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An Online Module Series to Prepare Pharmacists to Facilitate Cognitive Pharmaceutical Services

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ABSTRACT

An online module series offered to prepare pharmacists to facilitate cognitive pharmaceutical services. Four e-courses were uploaded in the e-based continuing pharmacy education (CPE) for community pharmacists. The four courses offered were the patient counselling aspects of hypertension, diabetes mellitus, peptic ulcer and asthma. Each course covered the necessary information about the disease, brief pathophysiology, treatment options, lifestyle modifications, expected side effects, ADR of treatment, Dos and Don'ts by the patients. The contents of these courses were presented online in the form of slides in reading format. The presentation included text, pictures and graphs. Out of 70 respondents, about 65.71% of (n=46) were male. Majority of the pharmacists (68.57%), (n=48) found to be D.Pharm. Holders Among 70 pharmacists about 55 pharmacists completed the patient counselling modules Majority of the respondents (n=38; 54%) believed that increasing the knowledge of the pharmacists would help to enhance the present status of pharmacy practice. More than three fourth (n=53; 76%) of the community pharmacists responded that continuing pharmacy education programs to be attended to develop their professional expertise. The feedback on the e-learn modules undergone by the participants was very encouraging and promising. All the participants agreed that the faculty of the module had got sound knowledge, and the modules were practical. This study's results suggest that a series of self-paced online modules with appropriate content can improve pharmacists confidence to provide cognitive pharmaceutical service.



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INTRODUCTION

The concept of community pharmacy and the roles of community pharmacists have seen numerous

changes over the past few years. Initially, pharmacies were the apothecaries involved in compounding medicinal products, and over time their roles turned towards dispensing the medicines manufactured by pharmaceutical industries and providing product advice, patient education and counselling. In the last few decades, there were further changes in the roles as the professional services were incorporated into the pharmacist's practice and the business model of community pharmacy (Neoh *et al.*, 2009). The World Health Organization (WHO) defines the term 'Cognitive Pharmaceutical Services' (CPS) as, pharmacists use specialized knowledge to enhance patient drug therapy and disease management, through interaction with both the patient and other healthcare professionals.

Furthermore, it is broadly defined to include self-care, health promotion and to encompass the following: provision of drug information, provision of non-prescription medicines, clinical interventions, medication management services such as medication review, preventive care services for the complications of chronic disease conditions, and participation in therapeutic decisions (Geneva, 1994). The Indian community pharmacists have restricted themselves as mere sellers of medicines and in the rarest cases; they attempt to provide any of the professional services as recommended by WHO. The salient reasons why the community pharmacists in India are not providing or are not able to provide CPS are enlisted here (Adepu et al., 2004).

1. The level of professional education and training acquired by the majority of the practising community pharmacists in India is relatively less compared to developed countries.
2. Lack of awareness among the pharmacists practising in the community about the professional roles and responsibilities that they shall discharge.
3. Lack of knowledge, continuing professional education/training, confidence, incentives, and availability of pharmacists can be regarded as some of the other confounding factors.

Realization of such reasons ensures updating and upgrading of the knowledge and skills of the community pharmacists in India for providing CPS, which is of great importance in the present scenario to get wider recognition for the practice of pharmacy profession in the community (Almarsdóttir et al., 2014). In these contexts, developing the Continuing Pharmacy Education (CPE) modules and encouraging the community pharmacists to attend such modules and enable them to provide CPS is considered imperative. With this broader objective, this research work was carried out.

The primary objective of CPE shall be to enrich the knowledge, enhance the skills and professional competencies of the practising pharmacists, thereby maximizing the impact of interventions on the patient's health. It is evident from the literature that the CPE programs not only help the pharmacists but also help the general public by improving the quality of pharmaceutical care services being provided by the pharmacists and promotes appropriate use of medicines in the society (Neoh et al., 2009). Therefore, the designing and implementation of CPE modules must help the pharmacists to master their knowledge, skills and attitude with the

vision of enhancing the quality of pharmaceutical care services provided to the general public.

MATERIALS AND METHODS

This was a prospective interventional community study conducted at Nilgiris district in the southern part of India for six months.

Development of E-Modules

Four E-courses were offered in the E-based Continuing Pharmacy Education (CPE) for community pharmacists. The E-courses were validated for their contents by a scientific committee of three academic pharmacists. The four courses offered were the patient counselling aspects of hypertension, diabetes mellitus, peptic ulcer and asthma. Each course covered the necessary information about the disease, brief pathophysiology, treatment options, lifestyle modifications, expected side effects, ADR of treatment, Do's and Don'ts by the patients, etc. The contents of these courses were presented online in the form of slides in reading only format. The presentation included text, pictures and graphs.

Attendees from E-courses could communicate among them and with a tutor asynchronously via an online forum which was an interactive element for each course implemented on the E-learning platform. The forum was a place where any user can express their feedback about the course, start a discussion or raise questions which could be seen and answered by other users or the tutor. The forum was also a place to express general comments related to the platform, to share ideas or proposals for other E-courses for pharmacists to implement them. Furthermore, every user-owned an internal mailbox in which he/she could receive messages from the tutor or send their messages.

