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Assessment of community pharmacists' knowledge and counselling practices on oral contraceptives use

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ABSTRACT

The consequences of unwanted pregnancy are a public health concern and the knowledge of pharmacists on contraceptives is important being the most accessed healthcare provider. The study assessed the knowledge of community pharmacists in Ibadan, Oyo State, Nigeria on oral contraceptives and counselling practices during dispensing of the same. 110 community pharmacists were assessed using self-administered questionnaires. Data collected include socio-demographics, knowledge, and current counselling practices of participants on contraceptives. Data was entered into IBM-SPSS version 23 and analyzed using descriptive and inferential statistics. Chi-square was used to determine the association between socio-demographic characteristics, knowledge and counselling practices of participants. 130 questionnaires were distributed and 110 were retrieved giving a response rate of 84.6%. There were more males (64, 58.2%) than females and the mean age of participants was 32.72±9.00 years. The majority (92, 83.6%) had only their first degree. Participants' knowledge of oral contraceptives was found to be high with 80 (72.7%) having good knowledge while 27 (24.5%) had good counselling practices. There was no significant association between socio-demographics and knowledge of contraceptives. Higher educational qualification had no positive influence on their counselling practices with significant number of participants with Bachelor of Pharmacy qualifications having better counseling practices (p=0.03). The knowledge of participants on the use of oral contraceptives also significantly influenced their counselling practice (p=0.03). Community pharmacists need further training on how to counsel patients on use of oral contraceptives in other to reduce unplanned pregnancy, and consequently prevent uncontrolled population growth.

Keywords: oral contraceptives, pharmacists, counselling practices, knowledge

INTRODUCTION

In recent years, and according to world population review, Nigeria has become the most populous country in Africa with a population of over 200 million people and still growing [1]. In order to address this population growth and the strain it places on available societal resources, there is an increase in efforts and strategies to reduce the reproduction rate, which has been incorporated into millennium development goals to improve child and maternal health [2]. Oral contraceptives protect women from unplanned pregnancies and subsequent abortion. Combined oral contraceptives (COCs) and emergency contraceptive pills are now largely available in most countries of the world including Nigeria. Notwithstanding, an estimated 76 million unintended pregnancies occur every year in developing countries [3]. Poor knowledge of emergency contraception methods and timing of use, as well as wrong perception about side effects, were barriers to the effective utilization of emergency pills for the prevention of unplanned pregnancy [4]. Lack of appropriate counselling regarding the proper use of oral contraceptives is a leading cause of incorrect use, premature discontinuation, and mishandling of missing dose situations, which lead to failure of the contraceptive regimen and increased side effects [5, 6].

The expanding roles of pharmacists in healthcare continue to evolve as pharmacists gain increased clinical responsibilities in developed countries. The role of community-based pharmacists in some countries has expanded to include contraceptive prescribing and counselling in most countries [7]. Previous studies have shown that increasing the provision of contraceptive counselling in primary care settings may reduce unintended pregnancy [8, 9]. Many studies have identified misinformation and misconceptions about side effects as the major barriers to the use of oral contraceptives. Providing correct and adequate counselling on the use of oral contraceptives is very important, and central to allaying the fears of women of childbearing age in order to encourage its use [8, 10].

The use of more effective contraceptive methods was observed to be higher when counselling was provided during both prenatal and postpartum period [11, 12]. Improving the quality of contraceptive counselling is one strategy to prevent unintended pregnancy. A shared decision-making strategy that

emphasizes soliciting and accommodating patient preferences is one way to improve contraceptive counseling. Another method is to build a deep, trusting connection with patients. Providing side effect counseling and implementing strategies to encourage continued use and adherence of contraceptives can both help women use contraception more effectively [13]. Community pharmacists, being readily accessible healthcare providers [14], play a significant role in ensuring the optimization of oral contraceptive use, and are therefore best positioned to provide appropriate therapeutic information on oral contraceptives to women using them [15].

