

Development, Validation and Implementation of Continuous Professional Development Programmes for Community Pharmacists

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Adepu and Shariff: Continuous Development Programmes for Community Pharmacists

In India, structured continuous professional development modules are not available to update the knowledge and skills of the practicing community pharmacists. A prospective study was designed to develop, validate and implement continuous professional development modules and to assess the impact of training programme on knowledge and skills of community pharmacists. Modules were developed by referring to standard texts and data bases and were validated for the content. The impact of training programme on pharmacists' knowledge and skills was assessed using suitably designed pre and post training knowledge attitude and practice questionnaires, pre and post training questionnaires for individual continuous professional development training sessions, pre and post training patient counseling skill assessment, blood pressure measurement skill assessment and capillary blood glucose check-up skill assessment check-lists. Data was analyzed by applying suitable statistical methods using InStat version 3.01 statistical software. Forty eight community pharmacists were enrolled in to the study. A statistically significant ($P<0.05$) improvement was observed in post training knowledge attitude and practice scores and in post training scores of individual training sessions. A statistically significant ($P<0.05$) improvement was also observed in post training scores of professional skills such as Patient counseling, capillary blood glucose recording and blood pressure measurement skills. The study findings conclude that continuous training updates the knowledge and skills in practicing the pharmaceutical care in their pharmacies.

Key words: Blood pressure, capillary blood glucose, continuous professional development, community pharmacists, knowledge attitude and practice, patient counselling

University education provides the necessary knowledge and skills to the students necessary for registration and practice as pharmacists. However, during their practice, with the incidence of new diseases and introduction of new medicines, pharmacists may encounter new drug related problems. To manage these problems, it is necessary for them to continually update their knowledge and professional skills^[1,2]. Internationally, pharmacists choose various ways to update their knowledge and professional skills; few among them are continuing education (CE), weekend lectures, monthly seminars, evening courses and workshops. Studies have shown that the best flexible way to update the knowledge and professional skills is Continuous Professional Development (CPD) programmes^[3,4].

The International Pharmaceutical Federation (FIP) has

adopted the concept of CPD in 2002 and defined CPD as the responsibility of an individual pharmacist for systematic maintenance, development and broadening of knowledge, skills and attitudes to ensure continuing competence as a professional throughout their career^[5]. Many countries have fully implemented this concept into their life long learning policies and the registering authorities in some countries consider participation in CPD as a pre-requisite for the renewal of license to practise as pharmacist^[6-12]. In India, Karnataka State Pharmacy Council (KSPC) and Maharastra State Pharmacy Council (MSPC) have taken some lead in conducting the CPD programmes to the registered pharmacists. All India Organisation for Chemists and Druggists (AIOCD) through MSPC has designed patient counseling course modules (PCC A, B, C and D) and offering the CPD modules to the registered practicing pharmacists. However these modules are passive and do not evaluate the impact of training on pharmaceutical care practices of the

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participants. Thus this study was conducted with the aim of developing, validating and implementing the CPD modules and to assess the impact of CPD programmes on knowledge and professional skills of practising community pharmacists.

MATERIALS AND METHODS

This study was a prospective study, approved by the institutional ethical committee of JSS College of Pharmacy, Mysore. This study was conducted at the JSS Community Pharmacy of JSS College of Pharmacy, Mysore.

Pharmacists' enrolment:

Forty eight registered practising community pharmacists were enrolled into the study after taking their written consent. The demographic data of the enrolled pharmacists such as name, sex, age, name of the pharmacy, qualification such as D. Pharm/B. Pharm, Karnataka State Pharmacy Council registration number, professional experience, details of CPDs attended and contact details were collected.

Knowledge, Attitude and Practice questionnaire administration:

Knowledge, Attitude and Practice (KAP) questionnaire was developed, validated and administered on all enrolled pharmacists at baseline and at the end of the study, to assess the pre and post training knowledge, skills and attitude towards practice as pharmacist.

