

# Impact of Training of Dispensers on Case Management of Acute Respiratory Tract Infections at Community Pharmacies in Pakistan

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## ABSTRACT

**Purpose:** To evaluate the impact of training of dispensers on the process of case management of ARI at community pharmacies in context to history taking and provision of advice working at community pharmacies in Islamabad, Pakistan. **Method:** A randomized, controlled, blinded intervention study was designed and implemented. Before the implementation of intervention, a baseline study was performed to assess the process of case management for ARI at community pharmacies. The study population included all community pharmacy outlets in Islamabad. After data collection, data was analyzed. The result of the study revealed that the overall process of disease management of ARI at community pharmacies in Pakistan is not satisfactory. Pharmacies of Islamabad which were visited in pre intervention phase (118) were divided into two geographical regions A (intervention) and B (control). From which thirty pharmacies were selected randomly from each region. The targeted group of the interventions was drug sellers. Keeping in view the results of the base line study an educational intervention was designed to improve the case management of ARI at community pharmacies in Pakistan. **Results:** No significant difference ( $p \leq 0.05$ ) was seen in the process of history taking and advice provision in case of ARI management at community pharmacies between pre and post control groups. On the other hand significant difference in the process of history taking and provision of advice for ARI was observed in the intervention group before and after training. **Conclusion:** The study has highlighted that improvements in the current dispensing practices at community pharmacies are possible through appropriate educational interventions. The dispensers have the potential to provide fast and low cost healthcare to the masses in the country where the presence of doctors and qualified pharmacist is low; to date they are an untapped and underutilized source in the country.

**Keywords:** Acute Respiratory Tract Infection (ARI); Community Pharmacies; Dispensers; Pakistan; Training

## 1. Introduction

Private pharmacies have become the first line contact in health care delivery system [1-3]. Dispensing is a critical part of the drug use process. The way drugs are dispensed and the type of information given during dispensing highly influences the compliance of patients with the therapy. Staff training and education, customer demand, physician practice, regulations, and economic incentives are the common factors affecting the pharmacy practice [1,2]. Implementation of regulations is an important factor influencing pharmacy practice in developing countries though effective enforcement mechanisms are still weak [3-5].

Changing the knowledge, behaviour and practices of

dispensers working at community pharmacies is a difficult and slow process but the likelihood of achieving improvements exists [6]. Improving dispensing practices in community pharmacies is possible by using a mix of focused interventions. Three types of interventions are used by researchers which include; educational, managerial and regulatory interventions alone or in combination [7]. The literature suggests that majority of dispensers are willing to learn and contribute towards rational dispensing and have also highlighted the need for training [8,9]. Uplift in social status, increase in knowledge, increased ability to help their families and earning better profits were few of the reasons for participation in interventions [10].

Educational interventions are mostly used for improving the practices of drug sellers worldwide. It involves

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focused small group training, one to one educational training, peer-educators, in-service training, moderated group discussion, large group training, feed back or peer review [11,12]. Persuasive educational intervention enables behaviour change by addressing barriers to change [13]. Though educational interventions have been effective in some studies but variation exists depending on the scenario. Face-to-face educational intervention did not improve management of ARI in Uganda; the study highlighted the need to combine education training with regulatory enforcement in order to ensure appropriate management of ARI [14]. It is important to design interventions in local context to improve the practices.

Communicable diseases including gastroenteritis, respiratory infections, congenital abnormalities, tuberculosis, malaria, and typhoid fever are the most prevalent and leading causes of morbidity and mortality in Pakistan. Hospital-based studies have reported ARI to be one of the major causes of hospitalization *i.e.* usually 30% - 60% of patients in a hospital OPD out of which (80% acute upper respiratory infections and 20% acute lower respiratory infections) in Pakistan. Malnutrition, vitamin A deficiency, low-birth weight, lack of immunizations, lack of breast-feeding, crowding and exposure to indoor pollutants (from wood or cow dung combustion or smoking) have been identified as major risk factors for development of severe ARI in Pakistan which needs to be addressed as foremost public health challenge [15,16]. In current health care scenario community pharmacies are looked upon for their potential in disease management. This requires knowledge and skills by the dispensers for the treatment of common ailments and their understanding of patient referral. This can be achieved through effective history taking and counselling of the patients regarding their disease and drug therapy. Experience from developing countries shows that dispensers working at community pharmacies do not possess adequate understanding about the process of effective disease management, though they are extensively involved in it [17,18]. The community pharmacies in Pakistan are known to be managed by a diversity of dispensers in terms of their qualification, knowledge and experience. The qualification of dispensers vary from qualified pharmacist (degree of B-pharm/pharm D), pharmacy assistant (diploma in pharmacy), diploma holder (certified course of drug dispensing), to medical doctors, nurses and to the salesmen (persons having no dispensing related education) and majority constitutes of this group [19-21]. These dispensers have minimal formal education with 10 to 12 years of schooling and with little or no professional training. Even this nominal education of primary or secondary level is seen as a commercial necessity and not as a legal requirement to be followed. A number of studies have documented in-

