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Didactic Lecture Versus Interactive Workshop for Continuing Pharmacy Education on Reproductive Health: A Randomized Controlled Trial

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Abstract

Pharmacists are routinely providing reproductive health counseling in community pharmacies, but studies have revealed significant deficits in their competencies. Therefore, continuing pharmacy education (CPE) could be utilized as a valuable modality to upgrade pharmacists' capabilities. A randomized controlled trial was designed to compare the efficacy of CPE meetings (lecture based vs. workshop based) on contraception and male sexual dysfunctions. Sixty pharmacists were recruited for each CPE meeting. Small group training using simulated patients was employed in the workshop-based CPE. Study outcomes were declarative/procedural knowledge, attitudes, and satisfaction of the participants. Data were collected pre-CPE, post-CPE, and 2 months afterward and were analyzed using repeated measure analysis of variance and Mann–Whitney *U* test. Results showed that lecture-based CPE was more successful in improving pharmacists' knowledge post-CPE ($p < .001$). In contrast, a significant decrease was observed in the lecture-based group at follow-up ($p = .002$), whereas the workshop-based group maintained their knowledge over time ($p = 1.00$). Knowledge scores of both groups were significantly higher at follow-up in comparison with pre-CPE ($p < .01$). No significant differences were observed regarding satisfaction and attitudes scores between groups. In conclusion, an interactive workshop might not be superior to lecture-based training for improving pharmacists' knowledge and attitudes in a 1-day CPE meeting.

Keywords

pharmacist, reproductive health, continuing pharmacy education, didactic lecture, small group training, knowledge, attitude, satisfaction

Introduction

Currently, pharmacists in community pharmacies have become involved in public health programs such as smoke cessation, weight management, and reproductive health (RH) services (Smith, 2009). Regarding RH, community pharmacists may frequently encounter counseling requests about contraception (particularly emergency contraception) and male sexual dysfunctions (premature ejaculation and erectile dysfunction) which require vigilant evaluation, management, or referral (Gale & Watson, 2011). Pharmacists' role in providing emergency contraception services has been investigated more extensively, as pharmacist-only or over-the-counter products are available in many countries (Anderson & Blenkinsopp, 2006). On the

contrary, little evidence exists on pharmacists' professional role in providing evidence-based care for sexual dysfunctions (Symonds et al., 2011), although patients frequently consult pharmacists about such issues (Martín Morales et al., 2010).

In spite of pharmacists' aforementioned roles, several studies have shown a relative lack of appropriate knowledge, attitudes, or skills which may affect their providing RH counseling (Borrego et al., 2006; Gale & Watson, 2011). Thus, continuing pharmacy education (CPE) could be utilized as a valuable modality to enhance pharmacists' competencies for providing RH services. CPE is mandatory in many countries including Iran, and formal meetings and conferences are the most common types of CPE (Sarayani, Rashidian, Gholami, Torkamandi, & Javadi, 2012). The educational content in such meetings are usually delivered in form of didactic lectures that have been shown not to be an effective method in improving participants' learning outcomes and practice behavior (Forsetlund et al., 2009). Moreover, a recent study showed that Iranian pharmacists who had previous exposure to formal CPE meetings on emergency contraception were not more knowledgeable than others who were not exposed to the meetings (Mostafavi, Sabzghabaee, Mirmoghtadaee, & Hoseini-Biuki, 2011). Literature shows that sophisticated, comprehensive, and long-term CPE programs are capable of improving health care providers' competencies and practice (Leikola et al., 2009). Nevertheless, short-term CPE meetings remain as one of the few available opportunities for continuing professional development in many resource-limited settings, while little evidence exists on effective strategies to enhance the learning and behavioral outcomes (Forsetlund et al., 2009).

In the present study, a randomized controlled trial was designed to compare the efficacy of two types of CPE meetings (didactic lecture vs. small group training utilizing simulated patients [SP]) on selected RH topics. The CPE outcomes were assessed based on Moore, Green, and Gallis (2009) framework, that is, Level 2 (participants' satisfaction) and Level 3 (learning). Participants' attitudes toward RH and their role in providing the services were also evaluated as an essential surrogate of behavior change (Fabrigar, Petty, Smith, & Crites, 2006).