The KAP questionnaire consisted of a total of 20 questions. Except for questions 8, 9, 13, 15 and 16, rest all other questions are "Yes" or "No" type, and carry one mark each for an "Yes" and zero for a "No". Question 8 has four options a, b, c and d, which carry 3, 2, 1 and zero marks, respectively. Question 9 has six items, of which for each item there are two options "Yes" option carries zero mark while each "No" option carries one mark. Question 13 contains four items, each having two options and each "Yes" option carries zero mark and each "No" option carries one mark. Question 15 has three items, I, II and III. Each item has two options and each "Yes" option carries one mark where as the "No" option carries zero mark. Similarly question 16 has five items having two options each. The "yes" option carries zero mark and each "No" option carries one mark.

Development, validation and implementation of CPD modules:

Based on the need of pharmacists, twelve CPD modules were developed by referring to standard texts and data bases. Five of them focused on practice skills such as pharmaceutical care, patient counseling, adverse drug reactions (ADRs), drug-drug interactions and health screening services. Seven modules were on specific disease conditions such as diabetes mellitus, hypertension, AIDS, asthma, tuberculosis, peptic ulcer disease and iron deficiency anaemia.

The practice skills modules emphasized on the skills to interview and counsel the patient, review the prescription for drug-drug interactions, monitor the patient and report the detected ADRs, recording the blood pressure (BP) and measuring capillary blood glucose (CBG) levels.

Modules on specific diseases were developed in order to improve the basic knowledge about etiopathogenesis, clinical signs and symptoms, non-pharmacological and pharmacological management, with special emphasis on patient instructions, ADRs, and potential drug-drug interactions of the drugs used in the management of the disease. Thus developed modules were validated for its content.

In each CPD session, the impact of CPD programme on knowledge of pharmacists was assessed by using suitably designed pre and post training questionnaires. Pharmacies of the enrolled pharmacists were visited during the week days to assess the impact of CPD training on skills and practice. During the visit, patient counseling skills, health screening services skills and ADR detection and reporting skills were assessed by the pseudo patient technique.

A twenty item USP patient counselling check-list was used as a tool to analyse the pharmacists' counseling skills. Each item was evaluated for 10 marks. So the total number of marks for each counselling session was 200^[13].

Two separate check-lists were developed and validated to assess the BP measurement and CBG recording skills. The BP measurement skill assessment check-list consists of eight items which reflects the compulsory steps to be followed in measuring BP and each item carries one mark. Similarly the CBG recording skill assessment check-list consists of six items reflecting

the compulsory steps to be followed while recording CBG and each item carries one mark. These skills were assessed at the base line and after providing the training.

During ADR session, the pharmacists were trained to identify, manage and report the ADRs using the suspected ADR reporting forms. During visits to the pharmacies, the pharmacists were helped in filling the suspected ADR reporting forms.

Statistical analysis:

All the relevant data was collected documented and was analysed using InStat version 3.01 statistical software. Two tailed paired 't' test was used to determine the significance in KAP scores, pre and post training scores, pre and post training professional skills assessment scores. The level of significance for all tests was set at $P < 0.05$.

RESULTS AND DISCUSSION

Forty eight community pharmacists were registered for the CPD programme. Majority (45) participants were male, the mean age of the pharmacists was 36.41 ± 7.17 y and mean duration of practice was 11.5 ± 6.25 y. Of the 48 enrolled pharmacists, majority (93.75%) of pharmacists were qualified with D. Pharm, an entry level qualification to practice as pharmacist and only three (6.25%) pharmacists were pharmacy graduates. The details of the participants are presented in Table 1.

In our study, the post training KAP scores were improved significantly from baseline with p value of less than 0.05 which is significant. Before attending the CPD programme the mean KAP scores of pharmacists was 13.77 ± 3.51 and it was improved to 23.27 ± 3.25 after providing training. This significant improvement was may be due to the improvement of knowledge during the training. Prior to the CPD programme, all the respondents were not knowing about the professional skills such as patient counseling, health screening services and ADR detection, management and reporting. But after the training, during skills assessment evaluation a significant improvement was observed in patient counseling scores and ADR reporting. The results of KAP are presented in Table 2.

