An Attempt to Develop Community Pharmacy Practice: Results of Two Surveys and Two Workshops Conducted in Tamilnadu

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For the past ten years, many individuals and institutions in India have recognized the importance of community pharmacists towards patient care in addition to their traditional role as drug dispensers. The purpose of this study is to investigate the current dispensing practices in various areas within a district of Tamilnadu, to identify the deficiencies vis-à-vis regulatory requirements and the interventions needed to enhance the image and status of community pharmacy practice. A surveillance study was performed in two phases. The person in-charge of a pharmacy was approached with a questionnaire and data on dispensing practices were collected through a structured interview. Workshops were conducted to provide interventions that have been identified during survey, to retail pharmacists who volunteered to participate in the workshops. The knowledge gained on completion of the workshop was assessed. The study found about 50% of the pharmacies function without pharmacists. Fifty eight percent pharmacists dispense prescription drugs without prescription. More than 80% of the retail pharmacists were not aware of rational drug use and have not even heard about transdermal patches. The retail pharmacists rarely counsel patients and examine the prescription for medical errors. Improvement in knowledge occurred among workshop attendees after the workshop. Guidelines have been compiled, which when implemented gradually, may provide impetus to community pharmacists in this area to perform the task of providing pharmaceutical services in a better and professional way.

One of the major challenges facing India has been that devising the professional role of community pharmacists to ensure access of medicines in rural areas that are safe and efficacious, while concurrently elevating the minimum qualification for registration as pharmacists to a level on a par with international pharmacy practices. The intricacies of the professional role of community pharmacist in sale/dispensing of medicines have not popularized neither by Government nor by manufacturers of medicines. It is no surprise that government's statistics on the health care professionals in the national health policy (www.mohfw.nic.in/np2002.html) does not even mention number of pharmacists in the country. In the absence of proper information and advice, patients purchase only a part of medicines prescribed and take these for inadequate periods due to financial constraints[1]. There are relatively few studies that focused specifically on community pharmacy services in India. One reported study observed that pharmacists lack proper training to take up patient counselling[2]. The Karnataka state pharmacy council project of training pharmacists was found to be promising due mainly to the interest shown by the pharmacists to update their knowledge in pharmaceutical sciences[3,4]. In 2001 a study preceding to this present study reported that community pharmacy practice is limited only to supply of ready-to-dispense drugs to patients[5].

We designed this project to analyze community pharmacists' current status regarding the delivery of pharmaceutical services with specific intention of identifying deficiencies vis-à-vis legal requirements, and what are the interventions to be provided to improve the present situations and the impact of interventions provided. In this study, we attempted to develop stepwise strategies needed that could enable the profession to have an increasingly greater impact on community pharmacy practice, with special reference to local situations.

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The present study was carried out in Cuddalore district (population: approximately 2 300 000; percent of rural population: 73.52; area: 3564 km²; pharmacies: 503) of Tamilnadu state. Structured interviews with a questionnaire served as main data collection method and supplementary documentary material was used. Both qualitative and quantitative approaches were used. The sample for this study included 210 representative pharmacies (Table 1). Pharmacies were randomly selected in urban and suburban areas. On the other hand, selection of pharmacies in villages and remote areas were subject to potential bias to include representative pharmacies from most villages in the district. The study team (authors of this study) contacted the persons in charge of each of the 210 pharmacies with a questionnaire and interviewed him/her directly to document pharmacist's attitude towards dispensing practice and to assess actual situation. The surveillance study was carried out in two phases. The first phase of the study was undertaken from February to August 2001 (prior to first workshop) and the second phase of the study from January to July 2002 (prior to second workshop). Two workshops, of 1 day duration, were conducted following each phase of surveillance study, for pharmacists to provide interventions needed, which have been identified during surveillance study. The questionnaire was so designed to elicit information concerning community pharmacists' awareness of medication use and knowledge of recent development of pharmaceuticals, the extent to which they respond to requests of health seekers to supply medicines, their general perceptions, and their opinions on certain barriers in community pharmacies. In addition the study team observed the following aspects: Do pharmacists equip

themselves to sell drugs on the basis of indications? Whether suggest prescription drugs to symptoms of ailments? Do they consider contra indications while selling drugs without prescription? What does the pharmacy look like? The data of the study were recorded and analyzed with the help of Microsoft Excel 2000. These data represent summary of operating figures, which were supplied voluntarily by the pharmacy owners or the persons in charge of the pharmacies.