Although in Nigeria, the knowledge, attitudes and practice of emergency contraceptive use have been documented among female undergraduates [16-18], patent medicine vendors [19], medical doctors [20], and healthcare professionals in general [21], studies or systematic review on both knowledge of oral contraceptive use, and counselling skills among community pharmacists are rare. This study, therefore, seeks to identify possible gaps in community pharmacists' knowledge of oral contraceptive use, as well as the adequacy of counselling practices.

METHODS

Study Setting

The study was carried out in registered community pharmacies in Ibadan, Oyo State. Ibadan is the 3rd largest city in Nigeria, with a population of well over 3.3 million [22]. Community pharmacists who registered with the Pharmacist Council of Nigeria in Ibadan for the year 2019, formed the population for the study.

Study Design

This was a descriptive cross-sectional study among community pharmacists in Ibadan, Oyo State. The duration of the study was four months: October 2019-January 2020.

Sample Size Calculation

The number of community pharmacists registered in Ibadan was obtained from the Pharmacist Council of Nigeria, Oyo State chapter. The estimated number given was 140. Using the 95% confidence level and 5% margin of error, sample size was determined using Raosoft online sample size calculator (http://www.raosoft.com/samplesize.html). A sample size of 104 was calculated. To account for 10% attrition (=104/0.9=116), 116 was used as a guide for participants' enrolment to the study.

Sampling Method

All registered and consenting community pharmacists in Ibadan were involved in the study. Of the 140 registered community pharmacists, 10 were involved in a pretest, and were exempted from the study; 10 either declined participation or were never available on two occasions/visits; 120 consented, out of which 110 appropriately filled and returned the questionnaires.

Data Instrument

A structured pretested questionnaire was used to collect data from participants. The self-administered questionnaires were divided into three sections: section A assessed participants' socio-demographic characteristics; section B assessed pharmacists' knowledge of oral contraceptives, and section C assessed their counselling practices.

The overall score by pharmacists in both knowledge and counselling practice domains developed for the purpose of this study, was converted into a percentage to ensure uniformity in the scores. Data on knowledge was analyzed by assigning a point to each correct answer provided by the participants. In the knowledge domain, a total score of nine out of the 13 questions (≥70%) was considered "good" knowledge, while scores less than nine of out 13 questions (<70%) were considered poor knowledge about oral contraceptives.

In the counselling practice domain, the total ranked score for the seven questions was seven. An individual was expected to give correct answers to at least six of the seven questions, including a discussion of at least two side effects and contraindications with patients. This implied that participants who did not indicate at least two side effects could not be assigned a score under that question, and the same thing applied to contraindications. A score between zero and three was considered poor counselling practice; a score between four and five was considered moderate counselling practice, while a score of six to seven was considered poor counselling practice. The cut-off point criteria was adapted from a review of other related studies [23].

The questionnaire was pretested for face-to-face validity among 10 community pharmacists. Some modifications were made, such as a few closed-ended questions rephrased as open-ended for more clarity. The content validity of the knowledge questions was tested by having a Cronbach factor of 0.78.

Data Collection

Participants were approached in their pharmacies during working hours and were encouraged to participate after the study objectives had been explained to them. Consenting participants were administered the questionnaires, and completed questionnaires were returned within 15 minutes of completion.

Data Analysis

Data was sorted, coded and entered to IBM SPSS (version 23) for analysis. Results were summarized using descriptive statistics. Pearson Chi-square test was used to test for association between knowledge and counselling, and socio-demographic characteristics, educational qualifications, and years of community pharmacy practice. Pearson Chi-square was also used to determine the association between knowledge and counselling practice of participants with $p<0.05$ considered as statistically significant.

RESULTS

Socio-Demographic Characteristics & Exposure to Training on Contraceptives Participants

A total of 110 community pharmacists adequately filled and returned the questionnaires, giving a response rate of 91.7%. There were 64 (58.2%) male participants as compared to 41.8% females. Most of the participants were very young, i.e., age groups of 21-40 (89.1%) compared to older ones. With respect to educational qualifications, 92 participants (83.6%) had only Bachelor of Pharmacy (B. Pharm) degrees.