Another important finding of our study was that

before administration of KAP questionnaire none of the pharmacists were aware of the concept of CPD which resulted in low scoring of pharmacists in pre-training KAP questionnaire. The significant improvement in post training KAP scores was due to awareness created during the study period among pharmacists towards the concept of CPD. From the post training KAP scores it may be concluded that, this change is due to the participation of pharmacists in CPD programme where they were motivated towards professional practices rather than being traders.

At every CPD session, the impact of CPD session on knowledge of pharmacists was assessed using suitably designed pre and post training questionnaires. In every CPD session statistically significant improvement in pharmacists' knowledge was observed. The pre and post training scores in each CPD session is presented in Table 3. The study results have shown that the percentage improvement from baseline was improved to

TABLE 1: DEMOGRAPHIC DETAILS OF COMMUNITY PHARMACISTS

Demographics	Male	Female	Total
Sex	45	03	48
Qualification			
D. Pharm	42	03	45
B. Pharm	03	00	03

The mean age of pharmacists was 36.4 ± 7.2 y and the mean years of practice as a pharmacist was 11.5 ± 6.25 .

TABLE 2: PHARMACISTS SCORE ON KNOWLEDGE, ATTITUDE AND PRACTICE

Number of Pharmacists	Pre-training score mean \pm SD	Post-training Score mean \pm SD
48	13.77 ± 3.51	$23.27 \pm 3.25^*$

*statistically significant at $P < 0.05$

TABLE 3: PRE AND POST-TRAINING SCORES OF PARTICIPANTS IN CPD SESSIONS

CPD Module	Pre-training score mean \pm SD	Post-training score mean \pm SD
Pharmaceutical Care	6.04 ± 1.71	7.33 ± 1.54
Health screening services	10.73 ± 3.04	13.46 ± 2.73
Drug interactions	3.71 ± 1.31	$5.24 \pm 1.46^*$
HIV and AIDS	9.15 ± 3.28	$13.40 \pm 3.10^*$
Diabetes mellitus	7.40 ± 3.18	$10.88 \pm 4.30^*$
Tuberculosis	7.35 ± 2.32	$11.35 \pm 2.66^*$
Hypertension	8.53 ± 2.69	$13.20 \pm 3.43^*$
Asthma	8.56 ± 1.86	$15.38 \pm 1.41^*$
Peptic ulcer disease	5.06 ± 1.48	7.06 ± 1.20
Iron deficiency anaemia	6.00 ± 1.32	$7.82 \pm 1.19^*$

*P value < 0.05 is statistically significant

12.91% (pharmaceutical care), 13.63% (health screening services), 15.2% (drug-interactions), 21.25% (HIV and AIDS), 17.4% (diabetes mellitus), 20% (tuberculosis), 23.3% (hypertension), 34.06% (asthma), 20% (peptic ulcer disease) and 15.8% (iron deficiency anaemia). This indicates that the CPD sessions had helped the pharmacists to gain more knowledge regarding diseases and pharmaceutical care services which is an essential element during the practice as a professional. The data on percentage improvement is presented in fig. 1.

Patient counselling is considered as an important responsibility of community pharmacists and is mandated by law in some countries. Although in India, counseling is not legalised but if pharmacists wish to offer counseling to their patients certainly this service will increase their customer patronage and in turn an increased sales^[14,15].

A study reported by Kansanaho *et al.*^[16], assessed the impact of continuing education (CE) course on pharmacists' patient counselling skills. The study involved seventeen community pharmacists. The participants expressed that the CE course had helped them to learn new skills and knowledge in patient counselling.

In our study it was observed that the patient counseling skills were improved to an extent of 24.4% from baseline. The mean pre-training score was 72.2 ± 12.96 which was improved to 120.9 ± 12.68 after training. During the study period, a total of sixty three patients benefited from the counseling session. This suggests that training to community pharmacists on patient counseling not only improved the skills of pharmacists but also helped them to counsel their patients which ultimately resulted in achieving positive health outcomes.

