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Original Research Article

# A Medication Audit to Assess the Knowledge and Practice Among Community Pharmacists Regarding Medication Dispensing and its Safety in Pregnancy

**Nivethitha T[1], Vijayarangan S[2], Suguna Anbazhagan[3]**

[1,2,3]Trichy SRM Medical College Hospital & Research Centre, SRM Nagar, Trichy- Chennai Highway, Trichy

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**Corresponding author: Dr. Nivethitha T**
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**Abstract:**

**Introduction:** Medication use during pregnancy is challenging because of the potential fetal risk associated with its use. Pharmacists are primary health care providers for a pregnant woman. Hence the main objectives of the study were to determine the knowledge among community pharmacists towards drug dispensing and its safety in pregnancy and also to assess the knowledge and practice gaps by performing a medication audit.

**Materials and Methods:** The study was a mixed method study conducted among community pharmacists within the field practice area of Trichy SRM Medical College Hospital for 3 months. 260 pharmacists were enrolled. The knowledge was assessed by a pre-tested semi-structured questionnaire. A medication audit was performed of the medications dispensed to pregnant women by the community pharmacist for the past 3 months.

**Results:** The average knowledge score was 6.64 ± 1.36. The knowledge scores were higher among B. Pharm graduates and (7±1.8), Pharmacists with experience 5 to 9 years (7.6±0.9) which were statistically significant ($p<0.05$). Pharmacists dispensed ≤ 50 prescriptions per day (n=135, 52%). Analgesics were most frequently dispensed (n=115, 44%). None the prescribed drugs belonged to FDA Category X and were dispensed in the prescribed dose, duration and frequency. However, 202 pharmacists dispensed drugs without prescription, at patient request (n=83, 33%) and based on previous knowledge (n=52, 20%) and experience of the pharmacist (n=41, 16%).

**Conclusion:** The community pharmacists had average knowledge and a gap between knowledge and practice. Hence there is a need for continuous education programmes to ensure safe and effective drug dispensing among pregnant women.



## Introduction

Medication use during pregnancy is challenging because of the potential fetal risk associated with the use of medications. Due to the maternal physiological changes during pregnancy, women suffer from a variety of symptoms, such as nausea and vomiting, constipation, indigestion, hypertension, eclampsia, and infections, for which medication use may be unavoidable at times [1].

Although several medications used during pregnancy are known to cause fetal harm, there is still a lack of data on the risk and safety of most medications. Because of this, pregnant women might unknowingly take a medication that could affect her fetus, or the anxiety and overestimated risk perception may discourage women from adhering to beneficial regimens [2]. Global data suggest that 27% to 93% of all women use at least one prescription drug during pregnancy [3]. Pharmacists are medication experts, well trained to apply evidence-based clinical knowledge, provide pharmaceutical care, and advise women on their prescriptions [4]. Some patients approach pharmacists as the first step in seeking medical advice for their symptoms [5]. Furthermore, studies have identified pharmacists as a primary health care provider in answering drug-related queries and counselling pregnant women on their medications [6].

However, pharmacists may not have the information and skills to provide appropriate advice. Dispensing of prescriptions remains the primary duty of pharmacists, particularly in community pharmacies with no clinical pharmacy services. However, there is a lack of empirical evidence about pharmacists' knowledge, practice, and experience of drug use in pregnancy. Hence this study was conducted with the objective of determining the knowledge among community pharmacists towards drug dispensing and its safety in pregnancy and also assessing the knowledge and

practice gaps by performing a medication audit of drugs dispensed to pregnant women by the community pharmacist within the study period.

## Materials and Methods

The study was a mixed methods study, a combined cross-sectional and retrospective study conducted for a duration of 3 months. The sample population was all rural and urban community pharmacists within the field practice area of Trichy SRM Medical College Hospital and the sample was obtained by universal sampling technique. From the sample population, the study population was selected which included all community pharmacists practicing in the pharmacies of rural and urban areas within the field practice area of Trichy SRM Medical College Hospital, who fulfill the inclusion criteria. The study included participants of age above 20 years and below 60 years, both genders, pharmacists practicing in the community pharmacy for 6 months and above and participants who gave informed written consent. Participants who were not willing to or unable to give consent to participate in study were excluded from the study.