Community pharmacists are registered pharmacists whose presence is legally required during selling and dispensing of medicines as per Rule 65(15) of the Drugs and Cosmetics Act, 1940[6]. The term 'drug retailers' is being used in this study for people who did actually manage a pharmacy when no pharmacist was present. These persons could be the owners of pharmacies, relatives in case of pharmacies owned by registered pharmacist, or other supporting staff having manageable knowledge of selling drugs. We name both drug retailers and community pharmacists together as 'retail pharmacists' for the purpose of our study since both groups play an important role in the pharmacies of rural India. This terminology was used in the previous part of the work reported earlier[7].

The workshops of 1 day duration were conducted in the Department of Pharmacy, Annamalai University, Tamilnadu. The pharmacists were invited to attend workshop, after each of survey phase. The incentive provided was reimbursement of expenditure. A total of 50 pharmacists were selected on the basis of experience and representation (80%

TABLE 1: DETAILS OF PHARMACIES

Group	Type of Pharmacy	% of Total n = 210	n
Location	Town	22.4	47
	Sub-urban	21.4	45
	Village Difficult areas	48.6	102
		07.6	16
Ownership	Non- pharmacist*	74.8	157
	Pharmacist	25.2	53
Establishment	Before 1980's	13.3	28
	1981-1990	21.9	46
	1991-2002	64.8	136
Turnover per month	Over 1 00 000	12.4	26
(in Rupees)	50 000 to 1 00 000	32.4	68
	Less than 50 000	55.2	116

*Pharmacists are working in non-pharmacist ownership retail pharmacies.

pharmacists and 20% drug retailers). Forty five participants attended the first workshop and 46 participants the second. At this workshop, topics such as proper use of medicines, stability and storage of medicines, rational use of antibiotics, applications of computers, prescribing in pregnancy and common physiological parameters were presented by senior faculties from Chennai, Pondicherry and Annamalainagar. Pre and post tests were conducted by 20 multiple choice questions, MCQ (the same MCQ was used without informing the attendees that same would be used). The maximum score possible in knowledge was 20. Changes in knowledge were measured by comparing the workshop attendees' baseline knowledge to knowledge gained on completion of workshop. Statistical calculation was performed using paired 't' test. The probability of occurrences (P) of the calculated t value was determined by reference to 't' table. The detailed analysis of second workshop conducted was reported earlier[8].

More than 90% community pharmacies were individually owned licensed private medical stores. The study found that pharmacies function without pharmacists in about half of the pharmacies at the time of study team's visit, more so in rural areas. The drug retailers seemed to perform all functions of community pharmacists. The registered pharmacists working even on duty in pharmacies, amidst other supporting staff, could not be identified by the study team as they were without wearing uniforms or badges. The community pharmacists rarely counselled patients and examined the prescription for medication errors. Pharmaceutical care as defined by Helper and Strand in 1990[9] found to be non-existent. All the pharmacies lacked space for patient counselling areas. Almost all schedule H drugs were available without a prescription. More than 26% of the pharmacists (85% of the drug retailers) accepted the fact that they supply prescription drugs without a prescription (Table 2). Table 2 further shows that a total of 98% of the pharmacists (94.6% of the drug retailers) suggested medicines for the minor ailments and diseases. Although more than 70% expressed willingness to act as health care provider albeit majority of them (67.5%) felt existing knowledge is not enough to do so. Table 3 shows the ratios of pharmacies to population vary from 1:5930 in the rural areas to 1: 2741 in the urban areas reflecting not only unequal distribution of pharmacies but also low levels of socioeconomic status. Average monthly sale of a pharmacy was in the range of Rupees 50 000 to 150 000 where the profit margin was 15-20% and no professional fee was charged to patients. The pharmacists' apathy in working with pharmacies may be linked with the fact that very low salary was offered by the pharmacy owner (Table 3). Fig.1 summarizes results concerning awareness of retail pharmacists on recent trends in pharmacy. Over 80% of the pharmacists were not aware of the issues around rational drug use, transdermal patches and targeted drug delivery systems. Another significant observation was that the majority of patients (70-80%) first seek advice about sexually

TABLE 2: RETAIL PHARMACISTS' BEHAVIOUR AND ATTITUDES

Parameters	Yes		
	Pharmacists[1]	Drug retailers[1]	Average[2]
Do you supply prescription drugs without prescriptions?	26/97 (26.8%)	97/113 (85.8%)	58.6%
Do you suggest medicines to symptoms of minor ailment?	95/97 (97.9%)	106/112 (94.6%)	96.2%[3]
Do you provide information at the time of dispensing?	19/96 (19.8%)	12/112 (10.7%)	14.9%[3]
Would you like to act as primary health care provider?	70/97 (72.2%)	69/113 (61.1%)	66.2%
Do you think your current knowledge level is enough to act as primary health care provider?	47/96 (48.9%)	41/111 (36.9%)	42.5%[3]

[1]Data are given as number/total number (percentage). [2]Average indicates both pharmacists and drug retailers together i.e. retail pharmacists. [3]Total number of some behaviors does not add up to 210 due to missing information.