Method

Study Design

This study was a two-armed, randomized, controlled trial to compare the effect of 1-day CPE meetings on contraception, premature ejaculation, and

erectile dysfunction. The study was approved by the Faculty of Pharmacy, Tehran University of Medical Sciences. The CPE meetings were conducted on two separate days at the Iranian Society of Clinical Pharmacists (ISCP), Tehran, Iran on September 2011.

Study Participants

Community pharmacists usually register for CPE at ISCP. However, for the purpose of the study, cell phone text messages were used to invite participants. The phone numbers were randomly selected from an ISCP database containing over 5,000 records. Volunteered pharmacists aged 25–70 were included in the study. Participants who did not live in or near Tehran (the city in which the study was conducted) or reported to work less than 4 hr per day (one working shift) in a community pharmacy were excluded. Using random number generator software, a coded table was prepared by the research team and the staff at ISCP who was blind to the instructional method of the meetings assigned pharmacists to one of them upon registration. The participants of each meeting were blind to the instructional method until they attended the meeting. A certificate of CPE credit points were offered to them at the end of the study.

Sample size was calculated based on the assumptions of a moderate effect size as observed in similar studies (Fordis et al., 2005; Sarayani et al., 2012), a correlation among repeated measurements of 0.3, and a power of 80% which resulted in a number of 29 participants in each group. To account for the high rate of loss to follow-up in educational studies, 60 pharmacists were recruited for each CPE meeting.

Educational Content

To address the principles of adult learning (Namara, Duncan, McDowell, & Marriott, 2009), a qualitative educational need assessment was performed to reveal pharmacists' perceived needs about the selected RH topics. In this phase of the study, unstructured interviews with 12 community pharmacists were done. The interviews were recorded, transcribed, and analyzed thematically. Main themes were extracted and the instructors were informed prior to developing the educational content. The learning objectives of the CPE included definitions of contraception and male sexual dysfunction, rationale of pharmacotherapy, herbal therapeutics/dietary supplements, and principles of counseling methods. The educational content was derived from the following sources: *World Health Organization Guide for Emergency Contraception* (World Health Organization, 2012), Contraception chapter of the

Pharmacotherapy: A Pathophysiologic Approach text book (Lee, 2011), and *Clinical Guidelines on the Management of Erectile Dysfunction and Premature Ejaculation* (American Urological Association, 2011).

Instructional Methods

Lecture-Based CPE. For the control group, two lecture-based sessions were designed and delivered by two clinical pharmacists who were faculty members of Tehran University of Medical Sciences. The CPE was held at a conference hall (with a capacity of 100 participants) and PowerPoint presentations were employed for both sessions. The training time was approximately 1.5 hr for each session followed by 20 min of questions and answers period. A short coffee break separated the sessions.

Workshop-Based CPE. For the intervention group, three scenarios were developed based on the educational content. Each of the scenarios was dedicated to one of the selected RH topics. Three PharmD students, who had previous experience with role-playing, were trained to act as SP. On the CPE day, participants were randomly divided into three small groups. Each of them attended a separate classroom that was supplied with a round table to ensure face-to-face contact of the participants. A facilitator, who was a senior clinical pharmacy resident, was assigned to each classroom in order to guide the group toward the instructional objectives. Each of the SPs presented the scenario to all three small groups. The facilitators started counseling with the SPs and encouraged participants to contribute. They also tried to employ the ''Brain Storming Technique'' (Newble & Cannon, 2004) by asking each of the participants to present their ideas on every part of the scenario. A whiteboard was available for writing the points mentioned by the participants. After the whole scenario was presented by the SPs, the facilitators summarized the scenario and elaborated on the topic if any parts of the educational content were not delivered during the SP presentation. The two faculty members, who delivered the lectures in the control group, supervised the whole scenario development process, SP training sessions, and the CPE meeting. The CPE duration was approximately 3 hr.

Study Outcomes

Study outcomes were evaluated based on Moore, Green, and Gallis (2009) framework proposed for the outcomes of continuing medical education (Moore, Green, & Gallis, 2009).

Satisfaction (Level 2). A standard satisfaction assessment questionnaire that is developed by the Ministry of Health and Medical Education, Office of Continuing Education was used to evaluate satisfaction (Ministry of Health, 1997). This tool is used for all continuing medical education programs in the country and evaluates satisfaction of participants with a variety of aspects including educational content, instructional design, and organizational issues. We used a brief version of the questionnaire which consisted of five Likert-type items (5-points scaled/rated as *very satisfied* to *very unsatisfied*).

