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Behind the Counter: Pharmacies and Dispensing Patterns of Pharmacy Attendants in Karachi

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Abstract

Background: There is little literature available on dispensing patterns and unsupervised sale of medicines from pharmacies in developing countries.

Objective: This study obtained background information on pharmacies, assessed the level of training, knowledge and dispensing patterns of pharmacy attendants in Karachi.

Methodology: This is a descriptive cross sectional study with convenient sampling. A structured questionnaire was used to interview pharmacy attendants.

Results: Of the 219 pharmacies surveyed, 62% reported more than 50 customers daily and 20% also sold items of general provision. Mean operating hours were 13. Only 24 (11%) had a visible license. On an average 3 attendants were employed per pharmacy. We interviewed one in each. Amongst the 219 interviewed, 77 (35%) were intermediate qualified and only 26 (12%) pharmacologically trained. Correct frequency of ORS administration was not known by 167 (76%) and 21% incorrectly suggested an anti-diarrhoeal preparation for viral diarrhoea in children. The knowledge of those with pharmacological training was significantly better. For respiratory tract infection in children approximately 60% did not know the correct dose of Paracetamol and Amoxicillin. Only 13 (6%) knew that Propranolol was contraindicated in hypertensive asthmatics. For Cotrimoxazole, metronidazole and lomotil only 40%, 21% and 15% respectively, were aware that these could not be dispensed without prescription.

Conclusion: In the absence of trained pharmacists existing pharmacy attendants should be trained to improve drug-dispensing patterns (JPMA 51:1 49;2001).

Introduction

In most less developed countries almost any drug available on the market may be purchased over the counter¹. Several studies of pharmaceutical practice have been conducted by pharmaco-epidemiologists, health social scientists and consumer advocates. These studies have examined the clinical rationality of prescription practices and self-medication, inclusive of over-the counter (OTC) drug use. Pharmacies (chemist shops and drug stores) are not only sites where medicines are bought and sold, they are also places where information and advice on common health problems and treatment is sought routinely. Such interactions have been reported to be convenient, time saving and cheaper than a doctor's consultation²⁻⁴.

Attention has also been called to the role played by pharmacists and shop attendants in fostering self-medication and medicine experimentation among the public^{1,5-7}. These pharmacy personnel have minimal formal education and little or no professional training. They recommend medicines which have dramatic effects as well as lucrative profit margins e.g., dispensing of antidiarrhoeal preparations with or without due emphasis on ORS.

The Pakistan Pharmacy Act of 1967 clearly advocates supervised chemist trade and prescription of drugs by trained personnel⁸. This law also requires the drug store to be certified and that certificate be clearly visible. Studies however show that the system in developing countries operates in a way that the shop is licensed in the name of the qualified proprietor, who seldom attends the shop, if at all^{9,10}. In the

context of growing urbanization this issue of self-medication is even more serious because neither do these pharmacy personnel have time to explain nor the customers the time or awareness to question their advice¹¹.

According to the government of Pakistan Census 1998, the population of Karachi is in excess of 10 million. Karachi city's growth rate is 6% which is twice the national growth rate of 3% per annum¹². As evident from poor provider to population ratios, it is not surprising that medically qualified personnel see only about 10-15% of outpatients and increasing proportion of health care in this urban environment is provided by the private sector including chemists¹³.

Although a limited number (approximately 800) of individuals graduate as Bachelors of Pharmacy, the total number of retail and wholesale drug outlets in Pakistan are around 45,000-50,000¹⁴. The pharmaceutical industry plays a key role in promotion and sale of medicines. The total number of registered pharmaceutical companies in Karachi out of a total of 14,000 in Pakistan¹⁵. Ironically, is 5,000 there is no data available about training and dispensing patterns of thousands of workers employed at pharmacies in over-the-counter sale of medicines. This study is the first of its kind in Pakistan on pharmacies and explores the level of training of pharmacy attendants, their awareness about specific indications, dosages and contraindications of drugs and role as agents of self-medication in Karachi, the largest city of Pakistan. The aim is to come up with feasible recommendations to improve the quality of existing health care and promote rational drug use.

