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Original Research Article

Knowledge of pharmacists on proper use of oral contraceptive pills and missed dose instructions in United Arab Emirates

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Abstract

Purpose: *To assess the knowledge of community pharmacists and senior pharmacy students in United Arab Emirates (UAE) about the proper use of oral contraceptive pills (OCPs) and to investigate factors associated with their knowledge.*
Method: *A cross-sectional study was conducted using a validated self-administered questionnaire to community pharmacists and senior pharmacy students in UAE. The survey contained 22 questions divided into 3 parts: a) demographic information, b) OCPs general knowledge, c) OCPs proper use and missed dose instructions.*
Results: *Community pharmacists had significantly higher knowledge scores than senior pharmacy students (26 vs 16.6 %; p = 0.032). Pharmacists with 10 - 20 years of experience had significantly lower knowledge scores than pharmacists with < 10 years of experience (p < 0.05). Conversely, gender, marital status and previous education on OCPs were not associated with knowledge score (p > 0.05).*
Conclusion: *Participants had poor knowledge of proper use and missed dose instructions along with several misconceptions of OCPs. This can be enhanced by encouraging pharmacists to enroll in continuous educations activities that provide updated information about OCPs. Additionally, inclusion of an intensive elective course on OCPs in undergraduate pharmacy curricula may be helpful.*

Keywords: *Oral contraceptives, Pharmacists, Pharmacy students, Counselling skills, misconceptions*

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INTRODUCTION

United Arab Emirates (UAE) is a fast developing country that has witnessed dramatic changes in the population characteristics. Over the past 30 years, there was a significant drop in fertility rate in UAE [1]. According to the State of World's Children 2015 UNICEF report, fertility rate dropped from 6.6 in 1970 to 1.8 in 2013 [2]. Major contributors to this drop were females' seeking higher education and higher rates of labor force involvement [1]. These factors were also known to enhance the prevalence of contraceptive methods use among women in UAE [3]. More than 58 % of women in the Middle East are using contraceptive methods [2]. According to the United Nation World Contraceptive Use in 2011, more than 27.5 % of local women in UAE were using contraceptive methods and the most commonly used method were pills [4].

In most of the Emirates**,** except Abu Dhabi, community pharmacists are permitted to dispense oral contraceptive pills (OCPs) without prescriptions. This intensifies the role of

community pharmacists in family planning. They are expected to provide professional support to patients, counsel them on side effects, contraindications, drug- drug interactions and to assure proper use of OCPs [5].

Combined Oral contraceptives pills (COCPs), a combination of the synthetic estrogens and progestin, are considered one of the most convenient and effective ways to prevent pregnancy [6]. Over the years, there has been a decrease in the concentration of both estrogen and progestin in pills to reduce side effects and cardiovascular complications [7]. OCPs side effects such as: breast tenderness, irregular bleeding and nausea, are claimed to be the main reason why women stop their contraceptive pills [8].

Adherence to OCPs is extremely important, as their efficacy will be reduced if a patient missed a pill or took a pill out of order. The chance of unintended pregnancy depends not just on the number of pills that were missed, but also on the week of the cycle in which the pill was missed [9]. Community pharmacists play a crucial role in improving patients' adherence to OCPs through adequate counselling and clear missed dose instructions. In community pharmacies, time constraints and administrative workload are common barriers that prevent pharmacists from providing proper counselling session that leads to incorrect use [10].

The objective of this study was to evaluate the knowledge of community pharmacists and senior pharmacy students in United Arab Emirates regarding the proper use of OCPs and to investigate factors associated with their knowledge. To the best of our knowledge this is the first study to assess the knowledge about OCPs proper dispensing practices in United Arab Emirates.

METHODS

Study design

This was a cross sectional study which was done by distribution questionnaires to final year pharmacy students at University of Sharjah and pharmacists working in three different cities in United Arab Emirates: Sharjah, Ajman and Dubai between February and May 2016. A researcher was available during the completion of the survey to answer participants' questions. A total of 212 questionnaires were distributed among pharmacists and senior pharmacy students using a convenience sampling technique, the response rate was 89.0 and 72 % respectively. Some pharmacists and students refused to participate in the study because they were busy or not interested. The survey was pre-validated by giving it to 5 faculty members of pharmacy school, 10 community pharmacists and 10 fifth year pharmacy students. Slight modifications were made based on the input received.