Learning (Level 3). A questionnaire was developed based on the educational content of the CPE to measure the learning outcome. Learning (knowledge) consists of two constructs including declarative knowledge (Level 3A) and procedural knowledge (Level 3B). Twenty-three multiple-choice questions (23 points) and two case vignettes (11 points) were used to assess the knowledge constructs, respectively. The knowledge scores of participants were calculated as percentage of correct responses. The content validity of the questionnaire was evaluated by two clinical pharmacy faculty members who were not involved in the CPE meetings. The face validity of the questionnaire was assessed by two of the authors. This outcome was considered as the primary outcome of the study.

Attitudes. Although the CPE objectives were generally aimed at enhancing knowledge, we expected improvements of attitude-relevant knowledge to change participants' attitudes (Fabrigar et al., 2006). Therefore, in addition to the aforementioned outcomes, 14 Likert-type items (5-point scale, *strongly agree* to *strongly disagree*) were designed to measure attitudes. To evaluate the reliability of the scale, a pilot test was carried out on 16 community pharmacists who did not participate in the CPE meetings. Three items were removed in order to reach a Cronbach's α measure of .72. Each item was scored a maximum of 3 points if the respondent had marked either of the desired options (*strongly agree* or *agree/strongly disagree or disagree*) and the total score of the scale was 33.

Data Collection

Data were collected using paper-based questionnaires which consisted of three parts including demographic characteristics (age, gender, years since graduation, previous exposure to topics), knowledge, and attitudes sections. The lecturers and small group facilitators were blind to the content of the

questionnaire. Data were collected on three time points: immediately before CPE, immediately after CPE, and 2 months after CPE. A courier was employed to collect the follow-up questionnaires. An appointment was set with each participant to receive the questionnaire and the courier brought back the completed forms. Satisfaction assessment was performed at the end of each CPE meeting. Pharmacists were asked to answer all questions to the best of their knowledge as no negative points were calculated for wrong responses. If participants did not answer at least 70% of the multiple-choice questions, they were considered as none respondent and were excluded from the study.

Statistical Analysis

Descriptive statistics were applied to explore the data. Demographic characteristics were analyzed using independent sample *t*-test and Pearson's chi-square test. Repeated measure analysis of variance (RM-ANOVA) was used to analyze knowledge scores. Data were subjected to 2×3 RM-ANOVA test with one between-subject factor (study group) and one within-subject factor (measurement time point). Age and gender were included in the analysis as probable covariates. Attitudes were analyzed using Mann–Whitney *U* test. p Value $\leq .05$ was considered as statistically significant.

Results

One hundred and twenty pharmacists were registered for the CPE meetings. Of them, 51 and 47 participants attended the lecture-based and workshop-based CPE, respectively. At the end of the study, data from 71 pharmacists, who had participated in all the three measurement time points, entered the analysis phase (36 of the lecture-based group and 35 of the workshop-based group participants). Pharmacists' characteristics are summarized in Table 1. Mean age of the CPE participants was 43.5 ± 10.9 and the median of years since graduation was 17. Approximately half of them reported to have no previous exposure to the RH topics.

Satisfaction

Both groups were equally satisfied with the educational content as "complying with their background information," "providing up-to-date knowledge," and "fulfilling their professional requirements" ($p = .79$, .35, and

Table 1. Demographic Characteristics.

	Lecture-based CPE ($n = 36$)	Workshop-based CPE ($n = 35$)	p Value
Age	43.5 ± 10.9	47.4 ± 12.3	.17
Gender (female)	19 (52.8)[a]	16 (45.7)	.63
Year since graduation[b]	16.5	18.0	.05
Previous exposure to the topics			
Sexual dysfunction			
Undergraduate education	3 (8.3)	3 (8.5)	1.00
Continuing education	9 (25.0)	8 (22.8)	1.00
Self-study	4 (11.1)	10 (28.6)	.08
No training	21 (58.3)	21 (60.0)	1.00
Oral contraception			
Undergraduate education	15 (41.6)	11 (31.4)	.46
Continuing education	7 (19.4)	13 (37.1)	.11
Self-study	6 (16.6)	12 (34.3)	.10
No training	14 (38.8)	13 (37.1)	1.00
Emergency contraception			
Undergraduate education	12 (33.3)	4 (11.4)	.05
Continuing education	6 (16.6)	9 (25.7)	.40
Self-study	9 (25.0)	8 (22.8)	1.00
No training	19 (52.7)	16 (45.7)	.64

Note. CPE = continuing pharmacy education.
[a]Numbers in parentheses are reported as percentage.
[b]Median of year since graduation is reported due to violation of normality assumption.

