

# Extending the Roles of Community Pharmacists: Views from General Medical Practitioners

Azmi Sarriff, PharmD\*, Nazri Nordin, BPharm\*\*, Mohamed Azmi Ahmad Hassali, PhD\*\*\*

\*Associate Professor (Clinical Pharmacy Discipline), \*\*MSc (Clinical Pharmacy) candidate, \*\*\*Associate Professor (Social and Administrative Pharmacy Discipline), School of Pharmaceutical Sciences, Universiti Sains Malaysia

## SUMMARY

This study investigates the views of general medical practitioners (GP) to the extended role of the community pharmacists (CP). A self-administered questionnaire was distributed to all private clinics (n=438) run by GPs in the state of Penang. The questionnaire asked GP's views on ideas for new services provided by community pharmacists. Three hundred and twenty-seven questionnaires were collected, giving a response rate of 74.5%. More than 50% of respondents were in favour of the community pharmacist involvement in activities of providing public health education (58.7%), contacting GPs on matters related to prescribing and prescription errors (56.0%), and referring patients who exhibit drug-related problems (53.0%). However, the respondents had a mixed opinion regarding the roles of CPs in smoking cessation programme (34.8%) and providing drug information to physicians (43.0%). Additional research is needed to explain GPs attitudes towards the acceptability of the new role of the pharmacist.

## KEY WORDS:

General practitioner, community pharmacist, patient-care activities, roles

## INTRODUCTION

Healthcare practice is drastically changing with the introduction of free accessibility of online health information such as the Internet<sup>1-2</sup>. People are better informed and educated concerning their health care needs. With the plethora of non-prescription products in the market, many people visit community pharmacies as their first point of contact in health care. Community pharmacists are strategically positioned to serve as gatekeepers into the health care system for self-medicating patients<sup>3-6</sup>. In addressing the professional development of pharmacists, the World Health Organization (WHO) introduced the concept of the "seven-star pharmacist" to cover the roles of a pharmacist, that is, as a caregiver, decision-maker, communicator, manager, life-long learner, teacher and leader. "Research" has been included as an eighth category, to form the Eight Star pharmacist<sup>7</sup>. According to WHO, pharmacists must possess specific knowledge, attitudes, skills and behaviours in support their roles. Accordingly, many studies have been carried out internationally to describe pharmacy practice, the role of pharmacist in the health care system and the pharmacy education<sup>8-11</sup>. Consequently, new

services provided by the community pharmacists are blooming and covering various aspects that include medication reviews, compliance support to elderly patients and propagation on various health promotion programs. Many studies had showed the positive impact of patient-centred roles of community pharmacists in term of health outcome<sup>8-12</sup>, quality of life<sup>13-16</sup>, cost-effective of the patient-orientated services<sup>15-18</sup>, as well as improve patients' drug use<sup>19-21</sup>.

Despite the expanding role of community pharmacist all over the world, the implementations of such an extended role has been slow in the local scene. The slow transformation and evolution of the pharmaceutical care practice might be due to the prescribing and dispensing activities by the general medical practitioners (GP). In the Malaysian context, the GPs have been given the legal right of dispensing<sup>22</sup>. The 1952 Poison Act<sup>23</sup> and other laws in place granted the right for registered general medical practitioners practicing in private clinics to prescribe and dispense medications in their clinics. As a result, most community pharmacies (CP) are focused on the sale and supply of non-prescription and health care products. In spite of the unfavourable conditions imposed by legal and historical limits<sup>22</sup>, there is a trend towards provision of patient-orientated activities such as patient counselling and providing drug information. This was reflected in a study conducted by Sarriff which revealed the engagement of CPs in such activities but there was no widespread implementation among the community pharmacists surveyed<sup>24</sup>. Nevertheless, the study provided insight regarding the role of community pharmacists and their involvement in patient care.