Instrument

The survey was printed in Arabic and English, and contained 22 questions divided into three sections. Section one was about demographic data: educational background, years of experience, number of OCPs prescriptions per week, age, gender, social status and pharmacy location. In section two, participants were asked to answer questions that assessed their general knowledge about OCPs: indications, side effects, possible drug- drug interaction and contraindications. In this section participants were asked to choose all possible correct answers for each question.

Part three consisted of seven multiple choice questions about the proper use of OCPs and missed dose. Participants were asked to choose one correct answer; their answers were combined to indicate their knowledge level. Scores ranged from zero to seven and were classified as follow: (1 - 3 correct answers) inadequate knowledge, (4 - 5 correct answers) satisfactory knowledge and (6 - 7 correct answers) good knowledge. A final question was about the preferred method for developing counselling skills.

Data analysis

The required sample size was calculated by Raosof sample size calculator software (Using the alpha level of error of 0.5 and confidence level of 95 % with an expected response rate of 80 %). The collected data from 172 surveys were entered and analyzed. Descriptive data and frequencies were obtained using statistical package for social science (SPSS 22) program. An independent sample t-test was used to compare differences between quantitative variables. Chi square test was used to measure the association between demographic data and knowledge scores for pharmacists. $P < 0.05$ was considered as statistically significant.

Ethical approval

The participation was performed on a voluntary basis. All participants were asked to sign a consent form to assure their agreement to use their data and to ascertain their privacy and

confidentiality. Participants were able to withdraw any time during the study. The study was approved by University of Sharjah's ethical committee.

RESULTS

Demographic data

The questionnaire was completed by 100 community pharmacists and 72 senior pharmacy students. Table 1 and Table 2 show demographic data of pharmacists and senior pharmacy students respectively.

Table 1: Pharmacists' demographic data

Variables	Frequency (%)
Male	52 (52)
Female	48 (48)
Age (years)	
20-30	60 (60)
31-40	28 (28)
41-50	12 (12)
> 50	0
Current social status	
Single	37 (37)
Married	63 (63)
How long have you been working as a pharmacist	
Less than 5 years	46 (46)
5 -10 years	28 (28)
10 -20 years	26 (26)
On a weekly basis, how many OC prescriptions do you dispense/sell?	
1 to 3 prescriptions	14 (14)
3 to 6 prescriptions	31 (31)
More than 6	55 (55)
During your studies, did you receive education related to oral contraceptives?	
Yes	88 (88)
No	12 (12)

Table 2: Senior pharmacy students' demographic data

Variable	Frequency (%)
Gender	
Male	5 (6.95)
Female	67 (93.05%)
Age (years)	
20-30	72 (100%)
Current social status	
Single	68 (97.1%)
Married	4 (5.5%)
During your studies did you receive education related to oral contraceptives?	
Yes	72 (100%)
No	0

OCPs general knowledge

Pharmacists and pharmacy student's general knowledge about OCPs was assessed through several questions about indications, side effects, contraindications and drug interactions, as shown in Table 3.

Proper use of OCPs

The opinions of community pharmacists and senior pharmacy students regarding the proper use of OCPs and the management of missed dose are shown in Table 4.

This study found that up to 21 % of pharmacists and 30.5 % of senior pharmacy students had inadequate knowledge about OCP use (score of 0 - 3). On the other hand, 26 % of pharmacists and 16.6 % of pharmacy students had good knowledge scores (Score of 6 - 7) (p = 0.032), which shows that community pharmacists had significantly better knowledge as shown in Figure 1.

