

Pharmacists' knowledge and interest in developing counseling skills relating to oral contraceptives

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Abstract *Background* Possessing correct therapeutic information on oral contraceptives is an important prerequisite for the provision of sound advice to women who are using these products. *Objectives* This study examines Egyptian pharmacists' knowledge of pharmacotherapeutic aspects of oral contraceptives as well as interest in developing skills in providing counseling on oral contraceptive pills. *Setting* Community pharmacies throughout Alexandria, Egypt. *Methods* A cross-sectional survey was self-administered by a random sample of community pharmacists in Alexandria, Egypt. Five multiple choice questions likely to arise when counseling women on oral contraceptives were constructed. Questions covered compatibility with breastfeeding, precautions, health risks and managing missed pills of oral contraceptives. Using ordered logistic regression, a model was estimated to predict pharmacists' interest in developing skills in providing counseling on oral contraceptives. *Main outcome measure* Pharmacists' aggregate scores for knowledge questions and pharmacists' interest in developing skills in providing counseling on oral contraceptive pills. *Results* Of the 181 approached pharmacists, 92 % participated. Twenty one pharmacists (13 %) did not know the correct answer to any question, 122 (73 %) answered one-two correctly, 23 (14 %) answered three-four correctly. No pharmacist answered all five questions correctly. For pharmacists' interest in developing skills in providing counseling on oral contraceptives, the percentage values for answers were: not interested at all (10.2 %), slightly interested (27.0 %), somewhat interested (23.4 %), interested (30.0 %) and extremely interested

(9.6 %). Pharmacists' interest in developing skills in providing counseling on oral contraceptives was significantly associated with the number of women who requested advice from the pharmacists on oral contraceptives (OR 1.54, CI 1.24–1.91). In terms of the learning method of preference, percentage values for answers were: attending a workshop (4 %), online course (18 %), publications distributed to pharmacy (44 %), other methods (1 %) and more than one method (23 %). Ten percent were not interested in developing their skills on oral contraceptives. *Conclusion* This study identifies considerable gaps among community pharmacists' knowledge of oral contraceptives. It also shows variation in willingness and choice of learning strategies among pharmacists to develop their skills in providing counseling on oral contraceptives.

Keywords Continuing education · Contraception · Egypt · Family planning · Oral contraceptives · Pharmacist · Pharmacy

Impact of findings on practice

- Continuing education activities on oral contraceptives should address existing gaps in pharmacists' knowledge especially topics related to common misconceptions, precautions, health risks and managing missed pills.
- Continuing education activities on oral contraceptives should be tailored according to pharmacists' preferences. Publications and online training geared toward this gap may be suitable for pharmacists who cannot attend a more time demanding workshop.
- Educational activities should target pharmacists whose advice is being frequently solicited by women on oral contraceptives to make sure they provide evidence based advice to their patrons.

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- Pharmacy schools should include current evidence based recommendations regarding family planning topics, a national priority, especially oral contraceptives in their curricula.

Introduction

Providing correct and complete counselling on the use of oral contraceptives (OCs) is central to securing the autonomy of women in child bearing age and has been proven to be a powerful tool of social change. In recent decades, Egypt, the most populous country in the Middle East and the third most populous country in Africa, has witnessed a considerable expansion of family planning use that was associated with an increased awareness of family planning methods [1].

Although not legally required to provide counselling, pharmacists in Egypt can be important sources of information for women who are considering using OCs. The Egyptian law classifies oral contraceptives as prescription medications. However, in Egypt as in many developing countries pharmacists do not adhere to the “prescription-only” laws. Most medications, with the exception of controlled drugs, are readily available without a prescription. Thus, Egyptian pharmacists routinely provide oral contraceptives in response to a patron’s request without demanding a doctor’s prescription.

A pharmacist who lacks pharmacotherapeutic knowledge of OCs would either miss an opportunity to educate women who obtain their OCs from pharmacies or provide erroneous information to potential users. The 2014 Egypt Demographic and Health Survey (EDHS), the latest in a series of nationally representative population and health surveys conducted in Egypt, shows that pharmacies were the principal source for OCs [1]. However, it also shows that women obtaining their OCs from pharmacies were much less likely than other users to have received information, especially about side effects, necessary to make an informed choice [1].

Most of the literature focused on pharmacists’ knowledge of emergency contraception [2–9], with a few studies examining pharmacists’ community pharmacists’ knowledge of OCs [7, 10, 11]. While the use of simulated clients provides a valuable reference on the pharmacist behavior, it does not provide information on whether the lack of counselling is due to a lack of knowledge or due other reasons related to the work system within the pharmacy [12]. Such data are particularly important to inform future interventions examining how best to prepare pharmacists in providing counselling for women on family planning techniques.