Knowledge test was administered as both pre and post-test through multiple choice questions related to the contents of the modules to assess the increase in the level of knowledge. The multiple-choice questions consisted of one correct answer and a minimum of three distracters. A correct answer scored one point, and an incorrect answer scored zero.

The E-course participants were not discouraged anyway from using additional sources of knowledge related to the subject provided by the E-courses. It was made sure that questions put in the pre- and post-tests were directly related to the contents of the courses. But it was designed such that our attendees could freely obtain and deepen their knowledge via other media.

The data collected were extracted from the web portal and analyzed. A critical value of $p < 0.05$

in paired student t-test was considered significant for the comparison between the pre- and post-test scores. Descriptive statistics viz. frequencies, mean scores and attitudinal differences on sample characteristics were also computed. The statistical analysis was done using the software SPSS version.21.

RESULTS AND DISCUSSION

A total of 70 community pharmacists registered in the study. Out of 70 respondents, about 65.71% of (n=46) were male. Majority of the pharmacists (68.57%; n=48) were D.Pharm. holders and 24.28%; (n=17) were B.Pharm. graduates. It was observed that 8.57 % of the pharmacists (n=6) were with < 5 years of experience followed by 21.42 % (n=15) with 5-10 years, 40 % of the pharmacists (n=28) with 10-20 years of experience and only 30% (n=21) of the pharmacists with > 20 years of professional experience. Demographic details of the community pharmacists registered for online modules are presented in Table 1. Out of 70 pharmacists, about 55 pharmacists completed the patient counselling modules.

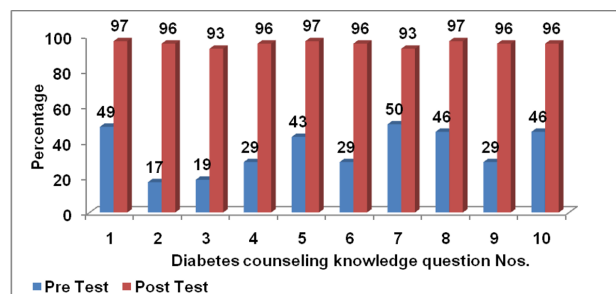


Figure 1: Responses of the community pharmacists to the questionnaire assessing their knowledge on patient counselling for diabetes mellitus

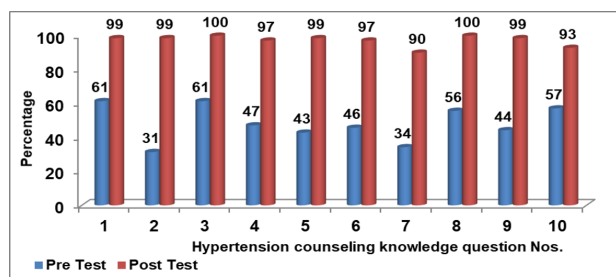


Figure 2: Responses of the community pharmacists to the questionnaire assessing their knowledge on patient counselling for Hypertension

Majority of the respondents (n=38; 54%) believed that increasing the knowledge of the pharmacists would help to enhance the present status of pharmacy practice. More than three fourth (n=53; 76%)

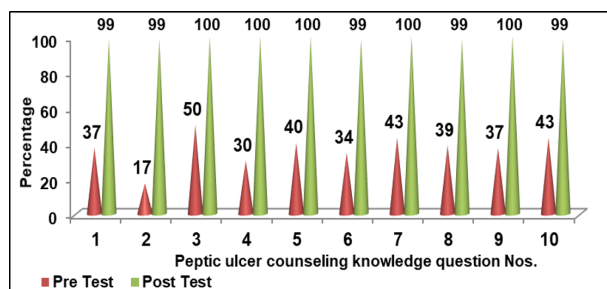


Figure 3: Responses of the community pharmacists to the questionnaire assessing their knowledge on patient counselling for peptic ulcer

of the community pharmacists responded that continuing pharmacy education programs should be attended to develop their professional expertise.

Thirty-five community pharmacists expressed their willingness to maintain the patient's medication records only with improved conditions while 28 were ready with the present conditions. An important observation was that none of the pharmacists stated that the maintenance of records was not at all possible. Almost every community pharmacist expressed that they were satisfied with their current practice, and no one expressed dissatisfaction about the current practice.

Specific questionnaires were used to assess the knowledge of the community pharmacists about counselling the important chronic diseases like diabetes mellitus, hypertension, peptic ulcer and asthma. These questionnaires were made online (pre & post module). The percentage of respondents who gave correct answers are shown in \$, which showed significant ($p < 0.05$) increase in the score for every question of all the four questionnaires between pre & post module.

The feedback on the modules undergone by the community pharmacists was also obtained through a structured online questionnaire, and the results are presented here.