The effect of demographic date on knowledge scores was studied for pharmacists only because all senior pharmacy students had similar demographic data. As shown in Table 5, pharmacists in the age range of 41-50 years achieved lower knowledge scores than younger pharmacist (p < 0.05). Moreover, Pharmacists with 10-20 years of experience had significantly lower knowledge scores than pharmacists with less than 10 years of experience (p < 0.05). Educational background was also significantly associated with knowledge scores, as pharmacists with PharmD degree had significantly higher knowledge scores than pharmacists with bachelor degree and assistant pharmacists (p < 0.05). It was also shown than pharmacist working in Ajman had significantly lower knowledge scores than pharmacists located in Dubai or Sharjah (p < 0.05). Conversely, gender, marital status and previous education about OCPs were not associated with knowledge scores (p > 0.05).

Regarding the preferred methods to improve participant's knowledge about oral contraceptive pills, attending workshops was the highest recommendation with 50 (students 52.7 %, pharmacist, 48 %), followed by elective courses (27.3 %), publications distributed to pharmacy and online courses (18.6 %). Less than 4.1 % were not interested at all.

Table 3: Pharmacists' and senior pharmacy students' general knowledge of OCPs (n = 172)

Variable	Community pharmacists (n=100)	Senior pharmacy students (n=72)	*P*-value
COCPs indications			
Prevent pregnancy (%)	74	97.2	< 0.001*
Acne (%)	48	47.2	> 0.05
Hirsutism (%)	40	51.3	> 0.05
Relief menstrual cramps (%)	36	51.3	> 0.05
Iron deficiency anemia (%)	16	8	> 0.05
Side effects			
Bleeding irregularities (%)	62	65.2	> 0.05
Nausea (%)	53	48.6	> 0.05
Weight gain (%)	82	87.5	> 0.05
Mood swings (%)	54	75	< 0.05 *
Breast tenderness (%)	48	48.6	> 0.05
Headache (%)	59	41.6	< 0.05 *
Contraindications			
DVT (%)	40	39	> 0.05
Liver tumor (%)	48	31	< 0.05 *
Breast cancer (%)	82	87.5	> 0.05
Migraine (%)	54	75	> 0.05
Drug-drug interactions			
Broad spectrum antibacterial drugs (%)	55	68	> 0.05
Antiepileptic drugs (%)	54	57	> 0.05
POPs indications			
Breastfeeding (%)	73	52.7	< 0.05 *
Active liver disease (%)	23	26.3	> 0.05
Smoker above 35years old (%)	18	26.3	> 0.05
Breast cancer within 5 years (%)	35	72.2	< 0.05 *

Data are presented as percent. The total in each row may not add up to 100 %, as participants were asked to choose more than one answer. *Significant at $p < 0.05$

Table 4: Pharmacists and senior pharmacy students' knowledge about OCPs proper use and missed dose

Question	Pharmacist with correct answers (%) (n=100)	Senior Pharmacy students with correct answer (%) (n=72)	*P*-value*
Q1) *Starting day* Day 1- 5 of cycle, continued for 21 days followed by 7 days' tablet free interval (%)	93	72.20	0.001*
Q2) *COC pills should be taken daily at the same time (%)*	88	91.60	0.404
Q3) *Missed dose in first week* Take a new pill and use additional precautions for the next week (%)	60	51.30	0.802
Q4) *Missed dose in second and third weeks.* Take a new pill and use additional precautions and omit the pill free interval (%)	26	23.60	0.138
Q5) *Progesterone only pills should be taken daily at the same time (%)*	64	55.50	0.45
Q6) *POP missed dose* After 3 hours of daily timing, use backup method for the next 48 h (%)	60	54.10	0.72
Q7) ***Changing from COPs to POP (%)*** Start pills immediately with extra precautions for 7 days	64	66.60	0.836