adequate knowledge of the dispensers and deficiencies in dispensing practices at community pharmacies in Pakistan but little has been done to improve so far [19,20,22,23]. Increasing market competition, perceived economic incentives and customer demand has an increasing influence on pharmacy practice at community pharmacies [18,23]. Educational intervention for improving pharmacy practices was employed in a study carried in rural Sindh, Pakistan. The results of the study highlighted that provision of education to drug sellers and expansion of education program for drug sellers across the country can be beneficial in promoting rational drug use [17]. However, there is no research published combining different types of interventions for improving the community pharmacy practice in Pakistan. The present study is unique in this aspect that educational intervention was targeted at dispensers working in community pharmacies and was conducted by involving regulators, chemist and druggist association along with provision of job aids to improve the practice. To evaluate the impact of training of dispensers on the process of case management of ARI at community pharmacies in context to history taking and provision of advice working at community pharmacies in Islamabad, Pakistan.

## 2. Methodology

### 2.1. Baseline Study

A randomized, controlled, blinded intervention study was designed and implemented. Before the implementation of intervention, a baseline study was performed to assess the process of case management for ARI at community pharmacies. The study population included all community pharmacy outlets in Islamabad selling allopathic medicines (western or modern medicines excluding traditional, herbal and homeopathic medicines), or homeopathic or herbal medicines if sold alongside allopathic medicines. Any shop meeting this definition constituted the sampling unit.

### 2.2. Sampling of Pharmacies

A list of pharmacies was obtained from respective District Health Offices. The total population of pharmacies in Islamabad was 169. The sample size was calculated at 95% confidence interval by using Cochran formula which came out to be 118. Simple random sampling was used to select the pharmacies from the list. A total of 118 simulated patient visits were conducted from April to June 2008 at these 118 pharmacies.

### 2.3. Data Collection Tool

Structured observation form was adapted from WHO manual "How to investigate drug use in health facilities

and was modified accordingly. Two Focus group discussions were carried out at different time intervals with four different groups of community pharmacist, drug inspectors (Government officials who inspect quality of drugs and legal requirements at community pharmacies by drug law 1976 Pakistan), academia and members of consumer groups (NGO) each group comprising of three to four participants for the development, finalization, face and content validity of the data collection tool. Pilot testing was carried out on 12 pharmacies (10%) of total sample size before execution of the final study. The value of cronbach's alpha was 0.69 which was applied to assess the reliability and internal consistency of the tool. The observation form included a total of twenty four questions which included history obtained regarding demographics of patients, history of illness, medication and medical history, advice regarding dose, frequency, duration, use and side effects of drug. Data collection was planned and permission for survey was obtained from relevant drug inspectors.

#### **2.4. Ethical Considerations**

As such there is no ethical committee for approval of such studies in Pakistan. The study was approved by the Research & Development wing of Drug Control Organization at Ministry of Health, Government of Pakistan. Local chapters of PCDA (Pakistan chemist and druggist association), DHO (District Health Officer) and Drug inspectors were also informed and approval was taken.

#### **2.5. Data Collection**

Trained data collectors performed simulated patient visits at each selected pharmacy to document the management of Acute Respiratory tract Infection. The data collectors presented as a simulated patient of ARI. They wanted to buy some drugs to treat these conditions. Other than the complaint/symptoms, no information was presented unless asked by the dispenser. The data collectors spoke to the dispensers at the time of the visit and later recorded the encounters at the end of each visit using a structured observation form. Any product that was finally recommended was purchased in quantities offered.

#### **2.6. Data Analysis**

After data collection, data was analyzed. The result of the study revealed that the overall process of disease management of ARI at community pharmacies in Pakistan is not satisfactory. The finding of the study supports the assumption that the community pharmacies in Pakistan have been converted into a place of medical practice which is being carried out by untrained dispensers. The process of history taking and provision of advice had

been ignored by the pharmacies either situated in rural or urban settings, irrespective of the provider type and location of pharmacies. The study results highlighted that 90% of drug sellers felt that they require training while 84% showed their willingness to participate if such opportunity arises.