With the changing scenario of pharmacy practice and with the introduction of the philosophy of pharmaceutical care as a primary mission of pharmacy<sup>25</sup>, pharmacists must develop close working relationship with other health care professionals. The concept of pharmaceutical care represents an attempt to provide the community pharmacist with a more meaningful role, emphasising the concept of caring and commitment to patient care<sup>26</sup>. It refers to extended professional roles in which pharmacists assume responsibility for pharmaceutical and health outcomes, rather than a more limited drug supply role. In regards to these concepts of practice, it is important that pharmacists themselves understand GP's expectation and perception of their roles and input to patient care.

This article was accepted: 23 September 2012

Corresponding Author: Azmi Sarriff, School of Pharmaceutical Sciences, Universiti Sains Malaysia, Minden, Penang Malaysia

Email: azmi@usm.my

There is little published work regarding GP's perceptions of the roles of a community pharmacist involvement in patient care. Hassali et al. has conducted pioneer work among GPs in the northern state of Malaysia<sup>27</sup>. Their findings suggest that most of the GPs are aware that the current professional training of CP is more patient oriented; however, their opinions vary on the patient care roles of community pharmacist. For example, they were not in favour of CPs involvement in treating minor ailments or conducting screening tests. Therefore, the aim of this study was to explore further the views of general medical practitioners with regard to the specific patient care activities of the community pharmacists.

## MATERIALS AND METHODS

The study was executed in Penang from August through December 2010. At the time of the study, there were 438 private clinics in the state of Penang. The GP practising at each clinic were approached by a trained research assistant and invited to participate in the study. A self-administered questionnaire was distributed to them on the first visit and effort was made by the research assistant to collect the questionnaire distributed on the same day. A second visit was arranged to those who were unable to fill in the questionnaire on the same day. A follow-up telephone call was made within a week after the second visit to those who failed to complete the questionnaire. Completion and return of questionnaire was considered as consent to participate in the survey.

The initial survey items were developed by using information from literature reviews and discussions with four community pharmacists, two pharmacy educators and two GPs. Content validity and clarity of the drafted questionnaire was then reviewed and assessed by five GPs. The final version of the questionnaire consisted of three parts: (1) demographic data of GPs; (2) question ask whether they have ever interacted with CPs regarding matters related to patient care; and (3) set of 12 items related to specific patient care activities of the community pharmacists: (i) treating minor illnesses (3 items); (ii) referral of customers to GPs (2 items); (iii) contacting GPs (2 items); (iv) medication counselling and monitoring drug therapy (2 items); and (v) offering specific services (3 items). The respondents were requested to answer the related questions and indicate their level of agreement using a 5-point Likert scale response format (from strongly disagree to strongly agree).

Responses were coded and entered into SPSS for Windows, version 18, for statistical analysis. Chi Square test was used to test the significance of association between the independent variables (age, gender, length of medical practice and ever interacting with pharmacist) and the dependent variables (respondent's level of agreement). Statistical significance was accepted at P value of < 0.05.

## RESULTS

Out of the 438 questionnaires distributed, 327 were completed and returned, giving a response rate of 74.5 %. The mean ( $\pm$ SD) age of respondents was 51.2( $\pm$ 9.4) years, with a range of 30 to 77 years. More than 50% of the

respondents were female. The ethnic groups of the respondents were 36.7% Chinese, 33% Indian, and 29.1% Malay. About 43% of the respondents stated that they were in practice for more than 10 years. Table I shows the demographic data of the respondents.

Majority of the respondents (98.9%) never or rarely interacted with community pharmacists with regard to matters related to patient care. For those who interacted (1.2%) stated that the nature of their interactions with CPs was about drug availability (3), drug alternative (3), drug dosage (4), side effect (1), and drug interaction (2).