Table 1. Socio-demographic characteristics of study participants

Variable	Frequency	Percentage
Gender		
Male	64	58.2
Female	46	41.8
Age group (Mean±SD=32.72±9.00)		
21-30	53	48.2
31-40	45	40.9
41-50	5	4.5
51-60	3	2.7
>60	4	3.6
Religion		
Christianity	91	82.7
Islam	19	17.3
Educational qualification		
B. Pharm	92	83.6
B. Pharm+M. Pharm	7	6.4
B. Pharm+Pharm. D	3	2.7
B. Pharm+others	8	7.3
Years of community pharmacy practice		
<5	64	58.2
5-10	36	32 .7
>10	10	9.1
Training on family planning		
Yes	64	58.2
No	46	41.8
Source of training		
Undergraduate study	34	53.1
Workshop	10	15.6
Hospital-sponsored training	4	6.3
Others	4	6.3
Any combination of above	12	18.7

64 participants (58.2%) claimed to have undergone at least one form of training on oral contraceptive use. 34 (53.1%) of them were trained on family planning as undergraduates, while 12 (18.7%) of them had been exposed to more than one training on family planning from other sources (**Table 1**).

Knowledge on Use of Combined Oral Contraceptives

The number of participants with poor knowledge (score <70%) was 30 (27.3%), while 80 (72.7%) had good knowledge of oral contraceptives (score≥70%). 108 (98.3%) participants were aware of COCs, while 107 (97.3%) were aware of the emergency contraceptives. 98 (89.1%) participants knew that COC are not the same as emergency contraceptives, and 95 (84.4%) did not agree that emergency contraceptives were best used 120 hours after unprotected sex. About 67 (60.9%) participants believed that repeated use of emergency contraceptives could lead to infertility. 103 (93.6%) participants knew that contraceptives work through inhibiting ovulation, fertilization, and implantation. 84 (76.4%) participants did not support the idea that a patient should combine two different contraceptives for maximum effect. 81 (73.6%) participants did not know that a patient's body mass index (BMI) determines the dose of emergency contraceptives. The details are shown in **Table 2**.

Association Between Socio-Demographic Characteristics of Participants & Their Knowledge on Use of Oral Contraceptives

Table 3 shows the association between socio-demographic characteristics of participants and their knowledge on the use of emergency oral contraceptives. None of the socio-demographic variables (gender, age group, religion, educational qualification, years of community pharmacy practice, and training on family planning) had a significant influence on the knowledge of participants on the use of COCs (p>0.05).

Counselling Practices of Participants on Use of Oral Contraceptives

100 (90.9%) indicated that they offer counselling on oral contraceptive use to patients. Pregnancy test was recommended by 106 (96.4%) participants. Once-daily dosing regimen of COCs to clients was mainly advised by 88 (80.0%) participants.

50 (45.5%) participants did not know whether to recommend emergency contraceptives to patients on both COC and antibiotics, while about 37 (33.6%) did not recommend emergency contraceptives. The top side effects discussed with clients by 92 (83.6%) of participants was weight gain, and 80 (72.7%) discussed breast tenderness.

87 (79.1%) participants recommended a switch to the use of combined daily oral contraceptives for patients using emergency contraceptives, while the remainder (23, 20.9%). did not. For those who wanted to switch from using emergency contraceptives to COCs, abstinence from sexual relationships for first few days of beginning the use of oral contraceptives was advised by 62 (56.4%) participants, while 43 (39.1%) participants advised that there was no need for patients to use backup contraceptives when commencing the use of COCs.