Materials and Methods

Using convenient sampling, a descriptive, cross-sectional study was conducted. Prior to actual data collection field trips helped to map out all drug stores noting the major area landmarks to help identify these locations later. An effort was made to get equal representation of pharmacies from all five districts of Karachi. Those pharmacies which were closed at the time of interview or where pharmacy attendants refused to divulge information or were located within the premises of a hospital, were excluded from the sample. The latter were excluded because most of the customers approaching a hospital pharmacy usually have a doctor's prescription and hence information obtained would not be in line with this study's objectives.

Final year medical students of the Aga Khan University (co-authors in this manuscript) collected data in October 1999. After explaining the purpose of the study, one pharmacy attendant (readily available and consenting to give time) was interviewed in each pharmacy. A structured questionnaire with coded responses and few open ended questions was used to obtain background information on pharmacies and pharmacy attendants including; location, operating hours, customer turnover, range and type of medicines dispensed, presence of a refrigerator, proof of formal registration and total workforce employed by education. Pharmacy attendants completing B. Pharm, diploma in pharmacy and certified course of drug dispensing or compounders were considered as formally trained.

Knowledge of pharmacy attendants about various items/terminology used on a prescription, over the counter (OTC) non-OTC medicines and their dosage were assessed. Case studies describing signs and symptoms of some commonly occurring ailments were presented to pharmacy attendants to get in depth information about their dispensing patterns.

Data was entered and analyzed in Epi Info version 6.04 C, a word processing, database and statistical software program¹⁶. Basic frequencies and percentages about pharmacies, pharmacy attendants and their prescribing practices were computed. Crude odds ratios with p values and confidence intervals were generated testing associations between formal training of pharmacy attendants and their prescribing patterns.

Results

Background Information on Pharmacies

A total of 219 pharmacies were surveyed in Karachi; 52 (23.7%) from district East, 47 (21.5%) from Malir, 45 (20.6%) from South, 43 (19.6%) from West and 32 (14.6%) from district Central. Mean operating hours were 13 with a range of 2 to 24. Of these 137 (62%) reported a customer turn over of greater than 50 per day. Only 45 (20.5%) were pure drug stores while others had various other general provisions including items for household use as well. More than half the pharmacies dispensed herbal and homeopathic medicines. Tetanus toxoid was sold by 167 (76%) pharmacies; however only 15 (8.9%) of these had a refrigerator. Although 207 (95%) reported being registered, on observation only 24 (11%) had a visible license.

Background information on Pharmacy Attendants

There were on an average 3 pharmacy attendants per store (range 1 to 12). All were men. Their mean age was 30 years. Of the 563 employed pharmacy attendants (the total work force), only 67 (12%) had a formal pharmacological training of which 32 (48%) had Bachelors degree in pharmacology, 7 (9%) had diploma in pharmacy and 28 (43%) were compounders. Only 29 (43%) of the trained pharmacy attendants were present at the time of the interview. The few cited reasons for absence varied from prayer and lunch break to working elsewhere. Instead of books, journals or continued educational sessions 110 (50%) pharmacy attendants cited medical representatives from pharmaceutical companies as their main source of enhancing drug-related information. Similarly among the interviewed 219 pharmacy attendants, only 77 (35%) reported completing 12 years (intermediate) of education and only 26 (12%) had a pharmacological training.