Although the survey showed that the responses were varied among the respondents, however, more than 50% of GPs 'agreed' or 'strongly agreed' for CPs performing certain patient-orientated activities for the following items (in descending order) : provide and communicate information on health and medicines to public (58.7%), contacting GPs on matters related to prescribing and prescription errors (56%), referring customers that exhibits drug-related problems to physician (54.4%), referring customers who are not suitable for self-care to the respective medical practitioner (53.4%), treating minor illness and monitor patient's response to drug therapy (52.6%), and suggesting the use of OTC drugs and screening customers for drug-related problem (50%). None of the respondents indicated more than 50% of 'disagree' or 'strongly disagree' towards the statements related to specific patient care activities of the community pharmacists. However, more than a third of the respondents 'disagreed' or 'strongly disagreed' with 'recommending the use of drug under the category of Poison C and D based on Poison Acts 1952' (30.2%), 'provides drug information to GPs on matters related to drug therapy' (33.3%) and 'counsel customers on the use of medications that prescribed by GPs and conducting smoking cessation program' (34.0%), respectively.

It was noted that the respondent's aged and years in practice showed a statistical significant association with response to the statement on recommending the use of drug under the category of Poison C and D based on Poison Acts 1952. The detail analyses of these associated variables were shown in Table II. Statistically significant differences were also observed amongst length of practice in response to the statements on contacting GPs on matters related to prescribing and prescription error, providing drug information, and screening customers for drug related problem. The question of whether GPs had ever interacting with CPs on matters related to patient care had showed no statistical significant differences with respect to the respondents' demographic.

## DISCUSSION

In order to develop patient-orientated activities effectively in community pharmacies, an understanding of the views of general practitioners concerning their present experience of community pharmacy services is vital. As there is a paucity of published data related to this matter, the present study provides empirical evidences on the views of GPs towards the extended roles of pharmacists in the community setting.

**Table I: Demographic characteristics of the participants (N = 327)**

| Demographic Characteristics | N (%)      |
|-----------------------------|------------|
| Gender                      |            |
| Male                        | 152 (46.5) |
| Female                      | 175 (53.5) |
| Race                        |            |
| Malay                       | 95 (29.1)  |
| Chinese                     | 120 (36.7) |
| India                       | 108 (33)   |
| Others                      | 108 (33)   |
| Years in practice           |            |
| < 10 years                  | 108 (33)   |
| ≥ 10 years                  | 139 (42.5) |

**Table II The association of respondent's age and years in practice on the following variables**

| Variables   | Responses, N (%) |           |           |           |           | P-value* |
|---|------------------|-----------|-----------|-----------|-----------|----------|
|   | SD               | DA        | N         | A         | SA        |          |
| 1. Age  |                  |           |           |           |           |          |
| 1.1 Recommending the use of drug under the category of Poison C and D based on Poison Acts 1952 (e.g. antihistamines, NSAIDs, antidiabetics)# |                  |           |           |           |           |          |
| < 40 years old  | 11 (25.6)        | 6 (14.0)  | 6 (14.0)  | 13 (30.2) | 7 (16.3)  | 0.005    |
| ≥ 40 years old  | 22 (7.7)         | 61 (21.5) | 74 (26.1) | 85 (29.9) | 42 (14.8) |          |
| 2. Years in practice  |                  |           |           |           |           |          |
| 2.1 Recommending the use of drug under the category of Poison C and D based on Poison Acts 1952 (e.g. antihistamines, NSAIDs, antidiabetics)# |                  |           |           |           |           |          |
| < 10 years  | 25 (13.3)        | 47 (25.0) | 44 (23.4) | 48 (25.5) | 24 (12.8) | 0.009    |
| ≥ 10 years  | 8 (5.8)          | 20 (14.4) | 36 (25.9) | 50 (36.0) | 25 (18.0) |          |
| 2.2 Contacting GPs on matters related to prescribing and prescription errors.   |                  |           |           |           |           |          |
| < 10 years  | 13 (6.9)         | 22 (11.7) | 61 (32.4) | 44 (23.4) | 48 (25.5) | 0.020    |
| ≥ 10 years  | 4 (2.9)          | 14 (10.1) | 29 (20.9) | 50 (36.0) | 42 (30.2) |          |
| 2.3 Provides drug information to GPs on matters related to drug therapy.  |                  |           |           |           |           |          |
| < 10 years  | 42 (22.3)        | 36 (19.1) | 35 (18.6) | 52 (27.7) | 23 (12.2) | 0.003    |
| ≥ 10 years  | 14 (10.1)        | 17 (12.2) | 42 (30.2) | 41 (29.4) | 25 (18.0) |          |
| 2.4 Screening customers for drug-related problems. (e.g. non-compliance, drug interactions, experience ADRs)                                  |                  |           |           |           |           |          |
| < 10 years  | 26 (13.8)        | 42 (22.3) | 36 (19.1) | 51 (27.1) | 33 (17.6) | 0.008    |
| ≥ 10 years  | 7 (5.0)          | 18 (12.9) | 35 (25.2) | 46 (33.1) | 33 (23.7) |          |