Table 2. Knowledge on use of combined oral contraceptives among study participants

Variable	Yes (%)	No (%)	I do not know (%)	Correct (%)	Incorrect (%)
Do you know about combined oral contraceptives?	108 (98.2)	1 (0.9)	1 (0.9)	108 (98.2)	2 (1.8)
Do you know about emergency contraceptives?	107 (97.3)	2 (1.8)	1 (0.9)	107 (97.3)	3 (2.7)
Combined oral contraceptives are the same as emergency contraceptives?	7 (6.4)	98 (89.1)	5 (4.5)	98 (89.1)	12 (10.9)
Emergency contraceptives are best used 120 hours after unprotected sex?	13 (11.8)	95 (86.4)	2 (1.8)	95 (86.4)	15 (13.6)
Contraceptives are to be used as abortifacients?	6 (5.5)	97 (88.2)	7 (6.4)	97 (88.2)	11 (11.9)
Repeated use of emergency contraceptives leads to infertility?	67 (60.9)	32 (29.1)	11 (10.0)	32 (29.1)	78 (70.9)
Should contraceptives be used during pregnancy?	1 (0.9)	108 (98.2)	1 (0.9)	108 (98.2)	2 (1.8)
Contraceptives work by inhibiting ovulation, fertilization, & implantation?	103 (93.6)	6 (5.5)	1 (0.9)	103 (93.6)	7 (6.4)
Intrauterine device is a type of barrier contraceptive?	90 (81.8)	14 (12.7)	6 (5.5)	14 (12.7)	96 (87.3)
Intrauterine device can be used as an emergency contraceptive?	8 (7.3)	99 (90.0)	3 (2.7)	8 (7.3)	102 (92.7)
Should a patient combine two different oral contraceptives for max. effect?	14 (12.7)	84 (76.4)	12 (10.9)	84 (76.4)	26 (23.6)
Oral contraceptives prevent sexually transmitted diseases (STDs)?	1 (0.9)	107 (97.3)	2 (1.8)	107 (97.3)	3 (2.7)
A patient's BMI should determine the dose of emergency contraceptives?	19 (7.3)	81 (73.6)	10 (9.1)	19 (7.3)	91 (82.7)
Knowledge scores					
Poor knowledge (nine out of 13<70%)				30 (27.3)	
Good knowledge (less than nine out of 13≥70%)				80 (72.7)	

Table 3. Association between socio-demographic characteristics of participants & their knowledge on use of oral contraceptives

Variables	Poor knowledge (%)	Good knowledge (%)	Chi-square	p-value
Gender				
Male	19 (29.7)	45 (70.3)	0.450	0.502
Female	11 (23.9)	35 (76.1)		
Age group				
21-30	16 (30.2)	37 (69.8)	0.440	0.803*
31-40	11 (24.4)	34 (75.6)		
>40	3 (25.0)	9 (75.0)		
Religion				
Christianity	25 (27.5)	66 (72.5)	0.011	0.918
Islam	5 (26.3)	14 (73.7)		
Educational qualification				
B. Pharm	25 (26.9)	68 (73.1)	0.046	0.776
Additional qualification	5 (29.4)	12 (70.6)		
Years of community pharmacy practice				
<5	17 (26.6)	47 (73.4)	0.927	0.629*
5-10	9 (25.0)	27 (75.0)		
>10	4 (40.0)	6 (60.0)		
Training on family planning				
Yes	20 (31.7)	43 (68.3)	1.488	0.223
No	10 (21.3)	37 (78.7)		

Note. *Fisher's exact test

Table 4. Counseling practices of participants on use of oral contraceptives

Variables	Frequency	Percentage
Advice to patient on dosing frequency of combined oral contraceptives		
Three tablets hourly	1	0.9
Once daily	88	80.0
Less frequently	5	4.6
Based on manufacturer's recommendation	2	1.8
I don't know	14	12.7
Recommendation of emergency contraceptives for patients taking combined hormonal oral contraceptives & antibiotics concomitantly		
Yes	23	20.9
No	37	33.6
I do not know	50	45.5
Side effects discussed with patients stating the use of oral contraceptives		
Weight gain	92	83.6
Breast tenderness	80	72.7
Headaches (migraine)	45	40.9
Increased risk of endometrial cancer	33	30.0
Increased risk of birth defects	18	16.4
Alopecia	13	11.8
Irregular menstrual cycle	5	4.5
Irregular bleeding	3	2.7
Altered libido	2	1.8
Hormonal imbalance	1	0.9
Advice to patients switching from emergency contraceptives to combined oral contraceptives		
Abstinence from sexual relationships for first few days of beginning the use of oral contraceptives	62	56.4
No need for backup contraceptives when commencing the use of combined oral contraceptives	43	39.1
Need for back up contraceptives for the duration of combined oral contraceptives use	5	4.5
Advice offered to patient concerning missed dose(s) of oral contraceptives		
Patient to use dose as soon as she remembers	39	35.5
Patient should not use double doses	36	32.7
Patient should use twice the dose the next day	11	10.0
Patient should start the cycle all over again	7	6.4
No idea	7	6.4