Aim of the study

This is part of a larger project examining pharmacist knowledge, attitudes and practices regarding OCs. The first study aimed to predict Egyptian community pharmacists’ counselling on oral contraceptives while utilizing a theoretical framework guided by the Theory of Planned Behavior. The aim of this study is to complement the earlier study though identifying Egyptian community pharmacists’ knowledge of pharmacotherapeutic aspects of OCs and examining pharmacists’ interest in developing OC counselling skills along with their learning method of preference on the topic.

Ethical approval

The High Institute of Public Health Institutional Review Board at Alexandria University, Alexandria, Egypt approved the study.

Methods

Sample

This study employed a cross-sectional, descriptive survey design. The sampling frame consisted of an updated list of 3350 community pharmacies provided by the Egyptian Ministry of Health (MOH). Sample size needed to answer another of the larger project’s research questions relating to pharmacists’ behavior in providing counselling to women on OCs was used. Substantial planning went into identifying and enrolling the sample. Various possibilities were taken into account including potential for pharmacist refusals, pharmacies that closed after the MOH list was compiled, pharmacies that could not be located, and absenteeism-pharmacies where a non-pharmacist served patients regularly as found from a recent study carried out on Alexandria community pharmacists [13].

Of the 3350 community pharmacies in our sampling frame, 230 pharmacies were selected using a random number generator. One pharmacist per community pharmacy was asked to complete the survey on his/her own. When more than one pharmacist was in the pharmacy at the time of the visit, data collectors asked the staff pharmacist who was about to interact with the next patient to fill the survey. Pharmacy students, interns and non-pharmacist attendants were excluded.

Study variables

Pharmacist knowledge was studied regarding key health issues likely to arise when counselling women dispensing

contraceptives at a community pharmacy. All knowledge items were based on the first two chapters in *Family Planning: A Global Handbook for Providers* [14]. In addition to consulting the chapters in the handbook addressing combined oral contraceptives and progestin only pills, the author consulted the 2014 DHS for potential gaps in Egyptian women's knowledge identified from this recent survey [1]. Moreover, seven semi-structured interviews were conducted with pharmacists working at community pharmacies in Egypt. These interviews solicited pharmacists' feedback into the kinds of situations and questions they encounter when discussing OCs with pharmacy patrons. The interviews started by asking pharmacists to think of the last few times they dispensed an OC or received a question related to contraception. In addition to an opening grand tour question, specific questions probed for further information depending on the topic that the pharmacist mentioned. The length of the interviews, which were conducted in November 2014, averaged from 30 to 40 min. Following this process, five multiple choice questions covering *compatibility with breastfeeding, precautions, health risks and managing missed pills of OCs* were constructed. Pharmacists were instructed to pick one correct answer for each question. Possible knowledge scores ranged from zero to five.

In addition to the knowledge items, pharmacists were asked about their interest in developing OC counselling skills, the number of women who solicited advice from pharmacists on OCs, the adequacy of time available to counsel women on OCs, the importance of profit from dispensing OCs on pharmacy revenue. Background data were collected on demographic variables such as pharmacist age, gender, and marital status as well as educational qualification and the average number of hours of work in the pharmacy every day.

Pretesting measures

The survey was prepared in Arabic, the native language of all Egyptian pharmacists. The primary researcher conducted standard think-aloud cognitive interviewing technique of all questionnaire items with eight community pharmacists from Alexandria, Egypt. "Think-aloud" interviewing encourages participants to verbalize their thoughts while responding to the survey questions [15]. The interviewer reads each question to the subject, and notes the processes that the subject uses in arriving at an answer to the question. Following slight revisions, pre-testing was done in nine community pharmacies in Alexandria. The respondents were asked to complete the questionnaire and then give comments and feedback on the relevance and clarity of items. These steps were used to establish face validity of the instrument.

Data collector training

Data collectors were instructed to adhere to the agreed upon introductory script and maintain neutrality at all times regarding all topics covered in the questionnaire in order not to influence pharmacists' responses. They were also instructed not to answer respondents' questions regarding the meaning of survey questions to ensure consistency. Role-playing was used in training the data collectors before the start of the survey.