\* Chi-Square analysis to determine the p-value; SA- Strongly Agree; A-Agree; N-Neutral; DA-Disagree; SD-Strongly Disagree; NSAIDs : Non-Steroidal Anti-inflammatory Drugs; ADR: Adverse drug reaction; GP: General practitioner ; # Poison C and D : The Group C and D poisons are drugs that are listed in the Poisons Act 1952(Revised 1989). A registered pharmacist can legally dispense these groups of drugs without a prescription from a registered medical practitioner, however, it needs to be recorded in the Poison Book.

In the current study, each respondent is requested to state their level of agreement in relation to community pharmacists providing a range of patient-orientated activities. It was found that more than half of respondents were receptive to community pharmacists undertaking many of the activities suggested to them. It seems that GPs generally agreed that CPs should be involved in providing public health education, contacting prescriber on matters related to prescribing and prescription errors, and referral of patients or customers. This was in line with other observations elsewhere<sup>28-29</sup> and in line with WHO recommendations to facilitate continuity of care among

patients by referral. Perhaps, this will create an opportunity for collaborative patient care<sup>30</sup>. In fact there was a study about a collaborative working relationship between these two practitioners in term of referral<sup>31</sup>. This extended role was proposed and agreed by both practitioners to be a part of health care system<sup>32</sup>. In fact, the American health care system has recognized pharmacist as part of the health care team members<sup>33</sup>. In this study, however, it was noted that the responses varied among the respondents with regards to pharmacist activities involving direct patient contact such as recommending the use of drugs under the category of Poisons C and D for the treatment of minor ailments, providing

patient counseling, as well as conducting smoking cessation program. It was noticed that the respondent's aged and years in practice had showed a statistical significant association with in response to the statements listed in Table II. This observation was in line with another study conducted by Adepu *et al.* which found that age significantly influenced only few opinions, whereas length of practice or experience of the GPs has significant influenced on the majority of the statements listed<sup>34</sup>. Actually, it was observed that younger GPs and those with few years in practice have a more negative perception of the role of community pharmacists. In this regards, community pharmacist have performed these roles for many years. This finding, may perhaps be that the respondents are less aware of the extent to which patients rely upon community pharmacists for recommending medicines for minor ailments. In addition, the respondents were probably uninformed about the current aspects of pharmacy education that are more patient and clinically oriented rather than product-oriented. A previous study had demonstrated how patients had consulted pharmacists for minor illness treatment and returned for another consultation<sup>35</sup>. In fact, the UK's health policy documents are encouraging community pharmacists to be involve thoroughly in treating patients with minor illness problem<sup>36</sup>.