87 (79.1%) participants indicated pregnancy as the highest contraindication with patients on contraceptives. 39 (35.5%) participants advised patients to use a missed dose as soon as possible, while 36 (32.7%) participants indicated that the patient should not use twice the dose. 58 (52.7%) respondents knew there are other non-contraceptive indications of oral contraceptives; of these, 22 (42.3%) of them stated regulation of menstruation in patients with menstrual irregularities as the most common indication. The details can be found in **Table 4** and **Table 5**. There were multiple responses in some variables.

Association Between Socio-Demographic Characteristics of Participants, Knowledge on Oral Contraceptives, & Counselling Practices

27 (24.5%) of the participants had good, 41 (37.3%) moderate, while 42 (38.1%) poor counselling practices. There

Table 5. Investigation before dispensing oral contraceptives & contraindications

Variables	Frequency	Percentages
Contraindications of oral contraceptives discussed with patients		
Pregnancy	87	79.1
Family history of endometrial cancer	65	59.1
Cardiovascular diseases	47	42.7
Uncontrolled hypertension	46	41.8
Migraine without aura	41	37.3
Family history of breast cancer	51	46.4
Investigations that patients would undergo prior to initiation of oral contraceptives		
Pregnancy test	106	96.4
Blood pressure	58	52.7
Hematocrit test	16	14.5
HIV test	12	10.9
Body mass index	26	23.6

Table 6. Association between participants socio-demographic characteristics & counseling practices on use of oral contraceptives

Variables	Poor counseling practice (n=42)	Moderate counseling practice (n=41)	Good counseling practice (n=27)	Chi-square	p-value
Gender					
Male	26 (61.9)	23 (56.1)	14 (51.8)	0.589	0.443
Female	16 (38.1)	18 (43.9)	13 (48.2)		
Age group					
21-40	27 (88.0)	39 (95.1)	13 (81.5)	5.401	0.030*
>40	5 (12.0)	2 (4.9)	5 (18.5)		
Religion					
Christianity	35 (83.3)	33 (80.5)	23 (85.2)	0.151	0.697
Islam	7 (16.7)	8 (19.5)	4 (14.8)		
Educational qualification					
B. Pharm	38 (90.5)	35 (85.4)	19 (70.4)	5.503	0.030*
Additional qualification	4 (10.5)	6 (14.6)	8 (29.6)		
Years of community pharmacy practice					
<5	27 (64.3)	25 (61.0)	12 (44.4)	2.822	0.244*
5-10	12 (28.6)	12 (29.3)	12 (44.4)		
>10	3 (7.1)	4 (9.7)	3 (11.2)		
Training on family planning					
Yes	23 (54.8)	22 (53.7)	19 (70.4)	2.508	0.113
No	19 (45.2)	19 (46.3)	8 (29.6)		
Knowledge					
Poor knowledge	13 (30.9)	14 (34.1)	3 (11.1)	4.712	0.030*
Good knowledge	29 (69.1)	27 (65.9)	24 (88.9)		

Note. *Significant (p<0.05)

Table 7. Oral contraceptives & participants' perceived non-contraceptive indications

Variables	Frequency	Percentage
Are you aware of non-contraceptives use of oral contraceptives		
Yes	58	52.7
No	52	47.3
Perceived non-contraceptive benefits of oral contraception		
Regulation of menstruation in patients with menstrual irregularities	22	42.3
Promotes hormonal balance & prevents syndromes associated with hormonal imbalance	9	17.3
Prevention of ovarian/ breast cancer	7	13.5
Prevention of weight gain	9	17.3
Improvement in sexual function	5	9.6

was no significant association between gender and offering of good counselling practice (p=0.443), neither was religion or age significantly associated (p>0.05) with counselling practices.