TABLE 3: COMMUNITY PHARMACY IN CUDDALORE DISTRICT

| Basic data	Basic data
Estimated persons per pharmacy*	
Rural	5930
Urban	2741
Total	4533
Average monthly sale in a pharmacy[1]	Rupees 50 000 to 150 000
Professional fee charged by pharmacist[2]	Nil
Pharmacist's salary[2]	Abysmally low in lieu of registration certificate
Non-pharmacists owner of pharmacy[2]	74.8%
Average floor space[1]	12.82 m^2
Average number of drug retailers per pharmacy[2]	2.24

*Census of India 2001 and district medical stores data.[1]Data provided voluntarily by pharmacy owner.[2]Survey study results.

transmitted diseases, menstrual disorders, contraceptive methods and minor illnesses from pharmacists. None of the pharmacies surveyed had air-conditioned facility and even majority of them didn't have refrigerator. The study found potent and newly developed medicines are available, in many cases without proper storage, to rural population of difficult areas through pharmacy. The demographic and pharmacy characteristic profile of the workshop participants is summarized in Table 4. Eighty five percent of the attendees were male, and the single largest group (60%) was 30 or less than 30 y old. The attendees of the workshops expressed strong willingness to participate such workshop to update

knowledge. Significant improvement of knowledge in pharmacists was observed. There was greater improvement of knowledge (Table 5) in younger pharmacists (age 30 y or less).

For all of the observations outlined earlier about the scanty role of community pharmacists towards providing pharmaceutical services, the authors identified the following stepwise 10 strategies to put in place and implement gradually to have an increasingly greater impact on community pharmacy practice.

1. It is important that community pharmacists improve their professional skill regularly. It will be good practice to attend workshop or any continuing education, and to become member of professional association(s).

2. A community pharmacist should be a health professional first and businessman later. Apart from being a career for earning livelihood, the pharmacists should have attitude of caring and interest to alleviate suffering.

3. A community pharmacist should be interested in knowing the relevant laws affecting practice of pharmacy. He has to uphold the laws regulating the activity of community pharmacy.

4. What is more ignored in pharmacy profession is social responsibility. A community pharmacist assumes obligation to the patients to supply medicines for right purposes.
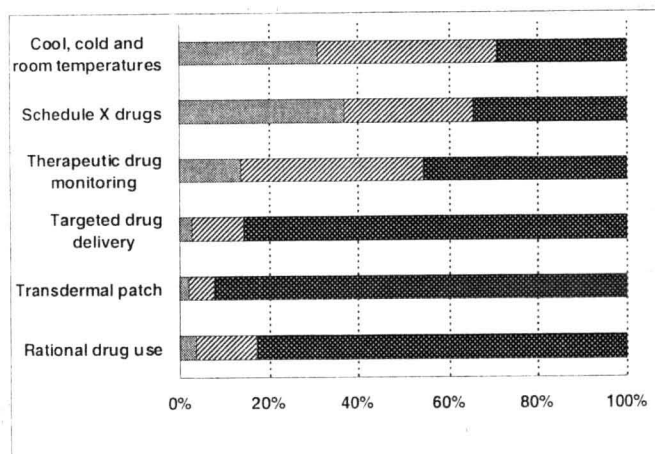
Fig 1: Awareness of retail pharmacists (survey results) Survey participants answers indicating that they know (-▦-), know partly (-▨ -) and that they don't know (▦)

TABLE 4: WORKSHOP PARTICIPANTS' DEMOGRAPHICS
AND PRACTICE CHARACTERISTICS

Characteristics	n=91
Gender-	
Male	77 (85)
Female	14 (15)
Age-	
30 y or less	55 (60)
31 to 40	32 (35)
41 and above	04 (05)
Mean±SD	29.8±6.5
Present position-	
Owner cum pharmacist	14 (15)
Community Pharmacist	63 (69)
Drug retailers	14 (16)
Experience-	
5 y or less	28 (31)
6 to 15 y	58 (62)
16 and above	05 (05)
Mean±SD	9.8±6.5
Educational Qualification-	
10+2 high school education	06 (07)
Diploma in Pharmacy	63 (69)
Bachelor of Pharmacy	04 (05)
Others Degrees	08 (09)
Practice location-	
Drug store independent	80 (88)
Drug store chain	02 (02)
Hospital-owned retail	09 (10)

All data are given as numbers (percentages rounded to whole number) unless otherwise indicated.