.28, respectively). Participants of the workshop-based CPE were more satisfied with the interactivity of the session; however, the difference was not significant ($p = .06$). In both groups, pharmacists rated their "interest for further training" similarly ($p = .81$).

Knowledge

The results of the RM-ANOVA test revealed a significant interaction between groups and time points ($p < .001$, partial $\eta^2 = 0.16$, observed power = 0.99). Tests of within-subjects contrasts showed significant differences between groups: pre-CPE versus post-CPE ($p < .001$, partial $\eta^2 = 0.29$) and post-CPE versus follow-up ($p = .02$, partial $\eta^2 = 0.07$). The trend of knowledge scores over time is illustrated in Figure 1.

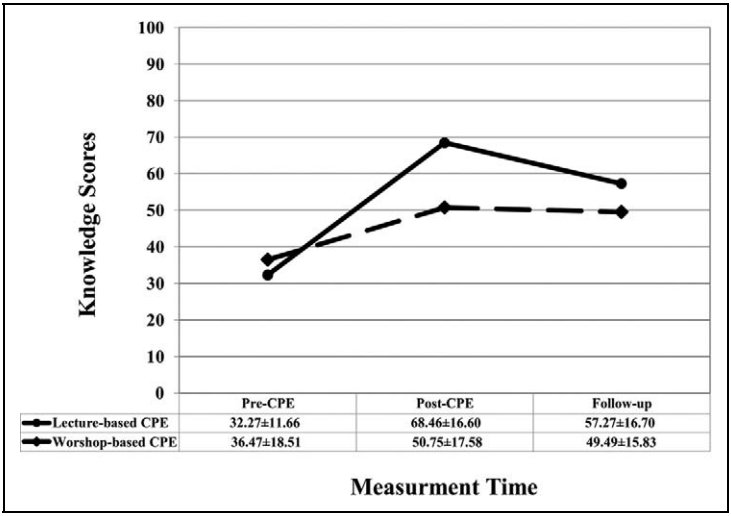

Figure 1. Knowledge scores are calculated as percentage of correct response to knowledge items in the questionnaire. Data were collected on three measurement times: immediately before (pre-CPE), immediately after (post-CPE), and 2 months after (follow-up) CPE. The results of the repeated measure analysis of variance revealed a significant interaction between groups and time points ($p < .001$). Tests of within-subjects contrasts showed significant differences between groups: pre-CPE versus post-CPE ($p < .001$) and post-CPE versus follow-up ($p = .02$). CPE = continuing pharmacy education.

Knowledge scores were not significantly different between groups immediately before CPE ($p = .2$). However, the lecture-based group scored significantly higher than the workshop-based group immediately after CPE ($p < .001$). This finding suggests that the lecture-based CPE was more successful in improving pharmacists' knowledge during the CPE meeting. At the follow-up, between-group comparisons revealed a significant difference ($p = .05$) in favor of the lecture-based group; however, the magnitude of difference was small (Figure 1).

Within-group comparisons showed that the scores improved significantly from immediately before CPE to immediately after CPE in both groups ($p < .005$). At follow-up, the scores were significantly higher than immediately before CPE in both groups ($p < .01$). In contrast, a significant decrease was observed in the lecture-based group from immediately after CPE to the follow-up ($p = .007$), while the workshop-based group maintained their knowledge over time ($p = 1.00$). This finding implies that the

higher knowledge level immediately after CPE in the lecture-based group was deteriorated over 2 months. On the contrary, in the workshop-based group, knowledge was maintained during the follow-up period although the scores were significantly lower than the lecture-based group immediately after CPE. Nevertheless, knowledge scores of both groups were significantly higher at the follow-up in comparison with immediately before CPE ($p < .01$). Neither age nor gender was a significant determinant of learning in any of the study groups.