Data collection

Five data collectors visited sample pharmacies, enrolled pharmacists, elicited Institutional Review Board consent following approved procedures, and delivered and retrieved the survey forms. Data collectors presented pharmacists with a support letter from the Dean of the High Institute of Public Health in Alexandria University that validated the identity of the primary researcher, explained the purpose of the study and encouraged cooperation from pharmacists. The pharmacy was visited up to two additional times to make sure the pharmacist was located. If the pharmacist was not found after a total of three visits, he/she was considered absent. Data were collected in the period from the December 2014 to January 2015.

Data analysis

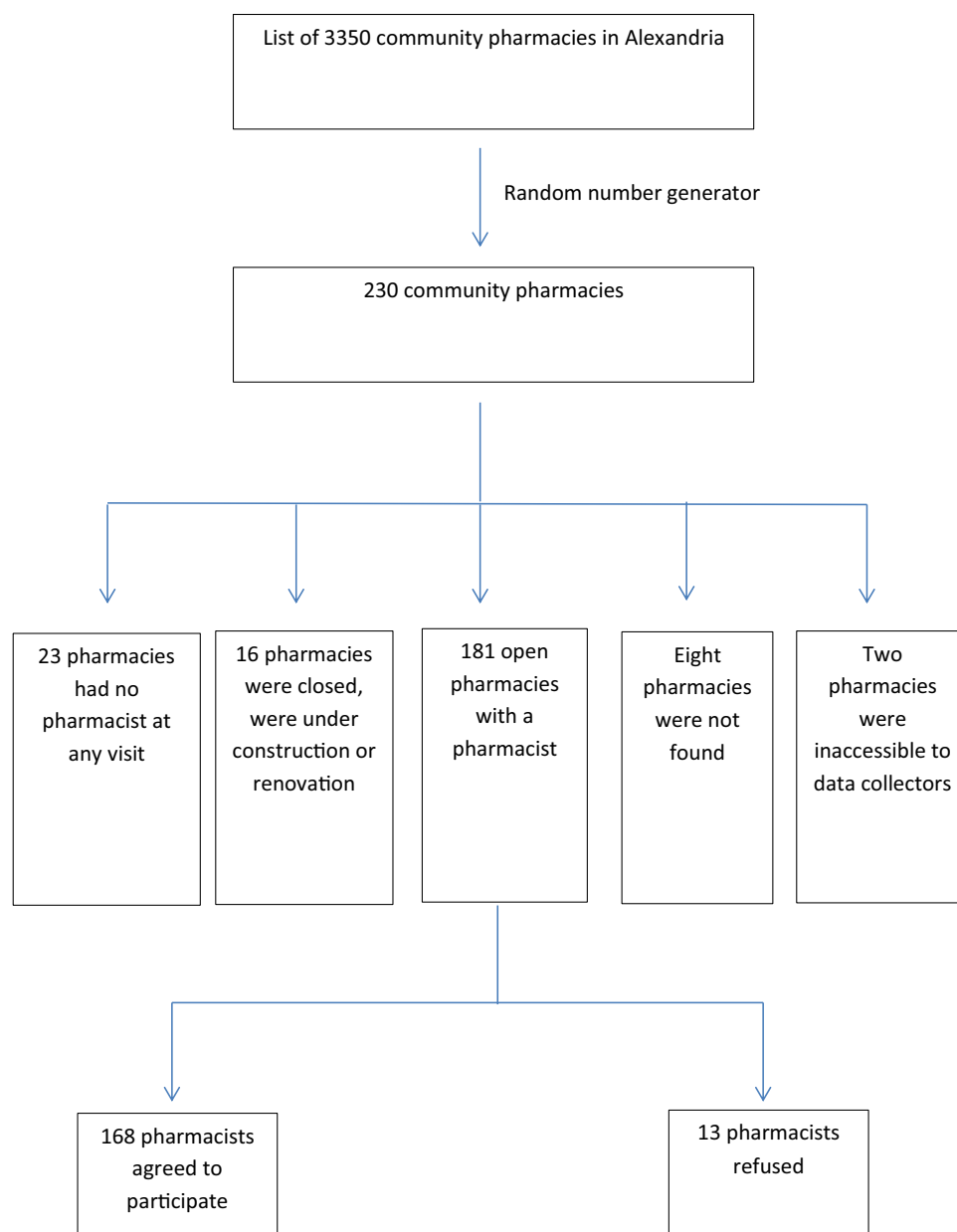
Data were analyzed using STATA (Version 12).

