despite the OTC status of OCs. Additionally, the involvement of qualified pharmacists as educators for general public must be recommended. But, as a primary recommendation based upon the current findings, a proper consultation with a qualified physician along with well-structured instructions before taking OCs is necessary including the suggestion of restricting the availability of OCs as an OTC medication (like other developed countries, for e.g., USA) in order to evade or minimize the side effects of OCs. Since, a good percentage of cases of missing pills has been reported by Saudi women, hence well-designed instructions along with proper consultation with a physician is warranted. In addition, as observed in this survey that a good proportion of women are not aware about the drug(s) used for menstrual cycle (periods) regulation and they are using OCs for non-contraceptive purposes, this indiscriminate/misuse of OCs must be tackled seriously. Based upon the current findings, presently we progressing towards conducting a large research study of organizing a social awareness campaign about 'understanding OCs' use and practice' and tutoring women at various public places in Riyadh city using short instructional video with pre-

and post-test evaluation of participating women's knowledge about OC's use and practice. In the above mentioned instructional video based future research investigation, we will include the said points of concerns.

However, continuous health education programs/events/efforts in the field of OCs use and practice are recommended and a basic level necessary counseling/consultation for all the fertile age group must be provided at the primary healthcare centers including information about all the currently used contraception methods. The findings of our study will provide a solid platform for planning strategies for improving women healthcare services, controlling OCs' use in a more acceptable and planned manner, reducing the number of unplanned pregnancies, and will also form a base for future trends in contraception practice in Arabian community.

The present study has certain advantages as compared to the previously published reports from Saudi Arabia,²³⁻²⁶ for e.g., the questions asked in this questionnaire were different and included knowledge parameters, like information about occurrence of migraine, abdominal pain etc., self-observation parameters like weight gain, headache etc., these were not reported earlier. Also, the indiscriminate use of OCs in delaying periods for religious events/purposes like Hajj & Umrah and Ramadan is another exciting finding, which has not been reported earlier, and warrants for further exploration, and suggests implementation of stricter guidelines for OC use.

Limitations of the study

The study was conducted in big malls of Riyadh city, where majority of the population is educated and follows a modern life style, which is not the case for other regions/cities of the kingdom with the exception of few areas of Saudi Arabia. Hence, the survey results can't be generalized to represent the entire Saudi kingdom.

Recommendations

Based upon the findings of this study, the following has been recommended-

- Further research is warranted to examine the relationship between the participants' age when they first started using OCs, how long they have been using it, and which brand of OCs they have used it in relation with their side effects.
- One major side effect that many participants' reported was depression, which was missed in our questionnaire; hence we recommend more research on its occurrence.
- Pharmacists must play a major role in educating the population about OCs' use, and they must explain the detailed information of OCs before selling it.
- Restricting OCs status of OTC drugs, and keeping into the category of prescription drugs to avoid the unwanted side effects and unplanned pregnancies and minimize the cases of missing pills.
- Continuous arrangements of awareness campaigns with optimal use of social media in educating women about this commonly used medication and conducting further research to check the progress in the level of knowledge change in attitude and practice.
- Researchers should continue to investigate the long-term as well as short-term effects of OCs' use and analyze the information and effects about the menstrual suppression.
- Also, further research is warranted to investigate the increased prevalence of OC use among housewives.

Conclusion

In conclusion, this study provides valuable evidence and suggests that by improving the knowledge of OCs and dispelling common misconceptions of OCs can help in changing Saudi women's behavior and attitude towards OCs. The survey results reveal haphazard use of OCs among women for other purposes (especially for delaying the period), less knowledge and more side effects. This warrants for the urgent need of novel educational strategies aimed to improve OCs' apt use for overall health (mental and physical) status and attitude of the users, and strict compliance with the suggested instructions for OC use.

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Conflict of Interest

The authors disclose that they have no conflicts of interest.

Declarations

Ethics approval and consent to participate

This study was approved by the Institutional Review Board, College of Medicine, King Saud University, Riyadh, Saudi Arabia. Subjects' participation was completely voluntary.

Availability of data and materials

Supplementary file appended with the manuscript.

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Authors' contributions

Conceived and designed the study and experiments: AAA BSA ANA SAT SS RA SH. Performed the experiments: AAA BSA ANA SAT. Analyzed the data: AAA BSA ANA SAT SH. Contributed reagents/materials/analysis tools: SS RA SH. Wrote the paper: AAA BSA SS RA SH. All authors reviewed the manuscript.

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