An informed written consent was obtained before enrolling them into the study. The study was initiated after approval from the Institutional Ethical Committee. The study was conducted in the pharmacies of rural and urban areas within the field practice area of Trichy SRM Medical College Hospital. The knowledge was assessed by a pre-tested semi-structured questionnaire consisting of 10 questions and a score of 1 was given to each question, so that the total score was 10. The scores were graded as >8 – high, average – 6 to 8, low – 4 to 5 and very low < 4 [7].

A medication audit was performed of the medications dispensed to pregnant women by the community pharmacist for the past 3 months.

The following parameters were noted: Prescription/non-prescription/food/herbal medications. In case of prescribed drugs, the following additional parameters were noted: average number of drugs per prescription, average prescriptions in a day, prescription drugs – FDA Category, Dose, Duration, frequency, dosage form and the class of drugs prescribed (e.g., analgesics). The data collected was analyzed using SPSS software (version 26.0). Descriptive statistics were used wherever appropriate, and the values were expressed as percentages. For continuous normally distributed values, the two tailed student's independent t-test was used for intergroup analysis (< 2 groups), ANOVA (analysis of variance) was used for >2 groups.

For continuous and not normally distributed variables, Mann Whitney U-test was used for < 2 groups and Kruskal Wallis test was used for > 2 groups. For discrete variables, Chi square test/Fisher's exact test was used. The p value of <0.05 was considered statistically significant.

## Results

A total of 260 community pharmacists were enrolled in the study. Out of which were 60% (n=157) males and 40% (n=103) were females. The age wise distribution of the pharmacists is illustrated in Table 1.

**Table 1: Age wise distribution of study participants**

| Age group in years | Total no of participants n=260(%) |
|---|---|
| 20-29 | 115(44%) |
| 30-39 | 71(27%) |
| 40-49 | 44(21%) |
| 50-59 | 20(8%) |

The academic qualifications of the pharmacists are illustrated in Table 2.

**Table 2: Academic qualification of the study participants**

| Level of education | Total number of study participants n=260 (%) |
|---|---|
| Diploma in pharmacy | 127 (49%) |
| B. Pharmacy | 99 (38%) |
| M.Pharmacy | 34 (13%) |

The average years of experience of the pharmacists is illustrated in Figure 1.

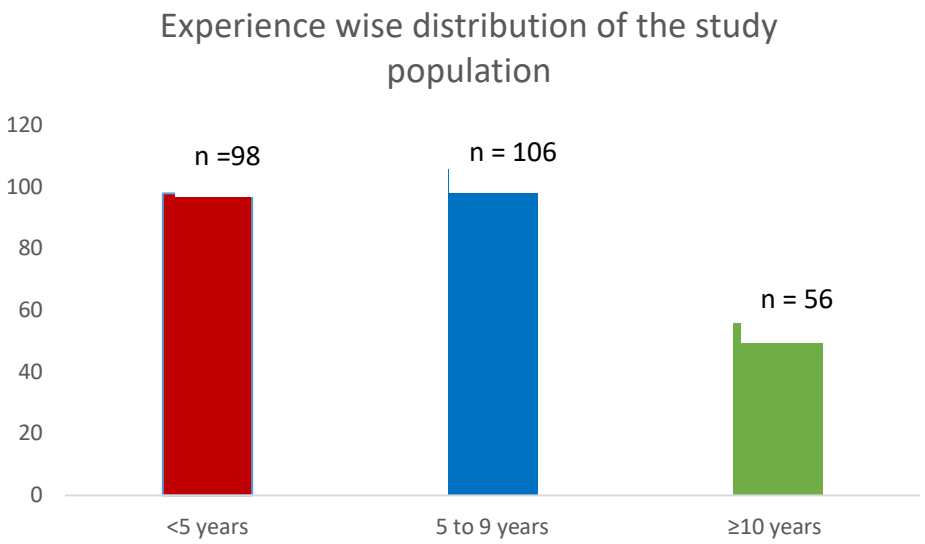


**Figure 1: Experience wise distribution of study participants**

About 36% (n=93) pharmacists belonged to government sector and 64% (n = 167) pharmacists belonged to private sector. About 45.8% (n = 119) of the pharmacies belonged to urban sector and 54.2% (n = 141) of the pharmacies belonged to rural sector. The knowledge of the Pharmacists was assessed using a pre-tested structured questionnaire. Part 1 of the questionnaire consisted of demographic information and Part 2 consisted of 10 questions used to test knowledge (Table 3).