Knowledge and Practices Of Pharmacy Attendants Physician Prescriptions

Of the 219 pharmacy attendants interviewed, 90% did not know the various items (date, dosage, duration of treatment etc) that need to be checked on a prescription; however more than 70% were familiar with terminology commonly used to denote frequency of drug administration (BD, TDS etc) on a physician's prescription, in order to assess awareness about drugs that could be dispensed over the-counter (OTCs) we used market names of certain commonly dispensed medications as a proxy and asked them to comment. Over 90% of these pharmacy attendants knew that Panadol (simple analgesic), Brufen (non steroidal anti-inflammatory), Dulcolax (relieves constipation), Surbex-T (Vitamin B-complex with Vitamin C), ORS (oral rehydration sachets) were OTCs. Similarly they (90%) also knew that antibiotics like Kiaricid, anti tuberculosis drugs and sedatives like Valium were non-OTCs. Approximately 80% knew that Lexotanil (a benzodiazepine) and Deltacortil (steroid preparation) were non OTCs. However, Amoxil, Genticyn eye drops (antibiotics), Zantac (H2 receptor antagonist), Fansidar (antimalarial), Aldomet (anti-hypertensive) and Ovril (oral contraceptive) were considered by only 60% to be non-OTCs. Even greater incorrect knowledge was found for Septran, Flagyl (antibiotics) and Lomotil (antidiarrheal) with 40%, 21% and 15%, respectively, considering them as non-OTCs.

Amongst these respondents 144 (66%) admitted that they would dispense Septran without prescription. Those who had received pharmacological training were significantly less likely to do so (Table 1).

**Table . Association of Pharmacological Training with certain Dispensing Patterns
(n = 219).**

| Sr.# | Items | Pharmacological Training | | Odds Ratio | 95% CI | P - value |
|------|-----------------------------|--------------------------|----------|------------|------------|-----------|
| | | No | Yes | | | |
| 1. | ORS preparation | n=191 | n=26 | | | |
| | *n=217 | | | | | |
| | Incorrect | 41 (21%) | 02 (8%) | 3.28 | 0.71-20.96 | 0.09 |
| | Correct | 150 (79%) | 24 (92%) | | | |
| 2. | ORS Frequency | n=190 | n=26 | | | |
| | *n=216 | | | | | |
| | Incorrect | 154 (81%) | 13 (50%) | 4.28 | 1.69-10.86 | .0004 |
| | Correct | 36 (19%) | 13 (50%) | | | |
| 3. | Inderal in | n=193 | n=26 | | | |
| | Asthomatics | | | | | |
| | n=219 | | | | | |
| | Incorrect | 185 (96%) | 21 (81%) | 5.51 | 1.41-20.99 | 0.02 |
| | Correct | 8 (4%) | 5 (19%) | | | |
| 4. | Septran sale without | n=193 | n=26 | | | |
| | Prescription | | | | | |
| | n=219 | | | | | |
| | Incorrect | 131 (68%) | 13 (50%) | 2.11 | 0.86-5.20 | 0.07 |
| | Correct | 62 (32%) | 13 (50%) | | | |

- All (n=219) pharmacy attendants interviewed did not respond to every item in the questionnaire
- There were 193 trained and 26 untrained pharmacy attendants
- Column Percentages have been mentioned. The denominator is indicated as n in each column

Also those with work experience of less than 8 years (median work experience was 8 years) were twice as likely to dispense Septran without prescription (O.R-2.04. C.I= 1.1 1-3.75, p=0.01). Pharmacy attendants were asked to recall the most common ailments for which medicines were sought. Upper respiratory tract infections, fever, body aches, hypertension and diarrhea were listed in order of frequency.

Dispensing Patterns for Common Ailments

Two hundred and twelve (97%) pharmacy attendants reported that customers approached them to get medicines without prescription. Assuming that these chemists were sought as the first contact to provide health care and the patient did not have a prescription, hypothetical case studies were presented to pharmacy attendants as part of the interview to assess their knowledge and dispensing patterns about commonly occurring ailments. Their responses are described below.

For diarrhea in a five year old child approximately 52% said that they would refer the child to the doctor. Other responses are also listed (Figure).