Interestingly, more than a third of respondents in this study 'disagreed' and 'strongly disagreed' with the CPs' roles as drug information provider to physicians. However, the respondents have strong views that CPs was a reliable source of general as well as information regarding traditional and complimentary medicines. This opinion, however, raises a question of how CPs were viewed by GPs as drug information provider. This finding was in line with the observation by Hassali *et al.* in which GPs 'disagreed' or 'strongly disagreed' that CPs were well educated in or well trained on clinical therapeutics<sup>27</sup>. This finding suggest that the respondents may perceive CPs are less able to provide information pertinent to drug therapy needs of patient as well. In this regards, it is unclear how GPs were aware of this deficiency. Other important roles of CP, for instance, in the patient counseling activity, where respondents showed mixed feeling of strongly neither agreed nor disagreed. This is surprising, given that patient counseling and providing drug information activities are the core services and important roles of community pharmacists. In the present study, however, almost all of the respondents had no regular interaction with CPs. Thus, it is possible that this may have resulted in the negative responses for such CP's activities of which they had little experience.

In short, the existence of CPs in the local health care system is not well understood by most of GPs. Little information about the extended role of CPs presented to the GPs might be a part of the reason. Therefore, GPs should accept the fact that pharmacies can be regarded as a health promotion centre<sup>37</sup>, whereby the pharmacists has been long recognized as one of the health care providers who can increase medication adherence<sup>38</sup> as well as promoted healthcare activities<sup>39,42</sup>. The smoking cessation program, for instance, has caused pharmacists to be perceived as a valuable health care provider<sup>43-44</sup>. Many studies has shown the positive impact of the pharmacist's activities in the health care system<sup>45-46</sup>, and the flow of patients' visit to GPs had been increased resulting from the pharmacist's advice on this matter<sup>47</sup>.

## LIMITATION OF THE STUDY

As this was a cross-sectional study conducted within a specific period among private clinics in the State of Penang, the results may not apply to all GPs practicing in Malaysia. In addition, the results obtained in this study only represent the GPs' opinions at a particular point of time and may not necessarily reflects the future since the community pharmacy practice is undergoing transformation over the current time. The questionnaire contained only a list of patient-orientated activities deemed to be practiced by community pharmacists. Inclusion of some open questions may have helped to elicit information or reasons for negative opinions on specific type of activities such as providing drug information to physician and patient counseling.

## CONCLUSION

Although respondents expressed positive opinion about the extended roles of the community pharmacists they have some reservations on some important key roles of community pharmacist. Nevertheless, findings of this study have illustrated an interesting range of opinions towards various aspects of the community pharmacists' extended role. Therefore, it is important to investigate fully general medical practitioners' attitudes towards the acceptability of the new role of the pharmacist.

## ACKNOWLEDGEMENTS

We would like to thank all the general practitioners who took part in the survey, and to the Universiti Sains Malaysia for the provision of funding under the Research University Grant (1001/PFARMASI/8120234).

## REFERENCES

- Murray E, Lo B, Pollack L, *et al.* The Impact of Health Information on the Internet on Health Care and the Physician-patient Relationship: National U.S. Survey among 1.050 U.S. Physicians. *J Med Internet Res* 2003; 5(3): e17.
- Shepperd S, Charnock D, Gann B. Helping patients access high quality health information. *BMJ* 1999; 319 (7212): 764-6.
- Covington TR. Nonprescription drug therapy: Issues and opportunities. *Amer J Pharm Educ* 2006; 70(6) article137, 1-5
- Smith M, Bates DW, Bodenheimer T, Clearly PD. Why Pharmacists belong in the medical home. *Health Aff* 2010; 29 (5): 906-13.
- Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm* 1990; 47 (3): 533-543.
- Major C, Vincze Z, Mesko A, Balogh J, *et al.* Medicating outside the consulting room. *Orv Hetil* 2007; 148 (7): 291-8.
- WHO. New tool to enhance role of pharmacists in health care. Available at: <http://www.who.int/mediacentre/news/new/2006/nw05/en/index.html>. Accessed on: 21/9/2010 )
- Anderson S. The state of the world's pharmacy: a portrait of the pharmacy profession. *J Interprof Care* 2002; 16(4): 391-404
- Kibicho J, Owczarzak J. A patient-centered pharmacy model of HIV patient care in community pharmacy setting: A theoretical and empirical framework. *AIDS Patient Care STDS* 2012; 26 (1): 20-8.
- Chisholm-Burns MA, Kim Lee J, Spivey CA, *et al.* US pharmacists' effect as team members on patient care: Systematic review and meta-analyses. *Med Care* 2010; 48(10): 923-33.
- Fuentes DG. Integration of pharmacotherapy topics across the curriculum using a " Create-Your-Own-Patient Case" team project. *Currents in Pharmacy Teaching and Learning* 2012; 4(1): 60-71.
- Hawksworth GM, Corlett AJ, Wright DJ, *et al.* Clinical Pharmacy interventions by community pharmacists during the dispensing process. *Br J Clin Pharmacol* 1999; 47(6): 695-700.
- Mehuys E, Van Bortel L, De Bolle L, *et al.* Effectiveness of pharmacist intervention for asthma control improvement. *Eur Respir J* 2008; 31(4): 790-9.