Community pharmacies are the first point of contact on matters related to drugs and drug use. Community pharmacists by virtue of their skills in drug and disease state management and education, may provide screening services to patients^[1,17]. In our study, about 89.58 % of pharmacists were unaware of health screening services which can be provided in the community pharmacy. This percentage was reduced to 4.16% after participating in CPD programmes.

We assessed the CBG recording skills of enrolled

pharmacists at baseline and after providing the training. Most of the pharmacists were engaged only in selling of glucometer in their pharmacies. By end of the study, it was observed that about 25 (52%) pharmacists were engaged in CBG recording in their pharmacies. At baseline, the mean pre-training score in recording CBG was 4.75 ± 0.4443 and was improved to 6.000 after the training was given. The data on professional services is presented in Table 4

The pharmacists expressed that this change not only increased their financial income but also fulfilled the needs of poor patients who can not afford to own a glucometer. In addition, this approach helped pharmacists to monitor health out comes of their patients.

A study was conducted in Australia by Krass *et al.*^[17] for assessing the benefits of diabetic screening services in community pharmacies. This study involved 30 pharmacies and total of 1,286 patients were screened. About 1.7% of patients who were screened using finger prick test for capillary blood glucose were diagnosed to have diabetes. In another study conducted by Valerie *et al.*^[18] the community pharmacy based diabetic education programme

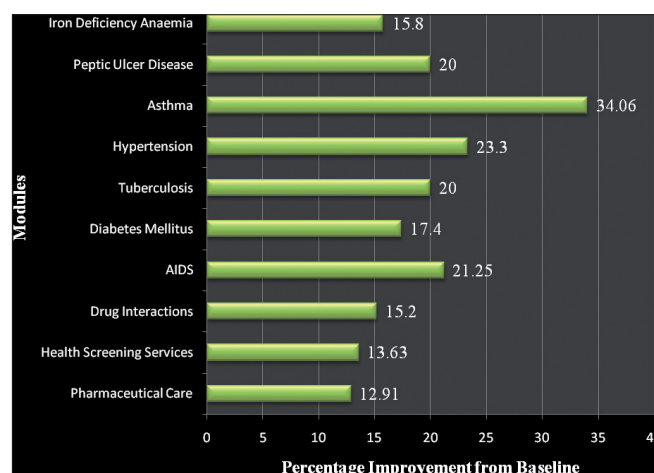


Fig.1: Percentage improvement in participants knowledge in continuous professional development sessions

TABLE 4: PRE AND POST TRAINING SCORES IN PROFESSIONAL SKILLS

Professional skills	Pre-training score mean \pm SD	Post-training Score mean \pm SD
Patient counseling	72.2 \pm 12.96	120.90 \pm 12.69*
CBG recording	4.75 \pm 0.44	6.00 \pm 0.0*
BP measurement	4.55 \pm 0.83	8.00 \pm 0.0*

*P value < 0.05 is considered as significant.

improved the clinical profile of 381 patients who were enrolled into the programme. The results of this study shown that hemoglobin A_{1C} results, fasting blood glucose levels, LDL cholesterol, total cholesterol and triglycerides levels, systolic and diastolic blood pressure measurements and diabetes knowledge scores were improved statistically. Authors concluded that the community pharmacies may serve as the centre for provision of diabetic education and screening to the patients.

In our study 473 individuals were screened for diabetes mellitus through CBG measurement and it was found that about 47 (9.93%) individuals were found to have high blood glucose levels (newly detected) and were referred to physicians for further diagnosis and management.

A study conducted by Wandikayi *et al.*,^[19] assessed the pharmacists' knowledge regarding the accuracy of BP measurement devices and their knowledge regarding high BP and resources for self measurement of BP. The study involved 174 community pharmacists of which only 25 pharmacists identified the correct procedure for checking the accuracy of the devices and correctly identify the cut off points for systolic and diastolic BP.

In our study, we observed that the BP measurement skills of the participants were improved by 43.12% from the baseline. At base line the mean pre-training score in measuring BP was 4.55±0.83 and was improved to 8.00 after training was given. These results suggest that pharmacists are capable of serving the community by providing health screening services like CBG recording and BP measurements if they are properly trained.