#### **2.7. Designing & Execution of Interventional Study**

Pharmacies of Islamabad which were visited in pre intervention phase (118) were divided into two geographical regions A (intervention) and B (control). From which thirty pharmacies were selected randomly from each region. The targeted group of the interventions was drug sellers. Keeping in view the results of the base line study an educational intervention was designed to improve the case management of ARI at community pharmacies in Pakistan. The results of the baseline study were shared with representatives of chemist and druggist association, drug inspectors, academia, drug sellers and community pharmacist. The focus, targets, contents and format of intervention was designed after a series of discussions with the above mentioned stakeholders. The contents of the training materials were developed from Drug Law, Good Pharmacy Practice guidelines, dispensing practice standards and discussion with drug inspectors. The format of a formal workshop was selected for training because it is the most common method used across the world for training drug sellers. After discussion with different stakeholders the name of the training workshop was recommended to be "Modern Concepts of Dispensing and Patient Handling". The training workshop was intended to be conducted over two days but due to busy schedule of drug sellers it was restricted to one day and was divided into three sessions; duration of each session was of 2.5 hours. The workshop was focused on issues including standard prescription/patient handling and dealing with patients of ARI without prescription. Different components of history taking and counseling were also highlighted and importance of referral and POM diseases were also discussed. The training workshop included presentations, video clips and group tasks. The trainees were provided with list of responsibilities of dispensers, essential documents to be kept in pharmacy, daily checklist for pharmacy, dispensing list, list of control drugs, sample of prescription, checklist for prescription and list of commonly used abbreviations and were requested to share the same with their colleagues working in pharmacies.

#### **2.8. Conduction of Training Workshop**

The training was conducted in collaboration with District Health Office, Chemist and druggist association and

Hamdard University, Islamabad. District Health Officer nominated Drug Inspector for coordination of training workshop. Randomly selected drug sellers were contacted through formal letter inviting for training and followed on phone for the confirmation of participation. Keeping in view the influence of opinion leaders; doctors, pharmacist from academia, drug inspectors and community pharmacist were engaged as trainers. Smooth running of workshop and attendance of drug sellers was ensured due to the group effort with DHO office.

## 2.9. Data Collection & Data Analysis

After four weeks of training a letter along with a small poster and a sample of drug label was sent to the participants of training and were reminded of the request to share the information with colleagues. Post intervention data was collected after two months of training using simulated patient visits. Neither the participants nor the data collectors and the data entry persons were aware of the intervention and control groups. Same data collection tools were utilized to collect post intervention data as were used in pre data collection. The data was cleaned coded and entered in SPSS 16 version. Wilcoxon and Man Whitney tests were used to compare the pre and post data.

## 3. Results

### 3.1. Impact of Training of Dispensers on the Process of History Taking and Advice Provision in ARI Management at Community Pharmacies

It was observed that while treating ARI at community pharmacies in 16.7% of the cases history of medication was asked, weight of the patient, history of past illness

and medical history was not inquired in any of the case from the patient before training. While after training in 30% of the cases weight of the patient, 46.7% of the cases history of medication and 23.3% of the cases medical history was asked from the patients. In 83.3% cases remedy was suggested for ARI before training while after training it was decreased to 56.7% of the cases. An increase in referral from 10% to 40% was seen in case of ARI after training. It was observed that while treating ARI at community pharmacies in 11.1% of the cases duration of drug, in 7.4% of the cases what drug does and in none of the case side effects were told before training. While after training in 22.2% of the cases duration of drug, 50% of the cases what drug does and 11.1% of the cases side effects were told. While an increase in communication of correct dose and frequency ranging from 55.6% to 100% and 37% to 72.2% was observed after training (Table 1).

### 3.2. Comparison of Case Management of ARI at Community Pharmacies between Pre-Post Control and Pre-Post Intervention Groups

No significant difference ( $p \leq 0.05$ ) was seen in the process of history taking and advice provision in case of ARI management at community pharmacies between pre and post control groups. On the other hand significant difference in the process of history taking and provision of advice for ARI was observed in the intervention group before and after training (Table 2).

### 3.3. Comparison of Case Management of ARI at Community Pharmacies among Control and Intervention Groups

A significant difference in the overall process of history taking and advice provision of ARI was observed at

**Table 1. Impact of training of dispensers on the process of history taking of ARI at community pharmacies.**

Information provided	Provision of advice				Percentage difference
	Pre-intervention n = 30		Post-intervention n = 30		
	F ARI treated cases = 27	%	F ARI treated cases = 18	%	%
Age of patient was asked	3	10	3	10	0
Weight of patient was asked	0	0	9	30	+30
History of illness was asked	13	43.3	11	36.7	-6.6
History of medication was asked	5	16.7	14	46.7	+30
Medical history was asked	0	0	7	23.3	+23.3
Correct dose	15	55.6	18	100	+44.4
Correct frequency	10	37	13	72.2	+35.2
Correct duration	3	11.1	4	22.2	+11.1
What drug does	2	7.4	9	50	+42.6
Side effects/caution	0	0	2	11.1	+11.1