**Table 3: Questionnaire used to test knowledge of the study participants**

| S.No | Question |
|---|---|
| 1 | What is a teratogen? |
| 2 | What are the FDA Categories of drugs in pregnancy? |
| 3 | Define category A |
| 4 | Define category B |
| 5 | Define category C |
| 6 | Define category D |
| 7 | Define category X |
| 8 | Which category of drugs is/are contraindicated in pregnancy? |
| 9 | Which of the following supplementation is necessary in pregnancy?<br>a) Iron and Folic acid b) Calcium c) Both a) and b) d) None. |
| 10 | Which of the following products might be harmful in pregnancy?<br>a) Herbal products b) Over the counter drugs (OTC) c) Topically applied medicines d) All of the above. |

The average knowledge score of the pharmacists was 6.64 ± 1.36 (average level of knowledge). The knowledge score was higher in males (6.67±0.52) compared to females (6.60 ± 2.57) although the difference was not statistically significant ($p = 0.94$).

The knowledge score of Pharmacists with D. Pharm degree was (6.6±0.54), B. Pharm degree was (7±1.8) and M. Pharma was (5±0) and the B. Pharm graduates had a higher knowledge score which was statistically significant ($p<0.05$). The mean knowledge score of pharmacists with <5 years of experience was (6.5±0.6), 5 to 9 years' experience was (7.6±0.9) and >10 years was (4.5±0.7). The mean knowledge score of pharmacists with experience 5 to 9 years was higher and the results were statistically significant ($p<0.05$). The mean knowledge score of Pharmacists employed in government sector was (6.50±0.58) and pharmacists employed in private sector was (7±1.67) and the results were not statistically significant ($p>0.8$). The mean knowledge score of pharmacists employed in urban sector was (6.60±0.55) and pharmacists employed in rural sector was (7±1.87) and the results were not statistically significant ($p>0.9$). A medication audit was performed of the medications dispensed to pregnant women by the community pharmacist for the past 3 months. The average number of prescriptions dispensed in a day were as follows:

**Table 4: Prescription wise distribution**

| Average number of Prescriptions dispensed per day | Total no of participants; n=260(%) |
|---|---|
| ≤50 | 135 (52%) |
| 51-100 | 78 (30%) |
| ≥101 | 47 (18%) |

The following classes of drugs were prescribed to the pregnant women. (Figure 2)

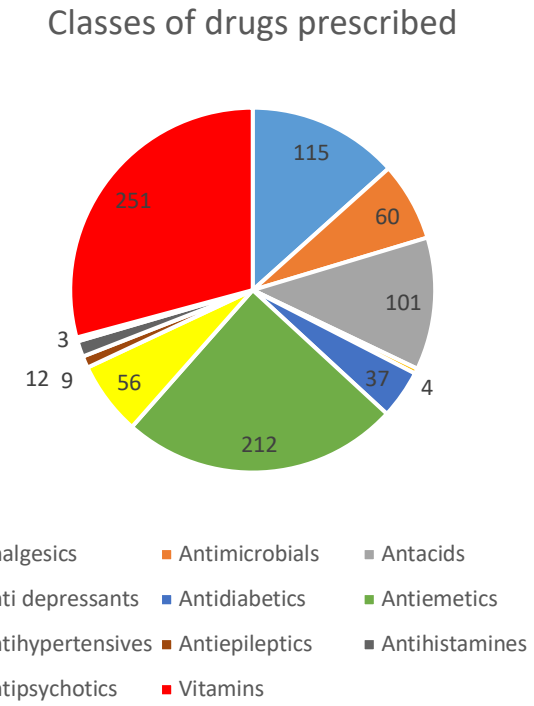


**Figure 2: Classes of drugs prescribed to pregnant women**

None the prescribed drugs belonged to FDA Category X so were deemed safe for pregnant women. All of them were dispensed in the prescribed dose, duration and frequency. However certain amount of drugs was dispensed without prescription by some of the Pharmacists (n=202). The factors responsible for this were stated as follows:

**Table 5: Factors responsible for prescribing drugs without prescription by pharmacist for pregnant women**

| S.No | Factors for dispense | Total number of participants (n=202) |
|---|---|---|
| 1 | Patient request | 83(33%) |
| 2 | Pharmacist's experience | 52(20%) |
| 3 | Pharmacist knowledge and background | 41(16%) |
| 4 | Treating previous similar cases | 16(6%) |
| 5 | Taking patients symptoms lightly | 8(3%) |

However, 98% (n=255) of the pharmacists asked about pregnancy status before dispensing non prescribed medications. 22% (n=58) requested the patients to return to the consulting physician for advice and prescription. However, 78% (n=202) dispensed the drugs based on their prior knowledge and experience.

## Discussion

This study was conducted among community pharmacists for a duration of 3 months. A total of 260 community pharmacists participated in the study. This study revealed that the pharmacists had average knowledge about drug prescribing in pregnancy (score = 6.64 ± 1.36). However, there were statistically significant differences in the scores when compared with gender, educational qualification, and years of experience.

This was similar to a study conducted among 76 pharmacists in Ethiopia by Tuha et al [8] which revealed a significant difference for study college and years of experience of the pharmacists in their score of knowledge test (p=0.020 and p=0.024, respectively). There was also a difference noticed among pharmacists in their advice to pregnant women with respect to gender (p=0.030), study college (p=0.036), and working institution (p=0.013).

This study also revealed that though the pharmacists had average knowledge of drug dispensing and its safety in pregnant women, there was a gap between the existing knowledge and practice, as they dispensed drugs to pregnant women based on prior experience in treating similar cases, and on the request of the patient, without redirecting them to the consulting physician for prescription and advice. This was similar to a study conducted by Narayana et al [9], among 403 community pharmacists which demonstrated that though community pharmacists had a positive attitude and some knowledge about safe medication use in pregnant women, there was a wide gap in knowledge levels and practices of community pharmacists towards safe medication use in pregnant women. The study also revealed that good knowledge and safe practices were associated with factors like age, qualification and experience of the pharmacists.

The study also highlighted the lacunae areas in pharmacists' knowledge and practice, which can be improved by conducting continuous medical education programmes about drug safety in pregnancy and disposal of drugs to pregnant women. The study also revealed the factors responsible for dispensing medications to pregnant women without prescription, which is a potential area of intervention in the future, to minimize dispensing errors and to enable safe medicine dispensing in pregnancy. This was similar to a study conducted by Rouf et al [10] in Qatar among 400 community pharmacists, which revealed that the majority of respondents having an average knowledge, and also highlighted the obstacles faced by pharmacists in Qatar while giving drug information to pregnant women, such as lack of time and lack of training in drugs used during pregnancy, hence emphasizing the need for continuous medical education in this area.

Hence it becomes the duty of the community pharmacist, who is more often the primary health care provider to a pregnant woman, to have a thorough knowledge about the medicine safety in pregnancy and to adopt proper dispensing practices, as the pregnant women themselves are unaware of the medication safety in most of the situations. This was highlighted in a study conducted by Navaro et al [11] among 503 pregnant women in Italy, which revealed that most women had poor knowledge and were more likely to self-medicate, and this tendency was higher in older, multiparous women, with no history of abortion, and in those who did not know the potential risk of using non-prescribed medication during pregnancy.

## Conclusion

The study revealed that the community pharmacists had average knowledge on the medication dispensing and its safety in pregnant women, and there were significant variations with respect to academic qualification and years of experience in the knowledge scores.

However, there was a gap in knowledge and practice, as evidenced by certain practices like prescribing drugs without prescription, based on their prior knowledge and experience with the drug. Hence there is a need for continuous education programmes in this area, to narrow down this gap between knowledge and practice, so that pharmacists being the primary health care provider will be able to dispense drugs safely and effectively, minimizing the errors and adverse effects, thus enabling to achieve the ultimate goal of rational prescription of drugs to the community.

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