Higher educational qualification of participants was not associated with their good counselling practices with significant numbers of participants with only B. Pharm degree having better counseling practices (p=0.03). The knowledge of participants on the use of oral contraceptives also significantly influenced their counselling practice (p<0.05). There was significant association (p=0.03) in the provision of good counselling among participants and good knowledge on oral contraceptives (**Table 6**).

Oral Contraceptives & Participants Perceived Non-Contraceptive Indications

Only 58 (52.7%) of the participants are aware of non-contraceptives indications of oral contraceptives of which majority (22, 43.3%) indicated regulation of menstruation in patients with menstrual irregularities as non-contraceptive indication (**Table 7**).

DISCUSSION

The important role of pharmacists in healthcare delivery and public health demands their adequate knowledge of contraceptives, and especially oral contraceptives. This is of importance because such knowledge is the basis of providing accurate and adequate counselling for patients. In this study, participants had good knowledge, and poor to moderate counselling practices on oral contraceptives.

Previous studies have reported good knowledge among pharmacists [24, 25]. In this study, there was no significant association between socio-demographics and additional degree in pharmacy or receiving of training on contraceptives on the participants' knowledge of oral contraceptives. A similar report was documented by [23] in a study in United Arab Emirates indicating that gender, marital status and previous education have no significant association on pharmacist's knowledge on oral contraceptives. However, it was reported that higher degree such as Doctor of Pharmacy influenced the knowledge scores of the pharmacist on oral contraceptives positively [26].

Generally, majority of the respondents had poor to moderate counselling practices towards patients in need of oral contraceptives as reported in some previous studies [6, 25]. It was indicated the counselling practices of pharmacists on use of oral contraceptives in the study as suboptimal [6]. There was no significant association between religion and higher level of education and counselling practices on use of oral contraceptives among pharmacist in this study. Similarly, there was no significant association between gender (being female) and counselling practices of the pharmacists, which contradicts reports in previous studies, where female pharmacists provided better counselling compared to their male counterparts [25, 26]. There was significant association between age and counselling practices, with respondents in their 20s and 30s providing better counselling compared to those above 40 years of age. This finding is similar to the report of [27] in South Korea among community pharmacists. Younger pharmacists may be providing better counselling possibly because they are still young in practice and could access information from different media more readily than the older pharmacists.

The exposure of participants in this study to training on family planning is not significantly associated to their counselling practices. This is contrary to [25], where community pharmacists in Lebanon with postgraduate oral contraceptive training provided better counselling compared to their counterparts. Furthermore, the knowledge of participants in this study on the use of oral contraceptives significantly influenced their counselling practice, which is similar to the report from a previous study [26]. This implies that the more informed a pharmacist is about contraceptives, the better the counselling practices he will engage in which would ultimately benefit the patients.

Several misconceptions about oral contraceptives were identified among the participants in this study. About two-third of participants wrongly reported that emergency contraceptives could lead to infertility as against the information of "no significant delay in conceiving on withdrawal of oral contraceptives" reported by [28].

Although majority of participants in this study reported that they offered counselling to patients on use of oral contraceptives, only about half of participants checked blood pressure history of patients, while only a few checked the patient's family history, and less than one quarter considered patient's BMI before dispensing oral contraceptives for use. According to [29], checking of the blood pressure (to ensure normotensive state), family history of cardiovascular disease, as well as patient's BMI to ensure patient is not overweight or obese before the commencement of the oral contraceptive is very important. It is therefore of concern in this study, where good number of participants hardly checked for these parameters before initiation of the therapy. Past studies have reported increase in the level of systolic and diastolic blood pressure in patient with long duration of use of oral contraceptive [30, 31]. Furthermore, the use of oral contraceptives has been reported to be less effective in patients with high BMI [32, 33].