5. Regulatory and enforcement mechanisms are required to be strengthened gradually.

6. Renewal of existing licenses of pharmacy should be based first on fulfilment of the earlier deficiencies and also on satisfaction of licensing authority that full-time presence of pharmacists in pharmacies assuming responsibility for all functions that are professionally accountable to supply medicines and counsel the patients.

7. Pharmacists should be given oppourtunity to improve their skill by the way of encouraging them to participate in training programme or continuing education regularly.

8. The requirement of locums in a pharmacy demands competence and minimum level of qualification. Government, therefore, fix norm and provide training of appropriate level of responsibility to exercise controls on such persons.

9. It is required today that Pharmacy Council of India (PCI) should bring out punitive actions (suspension/ cancellation of registration) against persons breaching code of conduct or oath.

10. It is very important that the PCI adopt dress code for community pharmacists by instructing them to wear clean white overall (with Badge) while on duty. This conveys confidence and may force pharmacist to discharge his duty more appropriately.

In conclusion, we are optimistic that implementation of the guidelines, mentioned above, may improve the community pharmacy practice in the area of study but also in other vast rural areas of our country and will fulfil the objectives of

TABLE 5: CHANGES IN KNOWLEDGE IN VARIOUS PARTICIPATING PHARMACISTS
GROUPS IN BOTH WORKSHOPS (N=91)

Group (n)	Mean scores		Mean* Change	P
	Initial±SEM	Final±SEM		
Women (14)	4.96±0.79	10.79±0.76	+ 5.83	<0.005
Men (77)	6.29±0.34	10.28±0.37	-+ 3.99	<0.001
Drug retailers (16)	6.23±0.71	08.30±0.76	+ 1.87	<0.010
Age ≤ 30 (55)	6.17±0.39	10.74±0.56	+ 4.57	<0.001
Age > 30 (36)	8.11±0.41	09.96±0.52	+ 1.85	<0.050

*'+' signs indicate increase in score

the WHO New Delhi report[10.]

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RP-HPLC Estimation of Gatifloxacin in Tablets

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A simple, efficient and reproducible method for the determination of gatifloxacin in tablets has been developed using reverse phase high performance liquid chromatographic method. The elution was done using a mobile phase consisting of 0.01N Na_2HPO_4 (pH 5.0) and acetonitrile (80:20% v/v) on Waters' Symmetry C_{18} 4.6x150 mm analytical column with flow rate of 1 ml/min with detection at 292 nm. An external standard calibration method was employed for quantitation. The elution time was 1.6 min. The linearity range was 5-30 µg/ml for gatifloxacin.

Gatifloxacin (GFN), 1-cyclopropyl-6-fluoro-1,4-dihydro-8-methoxy-7-(3-methyl-1-piperazinyl)-4-oxo-3-quinoline carboxylic acid is an advanced generation antibiotic[1]. This is used in the treatment of susceptible infections, including respiratory and urinary tract infections. It is official in Martindale's complete drug reference[2]. A survey of literature revealed a few high performance liquid chromatographic methods for its determination in human plasma using UV[3,4] and tandem mass detection[5]. No method has been so far reported for the estimation of GFN from pharmaceutical dosage forms. The present paper aims at reporting an isocratic RP-HPLC method for the determination of GFN in tablets.

The apparatus used was Water's HPLC SPD chromatograph equipped with dual wavelength detector and model 7725i Rheodyne injector with 20 µl external loop. The column used was Waters' Symmetry C_{18}, 4.6x150 mm analytical column, the elution was carried out isocratically at the flow rate of 1 ml/min using Na_2HPO_4 (0.01 N) at pH 5.0 and acetonitrile 80:20% v/v as mobile phase. The detector was set at wavelength of 292 nm. Responses of peak areas were recorded and integrated using software.

GFN was obtained from Hetero Drugs Limited, Chennai. Acetonitrile HPLC grade and disodium hydrogen orthophosphate anhydrous AR grade were obtained from S. D. Fine

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