Attitudes

No significant difference was observed between lecture-based and workshop-based CPE participants regarding attitudes at baseline (25 vs. 26 respectively, $p = .91$). The median of attitudes scores were also similar at post-CPE (28 vs. 27, $p = .18$) and follow-up (25 vs. 27, $p = .14$).

Discussion

The findings of the present study revealed that a workshop-based CPE may not be superior to a lecture-based meeting in improving pharmacists' knowledge and attitudes on contraception and sexual dysfunctions. However, a sustainable knowledge level was observed in the workshop-based group during 2 months.

Literature on CPE has shown controversial results regarding pharmacists' learning and practice outcomes and few well-designed controlled trials exist. A study compared four types of CPE methods including audiocassette, textbook, lecture, and problem-based workshop on cough medicines. Results showed that none of the CPE approaches were more effective than each other. However, the sample size was quite small and the study might lack adequate power (Leemans & Laekman, 1998). In another study, the efficacy of a combined CPE approach utilizing home study and interactive workshop was evaluated (Martin, Bruskiewitz, & Chewning, 2010). Although the home study was not successful in improving pharmacists' self-efficacy and skills independently, the workshop component could enhance both outcomes in comparison with preworkshop and prehome study status. Mixed-method approaches have also been investigated for CPE meetings (Rouleau, Beauchesne, & Laurier, 2007; Sarayani et al., 2012). In a previous randomized controlled trial, a mixed-method CPE approach (lecture plus small group training with SPs) was shown to be more effective than didactic lecture or lecture plus case discussions in improving

pharmacists' knowledge and competence for providing weight management counseling (Sarayani et al., 2012).

In the present study, an interactive small group training session with SPs was designed to enhance pharmacists' learning and attitudes. Interestingly, findings showed that the more intensive instructional approach in the workshop-based CPE was not more effective than lecture-based CPE in improving pharmacists' knowledge and attitudes. Although small group, problem-based training is highly promoted in medical education as being more effective than didactic lecture (Cantillon, Hutchinson, & Wood, 2003), some existing evidence cast doubt on the issue (Fischer, Jacobs, & Herbert, 2004; Smits et al., 2003). Smits et al. (2003) reported similar findings in a randomized controlled trial of continuing education on management of mental health problems for occupational health physicians. Their results revealed no significant difference between 4-day problem-based versus lecture-based programs regarding participants' knowledge and performance. Moreover, participants in the problem-based program were less satisfied (Smits et al., 2003). Some explanations may justify the controversies reported in literature. In the field of continuing medical and pharmacy education, didactic lectures have been employed by the instructors for years, and medical professionals are used to them (Buxton & De Muth, 2013; Driesen, Leemans, Baert, & Laekeman, 2005). Therefore, learners may not be able to become familiar with a new instructional method during a short-term continuing education program so that the learning outcomes and participants' satisfaction might be adversely affected. Hence, intensive training methods including small group and problem-based learning might be more effective when incorporated in long-term continuing education programs.

Considering the results of our previous study (Sarayani et al., 2012), it could be hypothesized that a mix-method (didactic lecture plus intensive interactive training) approach might be the most effective instructional method in comparison with solely didactic or interactive approaches for CPE meetings. However, the sequence of didactic and interactive parts of a meeting may alter the outcomes (Li et al., 2012) and requires further investigation.

Regarding attitudes, no significant difference was observed between study groups. The baseline attitudes scores were approximately high in both study groups and any improvements might require a more intensive, long-term educational intervention. Moreover, the attitude section of the questionnaire was not developed on the basis of a behavioral theory so that the validity of the results might be affected; however, other related studies in the literature also have such limitations.

Limitations

Our study participants represented a diverse sample of pharmacist regarding age, experience, and knowledge levels practicing in urban community pharmacies in Tehran metropolis. However, a probability sampling method was not used for inviting and recruiting participants. This limitation may weaken the external validity of the results. Regarding the main outcome of the study, it should be noted that knowledge is a necessary but not sufficient indicator of clinical competence. Thus, results should be interpreted cautiously since competencies such as communication skills can be developed in workshop-based training but may not be reflected in the knowledge assessments. Another caveat of the study is a high rate of loss to follow-up (29%). Educational trial guidelines state that loss to follow-up is usually expected in such studies (Centre for Evidence-Based Psysiotheraphy, 2003). Nevertheless, the final population of the study was not less than the calculated sample size to have adequate power. In addition, we did not find any significant differences regarding dropouts' demographic characteristics between two groups.