Similarly, the counselling provided by participants about the concomitant use of antibiotics and COC is of concern. Almost half of participants did not know whether to recommend emergency contraceptives to patients on both COCs and antibiotics, while a good number indicated need to avoid co-administration of the oral contraceptives and antibiotics because of interactions and subsequent reduction in the effectiveness of COC. This finding is similar to the report of a study in Saudi Arabi, where 51.0% of the respondent pharmacists indicated that there was interaction between COC and antibiotics [24]. Although, several studies have shown that broad spectrum antibiotics except rifampin (which is a metabolizing enzyme inducer) affects the blood levels of COCs and thereby reducing the effectiveness [34], earlier studies have not reported interactions between antibiotics and oral contraceptive [35, 36]. Similarly, several guidelines are yet to state the need to specially handle women on COCs and on antibiotics [29, 37]. However, a recent study on database review of yellow cards in the United Kingdom reported unintended pregnancies associated with the combined use of non-enzyme-inducing antibiotics and hormonal contraceptives [38]. Therefore, further study on interactions of COCs and antibiotics is very crucial to enable healthcare providers give adequate counselling to patients.

Major side effects of oral contraceptives discussed with patients according to majority of the respondents in this study were weight gain, breast tenderness and headaches; and these are major side effects an oral contraceptive user may likely experience with commencement of the medication. This is similar to the reports from other studies among pharmacists in other part of the world [6, 23]. Furthermore, some participants in this study indicated increased risk of endometrial cancer as a side effect, which was wrongly discussed with patients. Previous studies have reported about significant reduction in risk of endometrial cancer with women on COCs [39, 40].

Over half of the respondents advised abstinence from sexual relationship for the first few days of switching from emergency contraceptive to COCs as recommended by [28] while about half of the respondents wrongly advised that there is no need for patients to use backup contraceptives when commencing the use of COCs; and less than 10% indicated need for backup contraceptive at commencement as recommended by [29].

Only a few of the participants advise their patients correctly concerning a missed dose of COCs by informing them to use the missed dose as soon as possible as indicated by [28]. In another study carried out by [6], a low percentage (7%) of respondents

could give correct advice to patient on a missed dose. A past study in Egypt reported good numbers of pharmacists gave adequate counsel on missed doses of oral contraceptives [26]. Probable reasons behind some of the misconceptions and wrong counselling could be lack of opportunities for continuous education on updates in contraceptive use, lack of training and willingness to undergo training, and outdated protocols as noted in previous study [23].

Limitations

The study was carried out among community pharmacists in Ibadan; however, the findings of this study cannot be generalized for the whole country due to the limited sample size. In addition, some pharmacists were not seen on two occasions (at least) when the researcher was at their premises to administer the questionnaire, and this further reduced the sample size. Despite the limitation, the study provided information on the knowledge and counselling practices of pharmacist in public setting and identifying need for continuous education to improve knowledge and practicing skills.

CONCLUSIONS

The majority of the participants had good knowledge of oral contraceptives, but their counselling practice was poor. Good knowledge was associated with good counselling practices. Possession of additional degree or training did not influence knowledge of participants on oral contraceptives and counselling. Younger pharmacists had better counselling practices compared to the older ones. There were several misconceptions about oral contraceptives among the pharmacists. Therefore, continuous education of pharmacists in community settings on public health matters, especially use of oral contraceptives and appropriate counselling is of great importance. Access to right continuous education will help to eliminate whatever misconceptions pharmacists, especially community pharmacists have generally about oral contraceptives. Effective and proper use of oral contraceptives would contribute to the reduction of the high rate of unwanted pregnancies, and its implications in Nigeria.

Author contributions: AEI: designed study, collected data, conducted statistical analysis, monitored study data collection's progress, & draft of manuscript; **OOA:** designed study, collected data, conducted statistical analysis, & development of manuscript; & **OTU:** data analysis, developed manuscript as well as correction & editing of article. All authors have agreed with the results and conclusions.

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