In addition to the provision of patient counseling and health screening services, detection, and management and reporting of ADRs is also considered as an important professional service of the pharmacist to the community. At baseline about 21 (56.25%) pharmacists were unaware of concept of ADRs. This percentage was reduced to 4.16% after the CPD programme.

In a study reported from Jamaica, Gossell-Williams and Adebayo^[20] assessed the attitudes of community pharmacists to report ADRs. The study results have shown that of 102 community pharmacists who were participated in the study, 67% were not aware of ADR reporting, but 86% of participants strongly

agreed that ADR reporting was a professional responsibility. A total of 45 reports were collected in a three month prospective follow up. Authors conclude that the awareness of ADR reporting among participants is inadequate. However, continuous training and motivation may help the pharmacists to actively participate in ADR reporting.

In our study, during the CPD training on ADR detection, management and reporting, incidences of ADRs, influence of ADRs on budget and health outcomes was discussed and briefed about the roles of community pharmacists in reporting the ADRs. During the study period a total of 23 ADRs were reported through the pink form which was designed for reporting suspected ADRs by community pharmacists. The reported ADRs were then analysed for causality using WHO causality scale. twenty (86.95%) ADRs belong to *probable, 2 (8.69%) ADRs belong to *certain and one (4.34%) ADR belongs to *possible category on WHO causality scale. The data on ADR reports is presented in Table 5.

A study was conducted by Rouleau *et al.*,^[21] to assess the impact of an asthma CE program provided to community pharmacists on their knowledge, intervention frequency and the appropriateness of asthma medication use. The results of this study have shown that following a CE program the pharmacists' knowledge was improved but the practice of pharmacists was not improved to an extent of achieving statistically significant difference.

But in our study it was found that most of the pharmacists not only improved their professional knowledge and skills but also started to implement these knowledge and skills in their practice. This change may be due to the influence of CPD program. In addition to improved knowledge, it was also observed that most of the pharmacists started engaging in provision of different community pharmacy services such as patient counseling, CBG recording, BP measurement and ADR reporting in their pharmacies.

TABLE 5: ANALYSIS OF ADRS USING WHO CAUSALITY ASSESSMENT SCALE

WHO causality scale	
Certain	02
Probable	20
Possible	01
Total Number of ADRs reported	23

In UK, a prospective longitudinal study was conducted by Raisa *et al.*,^[22] with the aim of exploring community pharmacists' perceptions on individual factors influencing engagement in CPD. The participants of study expressed that the three main barriers for engaging in CPD were lack of information about CPD, lack of motivation and lack of time.

In our study few pharmacists expressed the similar kind of barriers in implementing the community pharmacy services. The most important barrier was found to be lack of time, lack of space in the pharmacy to provide community pharmacy services and lack of economic benefits. Self motivation is the best strategy in order to overcome these barriers. Pharmacists were motivated to plan their work appropriately so that they can find time to serve the community as a Health Care Professional by engaging in provision of different community pharmacy services.

As stated by FIP, "Participation of each individual in structured CPD is essential for all practising pharmacists and that results in continuous improvement in skills performance which is necessary for patient care, contemporary and competent practice, which in turn helps for flexible career choices, career satisfaction and ultimately improves patient health care outcomes".^[5] In our study, the overall results suggest that participation of community pharmacists in the CPD programmes improved their knowledge and skills, which helped them to perform better as a health care professional in the community. In addition, pharmacists expressed that practice of community pharmacy services in their pharmacies such as patient counseling and health screening services helped them in developing good rapport with their patients which in turn increased the patient patronage to their pharmacies.

The present study has shown that the knowledge, attitude and practice of the pharmacists towards professional responsibilities were improved. Significant improvements were observed in post training scores, that has shown impact of CPD programme on knowledge and provision of professional services by the pharmacists. Our study results imply that continuous motivation and provision of training helps community pharmacists to perform well as professionals in the community. Pharmacists

also realised that only continuous updating of knowledge and skills makes them more confident and able to perform as desired.

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