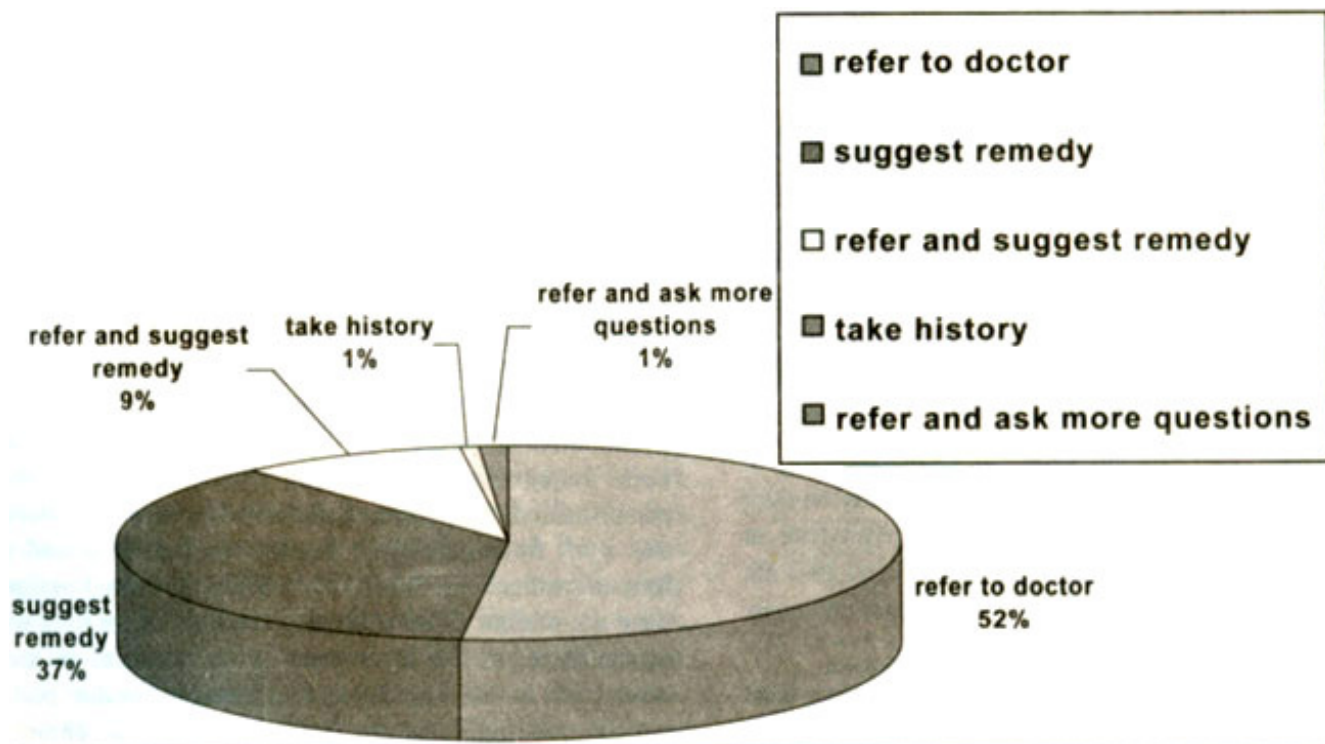


Figure: Responses of Pharmacy Attendants for Diarrhea in Children

Forty eight (21%) mentioned that they will prescribe oral anti-diarrheal medicines as a remedy, 174 (79.5%) knew the correct method of ORS preparation, however only 49 (22.4%) knew how frequently it should be given. Although not statistically significant, those with formal training were three times more likely to give correct responses about method of ORS preparation as compared to those with no formal training. Similarly those who were formally trained gave significantly correct responses about the frequency of ORS administration as compared to those who were not formally qualified (Table). In the case of symptoms of viral Upper Respiratory Tract Infection (URTI) in a four year old, of the 217 who responded, 106 (49%) said they would refer to a doctor, 105 (48%) would suggest a remedy (antihistamine or cough syrup along with an antipyretic) and 6 (3%) would both treat and refer. Only 88 (40%) knew the correct dose of paracetamol. Interestingly 9 (4%) also suggested an antibiotic. For a bacterial URTI in a four year old child, 142 (65%) said they would refer to the doctor. One third respondents reported an antibiotic to be the drug of choice and only 85 (38%) however knew the correct dose of Amoxil.