*Significant *at* $p < 0.05$

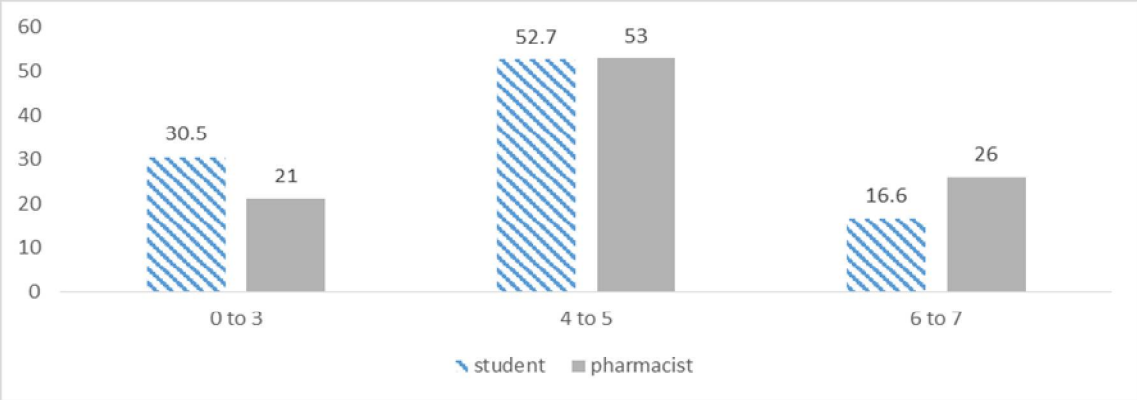

Figure 1: Community pharmacists and senior pharmacy students' knowledge score on OCPs proper use (values are in percentages)

Table 5: Association of demographic characteristics of pharmacists with their knowledge scores

Variable	Inadequate knowledge (score 0–3) (n= 21)	Satisfactory knowledge (score 4-5) (n= 53)	Good knowledge (score 6-7) (n=26)
Gender			
Male	11 (21.2%)	27 (52%)	14 (26.9%)
Female	10 (20%)	28 (56%)	12 (24%)
Age			
20- 30 years.	11 (18.03%)	33 (54.1%)	17 (27.9%)
31-40 years.	9 (33.3%)	10 (37.04%)	8 (29.6%)
41-50 years.	1 (8.3%)	10 (83.3%)	1 (8.3%)*
Social status			
Single	10 (27.03%)	19 (51.35%)	8 (21.6%)
Married	11 (52.4%)	34 (64.2%)	18 (28.57%)
Educational background			
Pharmacy (B Pharm)	16 (21.3%)	41 (54.67%)	18 (24%)
Pharmacy (Pharm D)	3 (50%)	NA	3 (50%)*
Pharm assistant diploma	3 (15%)	12 (60%)	5 (25%)
How long have you been working as a pharmacist?			
A. < 5 years	10 (21.7%)	25 (54.35%)	11 (23.9%)
B. 5 - 10 years	4 (14.29%)	13 (46.4%)	11 (39.3%)
C. 10 - 20 years	7 (26.9%)	15 (57.6%)	4 (15.4%)*
Pharmacy location			
A. Sharjah	11 (22.9%)	25 (52%)	12 (25%)
B. Dubai	4 (12.5%)	16 (50%)	12 (37.5%)
C. Ajman	6 (30%)	12 (60%)	2 (10%)*
On a weekly basis, how many OC prescriptions do you dispense/sell?			
A. 1-3	1 (7.14%)	10 (71.43%)	3 (21.4%)
B. 3-6	10 (32.3%)	13 (41.9%)	8 (25.8%)
C. More than 6	10 (18.2%)	30 (54.5%)	15 (27.3%)
During your studies did you receive education related to oral contraceptives?			
A. Yes	17 (19.3%)	48 (54.5%)	23 (26.1%)
B. No	4 (33.3%)	5 (41.6%)	3 (25%)

**Significant at p < 0.05*

DISCUSSION

Community pharmacists' knowledge about OCPs is a very important prerequisite to provide appropriate information and adequate counselling. Despite the fact that OCPs are the most commonly used methods, very little is known about how it is dispensed compared to emergency contraception [11]. This study highlighted two important aspects namely the misconceptions about OCPs, and poor

knowledge about proper use and missed dose instructions.

The participants were highly educated and their general knowledge about OCPs indications and contraindications were average. On the other hand, participants' knowledge about non contraceptive indications of OCPs such as acne and hirsutism were low. Previous studies had reported that acne and hirsutism are viewed as side effects of OCPs rather than indications [8,12]. Their knowledge about indications of POPs was also poor.