14. Verma A, Harrison A, Torun P, Vestbo J, Edwards R, Thornton J. Are pharmacists reducing COPD'S impact through smoking cessation and assessing inhaled steroid use?. *Respir Med* 2012; 106(2): 230-4.
15. Bunting BA, Cranor CW. The Asheville Project: Long term clinical, humanistic, and economic outcomes of a community-based medication therapy management program for asthma. *J Am Pharm Assoc* 2006; 46 (2): 133-47.
16. Krass I, Smith C. Impact of medication regimen reviews performed by community pharmacists for ambulatory patients through liaison with general medical practitioners. *Int J Pharm Pract* 2000; 8(2): 111-20.
17. Pauley TR, Magee MJ, Cury JD. Pharmacist-managed, physician-directed asthma management program reduces emergency department visits. *Ann Pharmacother* 1995; 29(1): 5-9.
18. Chumney EC, Robinson LC. The effect of pharmacist interventions on the patients with polypharmacy. *Pharmacy Practice* 2006; 4(3): 103-9.
19. Bertram MY, Lim SS, Barendregt JJ, *et al.* Assessing the cost-effectiveness of drug and lifestyle intervention following opportunistic screening for pre-diabetes in primary care. *Diabetologia* 2010; 53(5): 875-81.
20. Rosenquist A, Best BM, Miller TA, Gilmer TP, Hirsch JD. Medication therapy management services in community pharmacy: A pilot programme in HIV speciality pharmacies. *J Eval Clin Pract* 2010; 16 (6) : 1142-6.
21. Williams KA, Emmerton LM, Taylor R, Werner J, Benrimoj SI. Non-prescription medicines and Australian community pharmacy interventions: Rates and clinical significance. *Int J Pharm Pract* 2011; 19(3): 156-65.
22. Wong SS. Pharmacy practice in Malaysia. *Malaysian Journal of Pharmacy* 2001; 1: 2-8.
23. Legal Research Board. Poison Act 1952 (Act 366) & Poisons Regulations 1952, Poisons (Fees) Regulations 1983, Control of Drugs and Cosmetics Regulations 1984, Poisons (Psychotropic Substances) Regulations 1989. International Law Book Services, Kuala Lumpur, 1996: 11.
24. Sariff A. A survey of patient-orientated services in community pharmacy practice in Malaysia. *J Clin Pharm Ther* 1994; 19: 57-60.
25. Hepler CD, Strand LM. Opportunities and responsibilities in pharmaceutical care. *Am J Hosp Pharm* 1990; 47: 33-43.
26. Odedina FT, Segal R, Hepler CD. Providing pharmaceutical care in community practice: Differences between providers and non-providers of pharmaceutical care. *J Soc Adm Pharm* 1995; 12 : 170-180.
27. Hassali MA, Awaisu A, Shafie AA, *et al.* Professional Training and Roles of Community Pharmacists in Malaysia: Views from General Medical Practitioners. *Malaysian Family Physician* 2009; 4: 2-3.
28. Bleiker P, Lewis A. Extending the role of community pharmacists: the views of GPs. *Int J Pharm Pract* 1998; 6(3): 140-144.
29. Bailie GR, Romeo B. New York State primary care physicians' attitudes to community pharmacists' clinical services. *Arch Intern Med* 1996; 56(13): 1437-41.
