

the problem can be implementing continuing education programs to community pharmacist.⁵ The principal aim of continuing pharmacy education (CPE) is to update the pharmacist's knowledge and skills, to improve professional competencies, and to maximize the impact of interventions on the patients' health. CPE program not only help the pharmacist but also indirectly protect the public by improving the quality of pharmaceutical care and services provided to the population and by promoting the appropriate use of medications in society.⁶ These CPE activities for pharmacist must be designed to help them acquire, master knowledge, skills and attitudes with a view to enhancing the quality of care provided to the population. We aimed at developing a CPE module for the community pharmacist and evaluating its influence on the Knowledge, Attitude and Practice of community pharmacist in South India.

METHOD

A prospective open label study was performed among the community pharmacists in selected; 6 districts of Kerala and 4 districts of Tamilnadu over a period of 18 months from July 2013 to December 2014. The lectures in PowerPoint presentation, its handouts and leaflets for the diseases such as diabetes mellitus, hypertension and peptic ulcer, KAP assessment questionnaire and lecture feedback form were prepared. The community pharmacists need to comply all the three conditions like participation in the CPE lecture, undertake one week refreshing lecture after CPE lecture and provide CPE lecture feedback; to be consider as completed the study. Community Pharmacists who are enrolled but unable to cope up with the requirement of the study were excluded. Earlier the Institutional Review board approval (JSSCP/DPP/IRB/002/2013-14 & JSSCP/DPP/IRB/011/2013-14) was obtained from JSS College of Pharmacy, Ooty, India. The lectures and course content for the diseases were provided to the community pharmacist by trained pharmacist, revision of the course work after one week of the baseline class was done. The Knowledge, Attitude and Practice were assessed by KAP questionnaire at baseline and post CPE follow up. Paired t test was used to measure the difference between baseline and follow-up measures. The feedback for the lecture modules was also taken. Statistical analysis was done by using GraphPad Prism Statistical Software version 6.02 and SPSS version 22 for windows.

RESULTS

The community pharmacists from 6 districts of the Kerala state such as Palakkad, Kozhikode, Kotayam, Trissur, Malapuram and Ernakulam, and from 4 districts of Tamilnadu state such as Vellore, Kanyakumari, Chennai South and the Nilgiris were included in the study.

A total of 156 community pharmacists and 90 community pharmacists were initially approached for conducting the CPE program in Kerala and Tamilnadu states respectively. Among them 60 and 53 community pharmacists completed the study. Out of 60 community pharmacists from Kerala, 40% (n=24) were men and 60% (n=36) were women, 61.67% (n=37) were Bachelor of Pharmacy (B. Pharm) degree holders and 38.33% (n=23) were Diploma in Pharmacy (D. Pharm). Out of 53 community pharmacists from Tamilnadu state, 88.68% (n=47) were men and 11.32% (n=6) were women, 77.36% (n=41) were B. Pharm degree holders and 22.64% (n=12) were D. Pharm holders. The district wise participation of the community pharmacists are shown in Figure 1.

The provided continuing pharmacy education significantly increased the knowledge score of CP belonging to Kerala for diabetes by 2.75 (p value <0.0001) and the same for Tamilnadu increased by 2.83 (p value <0.0001). The baseline score for the knowledge regarding hypertension were found to 5.47 (\pm 1.64) & 3.91 (\pm 2.03) for Kerala and Tamilnadu respectively. The follow-up score were 6.57 (\pm 0.85) & 5.15 (\pm 1.83) with mean difference of 1.10 & 1.25 (p values <0.0001) for Kerala and Tamilnadu respectively. The mean difference in follow-up of CP's knowledge pertaining to the disease peptic ulcer