1. The faculty member was having sound knowledge and was influential in delivering the module.
2. The online format was appropriate for the subject matter, and one was able to access all components of the activity without difficulty.
3. These modules and online courses will assist in the improvement of the specific domain of community pharmacists.
4. What is your level of commitment to make the changes stated above?

Table 1: Demographic details of the community pharmacists registered for online modules

Category		n	%
Age Distribution of the Respondents	21-30 Years	15	21.42
	31-40 Years	22	31.42
	41-50 Years	19	27.14
	51-60 Years	11	15.71
	61-65 Years	3	4.28
Education status of the respondents	B.Pharm	17	24.28
	D.Pharm	48	68.57
	Others	5	7.14
Professional Experience	<5 years	6	8.57
	5-10 years	15	21.42
	10-20 years	28	40
	>20 years	21	30

5. What are the barriers you faced in your current practice setting that may impact patient outcomes?
6. The study materials in the modules were organized clearly for learning to occur quickly.
7. The content learned from this activity will impact my practice and/or the healthcare team.
8. Does this activity promote improvement in healthcare and/or patient outcomes?
9. The activity was presented objectively and was free of commercial bias.
10. I would recommend this activity to others.

The feedback on the E-learn modules undergone by the participants was very encouraging and promising. All the participants agreed that the faculty of the module had got good knowledge, and the modules were effective. The technical simplicity of the E-learn modules, format and appropriateness of the subject matters were accepted by about 70% of the participants. This revealed that technological development could be effectively used for continuing pharmacy education programs.

The participants had agreed that the modules which they had undergone through E-learn program not only helped them to increase their competency and performance but also enhance the patient's outcomes that were the ultimate endpoint of the process of continuing pharmacy education. All the respondents claimed that they were committed to implementing the changes as per the practice points learned through the modules. Further, all the participants accepted that the modules could result in the improvement of healthcare and patient outcomes.

Finally, every participant agreed that the E-learn modules would be recommended to others.

As it is evident from the results that the pharmaceutical care services shall be implemented in the community pharmacies by the qualified pharmacists provided if they are trained to enrich their knowledge and skills for the specific services. Moreover, few state pharmacy councils in India made the attendance certificate of Continuing Pharmacy Education (CPE) mandatory for renewal of the license. Further, it is also vital to ignite self-directed lifelong learning among the practising pharmacists in countries like India.

In these contexts, as CPE is becoming a requirement, every pharmacist should attend such programs. In this study, an attempt was made to deliver such CPE through an online portal. An online portal developed in-house was used for this purpose.

The online survey conducted among the study participants who registered in the portal revealed, about 69% of them believed that increasing the knowledge of the pharmacists could help to improve the present status of pharmacy practice in the community settings. Literature also supports that CPE increased the knowledge of community pharmacists significantly and thereby helped to improve the standards of practice ([Durai et al., 2016](#)).

Majority of the pharmacists (76%) participated in this study were willing to participate in CPEs. A survey conducted in Saudi Arabia also reported that the pharmacists were interested in participating in CPE programs ([Al-Ghamdi, 2001](#)).

About 90% of the community pharmacists participated in the survey were optimistic about maintaining the patient medication records either with present conditions (40%) or with improved condi-

tions (50%). This is considered to be a very positive sign from the community pharmacists as a study conducted in Macao revealed that only 4% of the pharmacists were involved in such record maintenance (Ung *et al.*, 2016; Song *et al.*, 2015).

In this study, it was observed that a vast majority (97%) of the respondents were satisfied with their professional practice. But the pieces of literature published within India have conflicting results in this aspect (Ahmad *et al.*, 2016; Nesterowicz *et al.*, 2014). As many factors are influencing the job satisfaction of the pharmacists, and it is more of subjective perception, the figures may change with different studies.

In this study, through an online portal, the education modules for the community pharmacists towards patient counselling for hypertension, diabetes, peptic ulcer and asthma were delivered. Invariably, the knowledge levels of the participants exceptionally increased after attending the modules from the baseline, i.e., before attending the modules.

Literature also showed that the knowledge levels of community pharmacists regarding diabetes, hypertension and peptic ulcer were improved after the CPE programs. Another study quantified the outcomes of E-learning course and reported that the knowledge of the pharmacists increased by 16%.

These results divulged the importance of using technology towards educating the practising pharmacists on various aspects of pharmaceutical care services. The flexibility of time, learner centeredness associated with these modules increase the adaptability of this strategy. In future, more such courses shall be delivered without costing much to the practising pharmacists for undergoing CPE programs.

CONCLUSIONS

This paper described the process of developing and delivering a series of online modules aimed at educating and preparing community pharmacists for cognitive pharmaceutical service. As the profession of pharmacy shifts from a product-oriented service to a patient care-oriented service, i.e., practice-oriented, experiential learning is likely to be the cornerstone for cultivating relevant competencies in practice. This study's results suggest that a series of self-paced online modules with appropriate contents can improve pharmacists confidence to provide cognitive pharmaceutical care services.

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Conflict of interest

The authors declare that they have no conflict of interest for this study.

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