**Table 2. Comparison of case management of ARI at community pharmacies between pre-post control and pre-post intervention groups.**

Sub scales	Case management of ARI					
	Control			Intervention		
	Pre-control median (IQR)	Post-control median (IQR)	p-value	Pre-intervention median (IQR)	Post-intervention median (IQR)	p-value
History taking	10 (9 - 10)	10 (9 - 10)	0.500	9 (9 - 10)	9 (7 - 10)	0.040
Advice provision	9 (9 - 10)	9.5 (5 - 10)	0.954	9 (8 - 10)	8 (7 - 8)	0.000

Wilcoxon test  $p \leq 0.05$ .

community pharmacies where dispensers received training as compared to those pharmacies where dispensers did not receive any training. The pharmacies where dispensers received training were better in the process of history taking and advice provision (Table 3).

#### 4. Discussion

Community pharmacies are looked upon for their potential in disease management in existing health care setting. For achieving this potential, better knowledge and skills by the dispensers and their understanding of patient referral is required. The available literature indicates that the standards of practice are quite low at community pharmacies in the country [20-23].

The result of the baseline study highlighted that the overall process of disease management of ARI at community pharmacies in Pakistan is not satisfactory. Dispensers attend to their customers and provide treatment but most of them prescribe ineffective, inappropriate drugs in inadequate doses with little or no counseling [17]. Study from Karachi Pakistan reported that the dispenser working at community pharmacies have fragmentary knowledge but when inquired were ready to treat patients of diarrhoea and ARI [19].

Interventions can improve the knowledge and practices of dispensers. The results of the present intervention study are encouraging despite the murky situation of pharmacy practice at community pharmacies in the country. During the training of dispensers it was emphasized that the case management may not be an appropriate option for dispensers with the current state of knowledge and training. History taking and provision of advice were significantly improved at community pharmacies after training. The patients were communicated with correct dose, frequency, use and side effects for ARI. Studies from Pakistan suggested that rational use of medicines can be achieved by improving the knowledge of dispensers working at community pharmacies and they can be used effectively for disease management [17,22]. The results of the present interventional study have supported this contemplation.

**Table 3. Comparison of case management of ARI at community pharmacies between post-control and post-intervention groups.**

Sub scales	Case management of ARI			
	n	Median	U	p-value
History taking	Control = 30	Control = 10	280.50	0.004
	Intervention = 30	Intervention = 9		
Provision of advice	Control = 52	Control = 9	165.50	0.000
	Intervention = 31	Intervention = 8		

Mann-Whitney test  $p \leq 0.05$ .

Intervention showed that training can improve the knowledge and practice of dispensers working at community pharmacies. Ongoing monitoring programs and regular audits must be designed to see the longer impact of interventions and sustainability in the practice of the dispensers. Training program for dispensers should be a regular feature of District health Office and the attendance of dispensers can be ensured by linking it with the renewal of their licence. The program should also be embedded in the National Drug Policy of the country which aims at achieving safe use of medication through public private partnership. Pharmacist is the best person to perform dispensing at community pharmacies. They shall be encouraged to come into community pharmacy business with introduction of incentives by the government. Due to the low number of pharmacists in the country it is difficult to ensure their presence at community pharmacies thus in the absence of qualified person, existing dispensers at these pharmacies should be trained for the improvement of dispensing practices. Mass media shall also be involved to inform general public for recognition of ailments, referral points and the extent of expertise and help available at community pharmacies. Long term change in the public health domain can be brought in by the education and legislation enforcement.

#### 5. Limitations of the Study

Financial constraint was one of the problems faced dur-

ing the training. Based on the information given during the training the dispensers might have developed an understanding on the variables which might be observed during the post intervention data collection which might have influence the real responses. Information provided by the dispenser was not verified to be correct or incorrect during the process of prescription handling as it was gathered through structured observation form.

## 6. Conclusion

The study has highlighted that improvements in the current dispensing practices at community pharmacies are possible through appropriate educational interventions. The dispensers have the potential to provide fast and low cost healthcare to the masses in the country where the presence of doctors and qualified pharmacist is low; to date they are an untapped and underutilized source in the country. To effectively utilize and expand the findings of the present study, there is a strong need of collaboration between academia, regulatory authorities and other organizations promoting health care. Developing a larger pool of trainers and the experience of training of trainer from the current intervention highlights the possibility of training a large number of dispensers thus contributing in the achievement of millennium development goals.

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