Pharmacists have a significant role in screening patients for contraindications and suggesting the appropriate contraceptive method accordingly. Grossman et al., had found that approximately 39 % of women in United States had at least one contraindication for oral contraceptives [13]. In this study, pharmacists were able to recognize more contraindications compared to students, such as: liver tumor and migraine.

Several misconceptions about OCPs were identified among the study population. Despite a lack of evidence, 85 % of participants believed that weight gain was a side effect of OCPs. Placebo-controlled trials had failed to show any association between low-dose combined OCs and weight gain [8]. Similar percentages were reported among pharmacists (76.7 %) by another study [14].

Another misconception was about OCPs drug-drug interactions. Several studies have shown that broad spectrum antibiotics other than rifampin, such as amoxicillin [15] and ciprofloxacin [16] don't reduce the effectiveness of OCPs. This was also confirmed by the World Health Organizations Medical Eligibility Criteria for contraception use [7]. Nevertheless, the vast majority of pharmacists and students in this study acknowledged antibacterial drugs as drugs that can affect the blood level of OCPs. A cross sectional study reported similar results with 88.5 % of pharmacists stating a drug -drug interaction between OCPs and broad spectrum antibacterial and 99 % indicating they would recommend a backup method while taking the course of antibiotics [16]. Potential reasons behind these misconceptions are lack of opportunities for continuous education on updates in contraception, outdated protocols and lack of training.

Another important aspect of this study was participants' lack of knowledge about OCPs proper use and missed dose instructions. Despite the high number of prescription per week, a lack of in-depth knowledge was identified. This gap was also reported by several other studies [10,11,14,17]

About half of the study participants knew what to advise a patient if she forgot a dose in the first week, while one of four knew what a user should do if the missed dose is in the second or third week. Similar percentages were reported by a study conducted among pharmacists in Egypt [17]. Other studies had shown that respondent knew how to handle one missed pill but few knew how to handle multiple missed pills [5,14]. This indicates a gap in dispensing practices that can affect OCPs users' adherence [10,11].

Upon investigating factors associated with knowledge scores, pharmacists' gender didn't seem to have any influence on their knowledge scores. Similar results were reported by a study conducted on COCP prescribing physicians [12]. On the other hand, pharmacists' age and years of experience were inversely related to their knowledge scores, as most community pharmacists don't have time to seek updated information through seminars or workshops [10]. Higher scores among PharmD is expected as usually they receive more intensive courses and practical training compared to pharmacists and pharmacy assistants [17].

Senior pharmacy students had achieved lower knowledge scores compared to community pharmacists. Similar results were reported by studies conducted among senior pharmacy students in Malaysia [18] and Saudi Arabia [19]. This could be due to the possible deficiency of curricular requirements along with the lack of experience and training. Pharmacy students should be prepared to interact with women using oral contraceptives who will frequently seek their assistance in the future. The extent to which pharmacy schools cover the topic of hormonal contraceptive should be re- evaluated.

Limitations of the study

The findings can't be generalized for all pharmacy students or all pharmacists in UAE, due to the small sample size. However, the study provides a valuable insight about pharmacy students' knowledge about contraception. The use of self-reported questionnaires and interviews could have led to an overestimation of the pharmacists' knowledge and dispensing practices. A larger study should be conducted on a random sample for all pharmacy students and pharmacists in United Arab Emirates.

CONCLUSION

There are several misconceptions about OCPs among pharmacists and senior pharmacy students in United Arab Emirates. Participants had poor knowledge about missed dose instructions. Since OCPs are used heavily among women in UAE, and can be purchased without prescriptions, community pharmacists have a major responsibility to assure safe use and promote patient's compliance. Better access to continuous education will eliminate misconceptions about oral contraceptives and enable community pharmacy staff in UAE to provide understandable missed dose instructions and to screen patients for OCPs contraindications before dispensing. Additionally, adding elective courses about oral contraceptive with experimental education for students can enhance their knowledge, boost their confidence, improve their contraceptive counselling skills and make them ready to participate actively in family planning in community pharmacies.

DECLARATIONS

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Conflict of Interest

No conflict of interest associated with this work.

Contribution of Authors

The authors declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by them.

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