Descriptive and bivariate analyses

Descriptive statistics were used to describe the characteristics of the sample, knowledge scores and method of preference for developing OC counselling skills. We performed a descriptive analysis to generate frequencies, as well as means, ranges or standard deviations as relevant. Possible aggregate scores for pharmacists' knowledge of all five questions ranged from zero to five. Spearman's rank correlation was used to examine the relationship between the knowledge and interest key variables.

Exploratory analyses of predictors of pharmacists interest in developing OC counselling skills

Ordered logistic regression was used to examine the association of pharmacists' interest in developing OC counselling skills (dependent variable) with number of women who requested advice on any topic related to OCs, perceived adequacy of time available to counsel women on OCs, perceived importance of profit from dispensing OCs

Fig. 1 Sample identification and response

on pharmacy revenue, pharmacists' gender, age and educational qualification (independent variables).

refused. Of the 168 returned survey forms, only one was not usable (Fig. 1).

Results

Sample identification and response

Of the 230 pharmacies in our sample, 23 had no pharmacist at any time, 16 were closed, eight were not found, two were inaccessible to data collectors, and 181 were open with a pharmacist on duty at some point in the day. Of these 181 pharmacists, 168 (93 %) agreed to participate and 13 (7 %)

Sample demographics

An analysis of sample demographics and descriptive statistics is presented in Table 1. Most respondents were males (72 %) and married (65 %). Pharmacists' mean age was 37 (SD = 13) and ranged from 22 to 74 years. On average, pharmacists worked 9 (SD = 2) h per day. Most pharmacists had a bachelor of pharmaceutical science degree (88 %) while 12 % had a PharmD degree.

Table 1 Pharmacist characteristics and descriptive statistics (n = 167)

Pharmacist characteristics	Results
Gender [n (%)]	
Male	121 (72.46)
Female	46 (27.54)
Marital status [n (%)]	
Single	59 (35.33)
Married	108 (64.67)
Highest educational qualification [n (%)]	
Bachelor of pharmaceutical science	147 (88.02)
Doctor of pharmacy	20 (11.98)
Average number of hours worked every day (h)	
Range	3–16
Mean (SD)	8.66 (\pm 2.39)
Age (years)	
Range	22–74
Mean (SD)	37.29 (\pm 12.5)

Pharmacists' response to individual knowledge questions

Table 2 presents the questions asked with the proportion of pharmacists who identified the correct answer for each question. While nearly three quarters of the pharmacists knew the correct answer to the question relating to the compatibility of pills with breastfeeding (73 %), less than one third of pharmacists knew the correct answer to each of the other questions.

Pharmacists' knowledge scores

Figure 2 shows the percentage of pharmacists who identified the correct answer to the various questions. The mean knowledge score for all respondents was 1.49 (SD = 0.98). The mean knowledge score for Bachelor of Pharmaceutical Science degree holders was 1.44 (SD = 0.89) while the mean knowledge score for PharmD graduates was 1.90 (SD = 1.41). Twenty one pharmacists (13 %) did not know the correct answer to any question, 122 (73 %) answered one-two questions correctly, while 23 (14 %) answered three-four correctly. No pharmacist answered all five questions correctly.

Interest in developing OC counselling skills

Pharmacists' responses to items addressing interest in developing OC counselling skills, importance of profit from dispensing OCs on pharmacy revenue, adequacy of time available to counsel women on OCs and number of women who solicited pharmacist's advice on any topic related to OCs in the past five encounters are presented in Table 3. The

interest in developing OC counselling skills was associated with pharmacists' knowledge score ($r = 0.19$; $P < 0.05$).

Table 4 presents the results of an ordered logistic regression model predicting pharmacists' interest in developing OC counselling skills. This was only significantly associated with the number of women who requested advice from the pharmacists on OCs (OR 1.54, CI 1.24–1.91).

Method of preference for developing OC counselling skills

In terms of the learning method of preference, the percentage values for the answer categories were: attending a workshop (4 %), online course (18 %), publications distributed to pharmacy (44 %), other methods (1 %) and more than one method (23 %). Ten percent were not interested in learning about OCs.

Discussion

Community pharmacists' knowledge of pharmacotherapeutic aspects of OCs is an important prerequisite for the provision of correct and adequate information for women obtaining this method of family planning from community pharmacies. This study identifies a huge gap between the knowledge that community pharmacists possessed and the knowledge required to provide sound medical advice to women using OCs. It also shows variation in willingness and choice of learning strategies among pharmacists to develop their skills in providing counselling on OCs.