Conclusion

The present study showed that interactive workshops may not be superior to lecture-based meetings in improving pharmacists' learning and attitudes. To the best of our knowledge, this is the first study to evaluate the effect of CPE for improving pharmacists' competencies for providing RH services. Although both types of CPE meetings were able to enhance pharmacists' knowledge, training programs with longer durations and frequent reminders are required to maintain knowledge levels. Furthermore, the extent to which such competencies are translated into practice needs more investigation.

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References

Anderson, C., & Blenkinsopp, A. (2006). Community pharmacy supply of emergency hormonal contraception: A structured literature review of international evidence. *Human Reproduction*, *21*, 272–284.

American Urological Association. (2011). Clinical guidance on erectile dysfunction and premature ejaculation (2010–2011). Retrieved from http://www.auanet.org/content/clinical-practice-guidelines/clinical-guidelines.cfm

Borrego, M. E., Jennifer, S., Naomi, H., Gupchup, G., Rupali, N., & Denise, C. (2006). New Mexico pharmacists' knowledge, attitudes, and beliefs toward prescribing oral emergency contraception. *Journal of the American Pharmacists Association*, *46*, 33–43. doi:10.1331/154434506775268634

Buxton, E. C., & De Muth, J. E. (2013). Pharmacists' perceptions of a live continuing education program comparing distance learning versus local learning. *Research in Social and Administrative Pharmacy*, *9*, 230–235. doi:10.1016/j.sapharm.2012.05.003

Cantillon, P., Hutchinson, L., & Wood, D. (2003). *ABC of learning and teaching in medicine*. London, England: BMJ Publishing Group.

Coalition for Evidence-Based Policy. (2003). *Identifying and implementing educational practices supported by rigorous evidence: A user friendly guide*. Washington, DC: US Department of Education, Institute of Education Sciences, National Center for Education Evaluation and Regional Assistance. Retrieved from http://www2.ed.gov/rschstat/research/pubs/rigorousevid/index.html

Driesen, A., Leemans, L., Baert, H., & Laekeman, G. (2005). Flemish community pharmacists' motivation and views related to continuing education. *Pharmacy World and Science*, *27*, 447–452. doi:10.1007/s11096-005-0950-7

Fabrigar, L. R., Petty, R. E., Smith, S. M., & Crites, S. L., Jr. (2006). Understanding knowledge effects on attitude-behavior consistency: The role of relevance, complexity, and amount of knowledge. *Journal of Personality and Social Psychology*, *90*, 556–577. doi:10.1037/0022-3514.90.4.556

Fischer, R. L., Jacobs, S. L., & Herbert, W. N. P. (2004). Small-group discussion versus lecture format for third-year students in obstetrics and gynecology. *Obstetrics & Gynecology*, *104*, 349–353. doi:310.1097/1001.AOG.0000133485.0000102727.ba

Fordis, M., King, J. E., Ballantyne, C. M., Jones, P. H., Schneider, K. H., Spann, S. J., … Greisinger, A. J. (2005). Comparison of the instructional efficacy of

Internet-based CME with live interactive CME workshops: A randomized controlled trial. *Journal of American Medical Association*, *294*, 1043–1051. doi:10.1001/jama.294.9.1043

Forsetlund, L., Bjorndal, A., Rashidian, A., Jamtvedt, G., O'Brien, M. A., Wolf, F., ... Oxman, A. D. (2009). Continuing education meetings and workshops: Effects on professional practice and health care outcomes. *Cochrane Database System Review*, CD003030. doi:10.1002/14651858.CD003030.pub2

Gale, A., & Watson, M. C. (2011). The provision of current and future sexual health services from community pharmacies in Grampian, Scotland. *International Journal of Clinical Pharmacy*, *33*, 183–190.

Lee, M. (2011). Contraception. In J. DiPiro, R. Talbert, G. Yee, G. Matzke, B. Wells & L. Posey (Eds.), *Pharmacotherapy: A pathophysiologic approach* (8th ed., pp. 1455–1466). New York: McGraw-Hill Medical.