30. Wledemmayr K, Summers RS, Mackle CA, *et.al.* Developing pharmacy practice- a focus on patient. Geneva: WHO, 2006.
31. Hassell K, Noyce PR, Rogers A, Harris J, Wilkinson J. A pathway to the GP: The pharmaceutical 'consultation' as a first port of call in primary health care. *Fam Pract* 1997; 14(6): 498-502.
32. Sutters CA, Nathan A. The community pharmacist's extended role: GPs' and pharmacists' attitudes towards collaboration. *J Soc Adm Pharm* 1993; 10(2): 70-84.
33. Chisholm-Burns MA, Kim Lee J, Spirey CA, *et al.* US pharmacists' effect as team members on patient care: Systematic review and meta-analyses. *Med Care* 2010; 48(10): 923-33.
34. Adepu R, Nagavi BG. General practitioners' perceptions about the extended roles of the community pharmacists in the State of Karnataka: A study. *Indian J Pharm Sci* 2006; 68: 36-40.
35. Vohra S. A community pharmacy minor ailment scheme – Effective, rapid, and convenient. *Pharm J* 2006; 276(7406): 754-6.
36. Paudyal V, Hansford D, Cunningham S, Stewart D. Pharmacy assisted patient self-care of minor ailments. A chronological review of UK health policy documents and key events 1997-2010. *Health Policy* 2011; 1011(3): 253-9.
37. Anderson C. Health promotion in community pharmacy: The UK situation. *Patient Educ Couns* 2000; 39(2-3): 285-91.
38. Lee JK, Grace KA, Taylor AJ. Effect of a pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol: A randomized controlled trial. *J Am Med Assoc* 2006; 296(21): 2563-71.
39. Anderson C, Blenkinsopp A. The role of the pharmacist in health development. *Pharmacy in Practice* 2003; 13(1): 16-24.
40. Chandra A, Malcolm 2nd. N, Fetters M. Practicing health promotion through pharmacy counseling activities. *Health Promot Pract* 2003; 4 (1): 64-71.
41. Jackson JK, Sweidan M, Spinks JM, Snell B, Duncan GJ. Public Health-Recognising the role of Australian pharmacists. *J Pharm Pract Res* 2004; 34(4): 290-2.
42. Jesson J, Bissell P. Public health and pharmacy: A critical review. *Critical Public Health* 2006; 16(2): 159-69.
43. Dent LA, Harris KJ, Noonan CW. Randomized trial assessing the effectiveness of a pharmacist-delivered program for smoking cessation. *Ann Pharmacother* 2008; 43(2): 194-201.
44. Dent LA, Harris KJ, Noonan CW. Tobacco interventions delivered by pharmacists: A summary and systematic review. *Pharmacotherapy* 2007; 27(7): 1040-1051.
45. Lewinski D, Wind S, Belgardt C, Plate V, Behles C, Schweim HG. Prevalence and safety-relevance of drug-related problems in German community pharmacies. *Pharmacoepidemiol Drug Saf* 2010; 19(2): 141-149.
46. Westerlund T, Almarsdottir AB, Melander A. Drug-related problems and pharmacy interventions in community practice. *Int J Pharm Pract* 1999; 7(1): 40-50.
47. Bond CM, Bradley C. The interface between the community pharmacists and patients. *BMJ* 1996; 312(7033): 758-60.