Overall, pharmacists performed best with the item addressing the compatibility of pills with breastfeeding. A pharmacist may identify the correct answer to this question through recognizing the names of products presented in the answer choices. It is possible that some pharmacists may have answered this question correctly without knowing the scientific basis behind these choices. The 2014 DHS shows that among the breastfeeding mothers, only 38 percent were employing brands of pills regarded as suitable for breastfeeding users [1]. Earlier research on OCs and emergency contraceptives has indicated that pharmacists may not always make use of their knowledge in practice [7, 8]. This indicates that, in addition to the knowledge gap among pharmacists, a gap may exist in communicating with women on this specific topic among pharmacists who know this piece of information but were unable to deliver it to women obtaining OCs. Thus, educating pharmacists on evidence based recommendations relevant to OCs should be supplemented with other interventions that would facilitate pharmacists' delivery of cognitive services [16].

By far, the second most correctly answered question had to do with the incompatibility of combined OCs with high

Table 2 Oral Contraceptive knowledge questions with the proportion of pharmacists who identified the correct answer for each question (N = 166)

Question	Correct answer n (%)	Incorrect answer A n (%)	Incorrect answer B n (%)	Incorrect answer C n (%)	Incorrect answer D n (%)
Which one of the following statements about OCs and breast feeding is true?	121 (72.9)	16 (9.6)	12 (7.2)	–	17 (10.2)
It is better to use pills that only have progestin during breast feeding such as Exluton or Microlut	It is better to use combined pills containing both progestin and estrogen during breast feeding such as Yasmin or CycloPrognova	A woman cannot use any form of OCs during breastfeeding	Women who have or have had anemia in the past	Women who have varicose veins	I do not know or selected more than one answer
It is unsafe for combined OCs to be used with...	Women with high blood pressure	Women who have not had children before	Women who have or have had anemia in the past	Women who have varicose veins	I do not know or selected more than one answer
Advice provided to a woman who missed 3 or more combined oral contraceptive pills in the second week includes...	Using a backup method for the next 7 days	Using a backup method for the next 4 days	Using a backup method for the next 5 days	Using a backup method for the next 6 days	I do not know or selected more than one answer
Combined OCs can cause...	Deep vein thrombosis	Endometrial cancer	Ovarian cancer	Iron-deficiency anemia	I do not know or selected more than one answer
Which of the following statements on OCs is true?	Can cause a heart attack in extremely rare circumstances	Can build up in a woman's body in extremely rare circumstances	Can make women infertile in extremely rare circumstances	Can cause birth defects or multiple births in extremely rare circumstances	I do not know or selected more than one answer

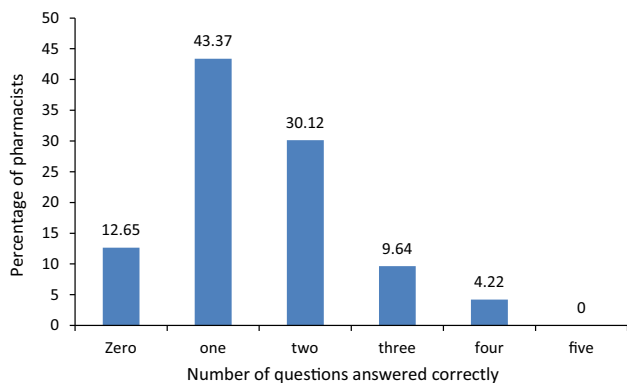


Fig. 2 Percentage of pharmacists answering knowledge questions about oral contraceptives correctly (N = 166)

blood pressure, a disease that pharmacists in Alexandria deal with regularly [17]. It is likely that this has provided pharmacists with multiple opportunities to learn about the unsuitability of combined OCs with high blood pressure.

Nearly one in four pharmacists answered the question that addressed managing missed pills correctly. This was slightly lower than the percentage found by Sattari et al. [10], who found that one-third of pharmacists knew what action users should take if they forgot to take two or more pills of monophasic OCs. Pharmacists answered most poorly with two questions addressing health risks of using OCs. This is particularly alarming since health concerns were a leading cause for women to stop using OCs in Egypt and other developing countries [1, 18].