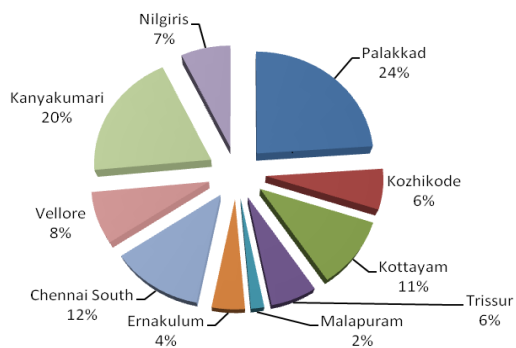


Figure1: District wise community pharmacist participation in Continuing Pharmacy Education (CPE)

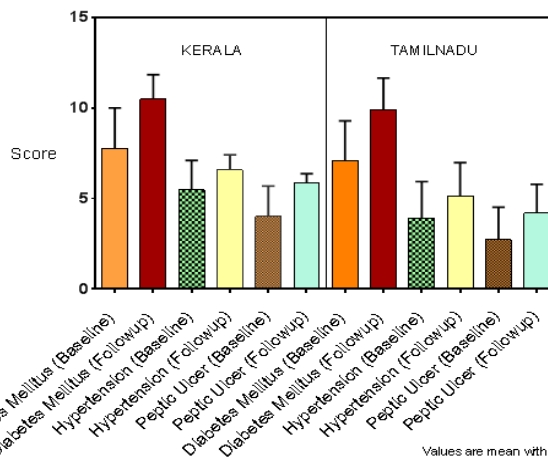


Figure.2: Effect of Continuing Pharmacy Education on Knowledge

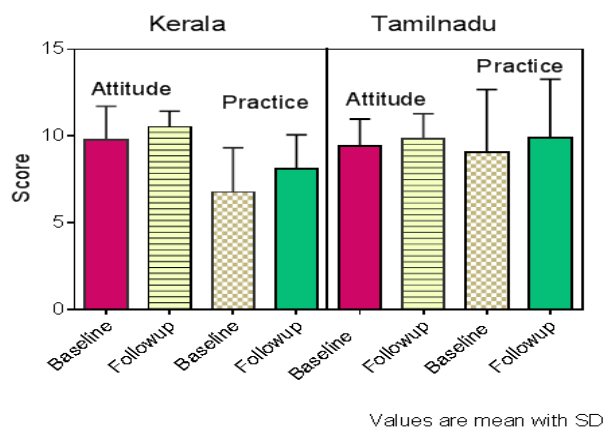


Figure 3: Effect of Continuing Pharmacy Education on Community Pharmacists' attitude and practice

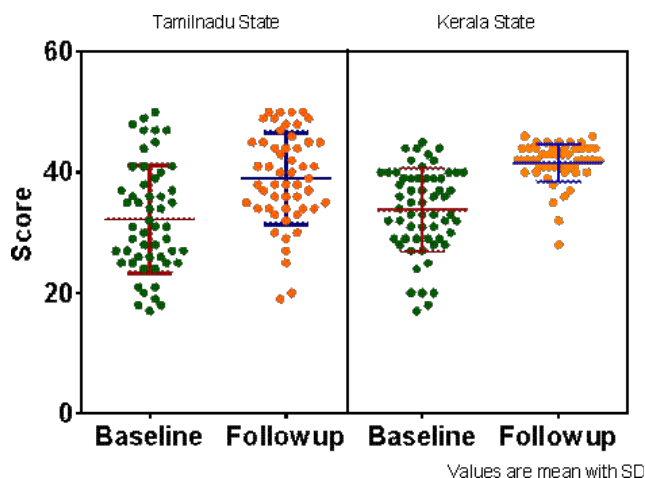


Figure 4: Effect of Continuing Pharmacy Education on Knowledge, Attitude and Practice of Community Pharmacist

from baseline were found to be increased; 1.87 (p value <0.0001) and 1.47 (p value <0.0001) for Kerala and Tamilnadu respectively (Figure 2).

