



THE AGA KHAN UNIVERSITY

eCommons@AKU

Department of Family Medicine

Medical College, Pakistan

January 2006

# Private drug sellers education in improving prescribing practices

Waris Qidwai

Aga Khan University, [waris.qidwai@aku.edu](mailto:waris.qidwai@aku.edu)

Mukesh Kumar Krishanani

Saman Hashmi

Rubina Abu Ali

Follow this and additional works at: [https://ecommons.aku.edu/pakistan\\_fhs\\_mc\\_fam\\_med](https://ecommons.aku.edu/pakistan_fhs_mc_fam_med)



Part of the [Family Medicine Commons](#)

## Recommended Citation

Qidwai, W., Krishanani, M., Hashmi, S., Abu Ali, R. (2006). Private drug sellers education in improving prescribing practices. *Journal of College of Physicians and Surgeons Pakistan*, 16(12), 743-746.

**Available at:** [https://ecommons.aku.edu/pakistan\\_fhs\\_mc\\_fam\\_med/126](https://ecommons.aku.edu/pakistan_fhs_mc_fam_med/126)

# PRIVATE DRUG SELLERS' EDUCATION IN IMPROVING PRESCRIBING PRACTICES

Waris Qidwai, Mukesh Kumar Krishanani, Saman Hashmi\*, Maria Afridi\* and Rubina Abu Ali\*

## ABSTRACT

**Objective:** To determine the education of private drug sellers as an intervention tool in promoting rational use of medicines for diarrhoea at private drug outlets in a rural setting.

**Place and Duration of Study:** The study was conducted at Mithi, Tharparkar in rural Sindh in August 2005.

**Patients and Methods:** Diarrhea was selected to study drug-prescribing habit of private drug sellers. Evidence-based guidelines for control of diarrhea were developed along with simulation cases and keys. In phase-1, simulators were sent to 6 private drug sellers and their prescription was noted. After phase-1, 3 private drug sellers were educated about prescribing, while in the other 3, there was no intervention. In phase-2, simulators were sent again and prescriptions by private drug sellers was noted.

**Results:** The work experience of private drug sellers was between 5 to 15 years. Two private drug sellers were employed at each of the drug outlet with education between matriculation and graduation. All the private drug sellers prescribed medicines to customers with confidence. The private drug sellers prescribed medicines to customers on a daily basis that included all categories of medications. Amoebicidals, Anti-diarrheals, antispasmodics, antibiotics, analgesics and oral rehydration solutions were prescribed by 22(38.6%), 10(17.5%), 3(4.9%), 10(17.5%), 3(5.3%) and 9(15.8%) private drug sellers prior to intervention respectively.

It changed to 0(0%), 6 (14%), 0(0%) 0 (0%), 4 (9.3%) and 16(37.2%) postintervention respectively. Referral to hospital for serious cases increased after intervention.

**Conclusion:** The rational use of medicines can be promoted by providing education to private drug sellers. Further studies and education programs for private drug sellers are strongly recommended across the country.

**KEY WORDS:** Private drug sellers. Private drug seller outlets. Pharmacy. Pharmaceutical preparations. Education. Pharmacy.

## INTRODUCTION

Rational use of drug is one of the cornerstones of good medical practice and is a concern around the world including the developed countries.<sup>1</sup> One of the most worrisome issue concerning medication abuse is the easy over-the-counter availability of medicines in general<sup>2-6</sup> and antibiotics<sup>7,8</sup>, tranquilizers<sup>9-10</sup> and analgesics<sup>11</sup> in particular. The over-the-counter use of medicines is also implicated in cases of poisoning.<sup>12</sup>

An even more worrisome concern is the frequent prescribing of medications by private drug sellers, with limited or no knowledge in prescribing medications.<sup>13</sup> In developing countries including Pakistan, there is very little control over the sale of medications at pharmacies.<sup>14</sup> The problems associated with such unrestricted use of medications include the incidence of serious side effects, drug dependence and emergence of resistance to antibiotics.<sup>13</sup>

Patients are sometimes non-affording and they try to avoid a visit to a physician to save physician's consultation charges, save time and inconvenience involved in waiting to be seen by a doctor. Lack of patient education and awareness of the risk

of using medications on the advice of private drug sellers is also responsible for a lot of patients using such short cuts for treatment.