Pharmacists’ interest in developing skills of developing OC counselling skills was only significantly associated with the number of women who requested advice from pharmacists on OCs. Pharmacists, as other health professionals, would like to provide accurate responses to their patrons. Being able to respond to such inquiries would increase their job satisfaction and help them appear competent in front of pharmacy patrons. On the other hand, it was interesting that a number of variables such as gender

Table 3 Names, items and response categories for the dependent variable (COC) and key independent variables used (N = 167)

Question	Answer choice A n (%)	Answer choice B n (%)	Answer choice C n (%)	Answer choice D n (%)	Answer choice E n (%)	Answer choice F n (%)
Interest in developing skills of providing counseling on OCs	Not interested at all 17 (10.2)	Slightly interested 45 (27.0)	Somewhat interested 39 (23.4)	Interested 50 (30.0)	Extremely interested 16 (9.6)	–
How adequate is the time available to counsel women on OCs?	Not adequate at all 37 (22.2)	Slightly adequate 44 (26.4)	Somewhat adequate 42 (25.2)	Adequate 39 (23.4)	Extremely adequate 5 (3.0)	–
How important is profit from dispensing OCs on pharmacy revenue?	Not important at all 50 (29.9)	Slightly important 79 (47.3)	Somewhat important 25 (15.0)	Important 12 (7.2)	Extremely important 1 (0.6)	–
Among the last five women whom you dispensed OCs to, how many women have solicited your advice on any topics related to OCs? (mean = 1.90, SD = 1.46, 95 % CI 1.68–2.12)	None 32 (19.2)	One woman 41 (24.6)	Two women 43 (25.8)	Three women 26 (15.6)	Four women 13 (7.8)	Five women 12 (7.2)

Table 4 Ordered logistic regression predicting pharmacists’ interest in developing skills in providing counseling on OCs (N = 167)

Predictor ^a	OR	SE	Z	P	95 % CI
Number of women who requested advice on OCs	1.54	0.17	3.94	0.001	1.24–1.91
Adequacy of time available to counsel women on OCs	1.11	0.16	0.73	0.467	0.83–1.48
Importance of profit from dispensing OCs on pharmacy revenue	1.30	0.23	1.52	0.128	0.93–1.83
Age	1.01	0.01	0.84	0.399	0.99–1.03
Male	1.45	0.48	1.13	0.258	0.76–2.77
PharmD graduate	2.02	0.89	1.59	0.112	0.85–4.79

OR odds ratio, SE standard error, Z Z-values, P 2-tailed P values, CI confidence interval, LR chi2(6) = 29.05, Prob > chi2 = 0.0001, Pseudo R² = 0.0575

^a The referent categories were as follows: female gender and Bachelor of Pharmaceutical Science

and age of the pharmacist were not associated with their interest in developing OC counselling skills. One might have suspected that female pharmacists would be more eager to learn more about the topic; this, however, was not the case. Younger age was not associated with pharmacists' interest although it has been shown to be associated with interest in learning on other topics among pharmacists in Alexandria [19]. The association between knowledge and interest shows that those who are interested in OCs have better knowledge of the topic probably because they are more active in seeking knowledge on OCs and their use.

Preparing pharmacists to provide women with correct and adequate information on contraception is an international issue that is important both to developing and developed countries [20]. A study on members of the American Pharmacists Association indicated that respondents were comfortable and interested in providing direct access to hormonal contraception in pharmacies [21]. Another study showed increased US pharmacy staff desire to make contraception topic a priority [22]. In light of the ongoing discussion on the new laws that allow pharmacists to prescribe OCs, there is a question as to how far the findings of this study can apply to other countries. Another question is whether contraception is covered in sufficient depth in places where pharmacy schools provide students with a more thorough training in pharmacotherapy.

Covering topics addressing contraception in the curricula of pharmacy schools should be supplemented by interventions that assist practicing pharmacists in providing proper counselling on the topic. In this study, having publications distributed to pharmacies was the mostly widely selected learning method while attending a workshop was the least preferred option by pharmacists. It is likely that pharmacists' busy schedules have contributed to this. Hence, publications and online training geared toward this gap may be suitable for pharmacists who cannot attend a more time demanding workshop. This is particularly important in areas where women solicit pharmacists' advice on OCs.

Strengths and limitations

The probability sample and high response rate reduce nonresponse bias and improve the generalizability of the study. The self-administered questionnaire was provided to pharmacists in their native language with no interference from the data collector improving the comprehension of questionnaire items and the quality of data.

One limitation of this project merits discussion. Due to busy pharmacists' schedules, the survey used only five questions to examine pharmacists' knowledge of pharmacotherapeutic aspects of OCs. A more comprehensive set of

questions may be useful in examining particular knowledge gaps among pharmacists.

Conclusion

This study identifies considerable gaps among community pharmacists' knowledge of pharmacotherapeutic aspects of OCs. It also shows variation in willingness and choice of learning strategies among pharmacists to develop their skills in providing counselling on OCs.

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