The baseline scores for attitude were 9.78 (± 1.94) & 9.45 (± 1.54) for Kerala and Tamilnadu respectively. The follow-up scores for attitude were 10.53 (± 0.91), p value = 0.0031 & 9.85 (± 1.45), p value = 0.002 for Kerala and Tamilnadu respectively. The baseline scores for practice were 6.78 (± 2.56) & 9.06 (± 3.61) for Kerala and Tamilnadu respectively. The follow-up scores for practice were 8.12 (± 1.97), p value <0.0001 & 9.91 (± 3.38), p value = 0.0017 for Kerala and Tamilnadu respectively (Figure 3).

The baseline score for knowledge, attitude and practice were 33.78 (± 6.91) & 32.25 (± 8.92) for Kerala and Tamilnadu respectively. These scores are increased by 7.80 & 6.77 with significance (p value <0.0001) at follow-up visits (Figure 4). 93.80% of Community pharmacist said "yes" to the question for the lecture feedback, "Is your expectations of CPE is fulfilled by this lectures?"

DISCUSSION

This study was performed to measure how effective was the CPE provided in knowledge enhancement, improvement in attitude and practice to the community pharmacist belonging to selected districts of Kerala and Tamilnadu. There are different ways of incorporating continuing education to the pharmacist, Budzinski et.al reported that reading highlight excerpts and completing Web-based questionnaires was found to be effective mode of continuing education⁷ and another study published by Conte shown that even though pharmacists are interested to participate positively in web lectures, lack of technological and internet skills among community pharmacist would direct them more towards live sessions.⁸ In India, every pharmacy yet to even hold an internet connection, we adopted this method of delivery of live lectures, issue of leaflets and revision after one week as the effective method of providing continuing education.

In Kerala state more number of women pharmacist are working at community setup comparing Tamilnadu. This can be due to Kerala being educationally upfront state in India. In Tamilnadu more pharmacists are Bachelor of Pharmacy graduates. As large number of privately funded colleges and Universities are located in Tamilnadu than Kerala number of Bachelors in Pharmacy degree working in Community setup is high.⁹ The maximum participation was observed in Palakkad (23.89%) district followed by Kanyakumari (19.47%). The baseline score for knowledge in diabetes mellitus, hypertension, peptic ulcer disease and baseline score for attitude were higher in Kerala state than Tamilnadu, while practice score at baseline was higher in Tamilnadu comparing Kerala. The pre and post CPE shown that the knowledge, attitude and practice of the community pharmacist positively improved in both the states.¹⁰ Although direct measurement in quality of care to patient could not be established, it is expected that increment in community pharmacist's knowledge, attitude and practice can involve in delivering better patient care.

The pharmacist involvement in providing community based pharmaceutical care can lead to improvement in disease management without even altering the pharmacotherapy.¹¹ Further community pharmacist should evolve from dispenser to medication therapy adherence clinic manager for which his knowledge update, change in attitude and practice are the key components so that he can work along with physician to significantly improve the health of the patients. A research study conducted by Lim & Lim proved that such a collaboration shown significant improvements in HbA1c, glucose and LDL cholesterol levels as well as medication adherence in patients with diabetes.¹² Providing continuing pharmacy education can be a milestone in preparation of the pharmacist to

meet the increasing expectations of regulatory authorities.¹³ Comparing baseline score for KAP, the follow-up for both the states increased to larger extent indicating CPE positively affected the Community pharmacist establishing the evidence for implementing the CPE for lifelong learning and professional development.¹⁴ The majority of the community pharmacist (94%) said that the lecture fulfilled the expectations of them. The findings serve as a reference for the future planning, design, and improvement in continuing pharmacy education for India.^{15, 16}

CONCLUSION

The specified CPE program made a significant change ($P < 0.0001$) in pharmacist's knowledge, attitude and practice (KAP). The Community Pharmacist gave satisfactory score in feedback for the lectures delivered. Further Continuing pharmacy education modules for other diseases can be prepared and used for lifelong learning and professional development.

CONFLICT OF INTEREST:

Nil

ACKNOWLEDGEMENT:

Nil

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