In case of a 50 year old woman seeking medication for symptoms of hypertension, 153 (70%) reported that they would refer to a doctor and would refuse to prescribe any anti-hypertensive themselves. Aldomet was considered as the drug of choice by 67 (31%). Only 13 (6%) knew that Inderal was contraindicated in hypertensive asthmatics. Those who did not have a pharmacological training were 5 times less likely to know this (Table).

In case of a 40 year old woman complaining of insomnia, 39 (18%) said they would start a remedy on their own. Those with a level of education as intermediate or below were more likely to do so (O.R= 1.76, C.I=0.89-3.50, p= 0.07). Lexotanil was reported to be the drug of choice by 133 (61%) pharmacy attendants.

In the case of constipation of 48 hours duration in an adult, 185 (84%) pharmacy attendants were ready to start a remedy. Dulcolax was reported to be the drug of choice by 145 (67%). 7 (3%) said that they would suggest non-pharmacological interventions.

Discussion

This is the first study which highlights important features of pharmacies, pharmacy attendants and their dispensing patterns in the largest city of Pakistan. Customer turn over shows that these pharmacies are catering to the needs of a large segment of the population. Medicines are mostly being dispensed without prescription (on consumer demand). These drug stores are quite commercial and have other items of general provision too. Similar business-like environment at pharmacies is also reported from India¹¹. Legal requirements for running such a drug store were compromised. These stores did not have a proper license and work force employed was neither well educated nor formally trained. Of those few who were trained majority were not present at the pharmacy location where they were officially registered as owners or employees. A study conducted in Sri Lanka demonstrates a similar pattern where qualified pharmacists often own a chain of pharmacies, each of which they visit in turn at regular intervals¹

Our study shows that work experience does make a difference, however none of the untrained employees get on-job training. Also a qualified pharmacist, even when present in the shop rarely interacts with customers. The day to day activities of a pharmacy are typically managed by untrained counter attendants who are familiar with medicines stocked and conditions for which they are commonly prescribed or advertised. This is also reported elsewhere¹¹. Hence eligibility criteria and existing legislations should be strictly enforced before a license is given. Thereafter periodic surveillance of these drug stores should be mandatory to ensure that legal requirements continue to be met and best possible standards of practice are in place. Regular license renewal should be considered and incentives should be given to improve quality of service.

Dispensing of sub-therapeutic quantities of products such as anti-bacterial and antituberculosis medicines, failure to dispense safe, effective treatment such as oral rehydration salts for diarrhea, indiscriminate dispensing of antibiotics, dispensing of inappropriate combination of drugs and dispensing of injectables under sub-optimal conditions have been reported¹¹. This study validates these findings in our setting. Faulty cold chain maintenance along with lack of awareness about items that need to be checked on a prescription before dispensing drugs was commonly noted.

Despite this fragmented knowledge it was encouraging to note that pharmacy attendants were aware about routinely used terminology of drug administration on a doctor's prescription (BID, TID), were able to classify quite a few medicines as either OTC or non-OTC and preferred to refer to the doctor before dispensing medicines without prescription for moderate to severe health conditions. There is therefore potential to improve this fragmented knowledge. Drug retailer courses and parapharmacy programs to promote safer drug practices should be introduced. Drug representatives who have been reported as the main source of information for pharmacy attendants can be trained for use as a technical resource. These approaches have worked in other places^{11,18,19}. In the absence of trained pharmacists and appropriate measures to restrict illicit sale of drugs and self-medication, this training will be a recognition and acknowledgment of these pharmacy attendants lending some credibility to this parallel system of health care. On the other hand mass media should also help the general public develop early recognition of common ailments, timely referral to health care facilities and question irrational sale and dispensing of medicines. Future studies incorporating direct observation, simulated client and other research techniques should aim at a situational assessment of the dispensing practices which prevail in the medical market place in Pakistan.

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