Leemans, L., & Laekman, G. (1998). Teaching and counselling behaviour: An applied study with community pharmacists. *Pharmacy World and Science*, *20*, 238–247.

Leikola, S. N., Tuomainen, L., Ovaskainen, H., Peura, S., Sevon-Vilkman, N., Tanskanen, P., & Airaksinen, M. S. (2009). Continuing education course to attain collaborative comprehensive medication review competencies. *American Journal of Pharmaceutical Education*, *73*, 108.

Li, C. H., Kuan, W. S., Mahadevan, M., Daniel-Underwood, L., Chiu, T. F., & Nguyen, H. B. (2012). A multinational randomised study comparing didactic lectures with case scenario in a severe sepsis medical simulation course. *Emergency Medicine Journal*, *29*, 559–564. doi:10.1136/emermed-2011-200068

Martin, B. A., Bruskiewitz, R. H., & Chewning, B. A. (2010). Effect of a tobacco cessation continuing professional education program on pharmacists' confidence, skills, and practice-change behaviors. *Journal of the American Pharmacists Association*, *50*, 9–16. doi:10.1331/JAPhA.2010.09034

Martín Morales, A., Ibáñez, J., Machuca, M., Pol-Yanguas, E., Schnetzler, G., & Renedo, V. P. (2010). The EPIFARM study: An observational study in 574 community pharmacies in Spain characterizing patient profiles of men asking for erectile dysfunction medication. *Journal of Sexual Medicine*, *7*, 3153–3160.

Ministry of Health. (1997). Office of continuing education for health personnel. Retrieved September 20, 2012, from http://cehp.behdasht.gov.ir/

Moore, D. E., Green, J. S., & Gallis, H. A. (2009). Achieving desired results and improved outcomes: Integrating planning and assessment throughout learning activities. *Journal of Continuing Education in the Health Professions*, *29*, 1–15. doi:10.1002/chp.20001

Mostafavi, S. A., Sabzghabaee, A. M., Mirmoghtadaee, P., & Hoseini-Biuki, S. M. (2011). Emergency contraception and the knowledge of community pharmacists in Isfahan, Iran. *International Journal of Preventive Medicine*, *2*, 252–255.

Namara, K. P., Duncan, G. J., McDowell, J., & Marriott, J. L. (2009). Community pharmacists' preferences for continuing education delivery in Australia. *Journal of Continuing Education in the Health Professions*, *29*, 52–57. doi:10.1002/chp.20006

Newble, D., & Cannon, R. (2004). *Teaching in small groups a handbook for medical teachers* (4th ed.). New York, NY: Kluwer Academic.

Rouleau, R., Beauchesne, M. F., & Laurier, C. (2007). Impact of a continuing education program on community pharmacists' interventions and asthma medication use: A pilot study. *Annals of Pharmacotherapy*, *41*, 574–580. doi:10.1345/aph.1H606

Sarayani, A., Rashidian, A., Gholami, K., Torkamandi, H., & Javadi, M. (2012). Efficacy of continuing education in improving pharmacists' competencies for providing weight management service: Three-arm randomized controlled trial. *Journal of Continuing Education in the Health Professions*, *32*, 163–173. doi:10.1002/chp.21141

Smith, F. (2009). Private local pharmacies in low- and middle-income countries: A review of interventions to enhance their role in public health. *Tropical Medicine and International Health*, *14*, 362–372. doi:10.1111/j.1365-3156.2009.02232.x

Smits, P. B., de Buisonje, C. D., Verbeek, J. H., van Dijk, F. J., Metz, J. C., & ten Cate, O. J. (2003). Problem-based learning versus lecture-based learning in postgraduate medical education. *Scand J Work Environ Health*, *29*, 280–287.

Symonds, T., Dean, J. D., Carr, A., Carlsson, M., Marfatia, A., & Schnetzler, G. (2011). A Feasibility study comparing pharmacist and physician recommendations for sildenafil treatment. *The Journal of Sexual Medicine*, *8*, 1463–1471. doi:10.1111/j.1743-6109.2011.02212.x

World Health Organization. (2012). Emergency contraception. Retrieved from http://www.who.int/mediacentre/factsheets/fs244/en/