Diarrhoea is a common ailment for which even physicians are using antimicrobial and antidiarrheals inappropriately in treating cases of diarrhea.<sup>15</sup> Physician education is also required to promote rational use of medicines in the country.

Private drug outlets have virtually turned into bursting medical practices with drug sellers openly prescribing and dispensing medications without any restrictions. Private drug sellers in most cases are not pharmacy graduates as required by law, and they have very little knowledge about diseases and medications. Practicing medicine by private drug sellers with such a background can be highly dangerous.

Under the present circumstances, it would be impossible to ensure qualified and experienced private drug sellers at all private drug outlets across the country. It would also be impossible to stop private drug sellers from prescribing and dispensing medications; and to stop patients from using them for treatment. The most viable option is the education of the private drug sellers in the limited use of medications in patients with minor ailments and in identifying alarming symptoms and referring those with major ailment to a qualified practicing physician or hospital. Such a strategy has been successfully attempted in other settings.<sup>16</sup>

A need was identified to use education of private drug sellers as an intervention tool in promoting appropriate use of medications at private drug outlets in the country.

Department of Family Medicine, Aga Khan University, Karachi.  
\*Medical students, class of 2008, Aga Khan University, Karachi.  
Correspondence: Dr. Waris Qidwai, Associate Professor, Family Medicine, The Aga Khan University, Stadium Road, P.O.Box 3500, Karachi-74800, Pakistan. E-mail: waris@akunet.org.

Received December 01 2005; accepted October 16, 2006.

The objective of this study was to determine the education of private drug sellers, as an intervention tool, in promoting rational use of medicines for diarrhoea, at private drug outlets in a rural setting.

## PATIENTS AND METHODS

The study was conducted at Mithi, district headquarter of Tharparkar in rural Sindh. Mithi has a population of about 45,000 with 20 qualified practicing physicians and 25 private drug outlets. Six private drug sellers were identified in "Mithi" for the study. Two private drug sellers were recruited from each of the 3 drug outlets.

Identified private drug outlet owners were approached with a request to participate in the study. The details and purpose of the study were explained to them and their informed consent was obtained prior to the conduct of the trial.

Data was collected about the private drug outlets and their staff that dispense medicines. Details about the drug sellers that dispense medicines, their qualifications, and years of service at the store were enquired. They were asked whether they prescribed medications and among those who did, the confidence in doing so.

Diarrhea was selected to study drug-prescribing habit of private drug sellers that dispenses medicines. This was done because diarrhea is a common disorder in the community and patients often seek treatment from private drug sellers for its resolution.

As a first step, evidence-based guidelines for control of diarrhea were developed with the consensus of all study investigators. These guidelines were that a patient with fever (temperature > 38.5°C ; 101.3°F), dysentery (passage of blood and mucus in the stool), symptoms of dehydration, particularly postural lightheadedness, decreased urine output, and excessive thirst, worsening diarrhea after 48 hours, six or more stools in 24 hours, advanced age (> 70 years), compromised immune system and age greater than 50 with severe abdominal pain,<sup>17-19</sup> should be evaluated and, therefore, requires referral to a qualified physician.

If none of these is present, no further evaluation other than a brief history is generally necessary. Oral hydration and over-the-counter loperamide would usually suffice. Those advising ORS and loperamide should be proficient in how to advice.<sup>20</sup>

Seven simulation cases were constructed based on the developed guidelines, again with the consensus of all the investigators. Keys for correct evidence-based prescribing and handling of all the individual simulation cases were developed with the consensus of all the study investigators. Simulation cases and the key messages are listed in Table I.

The study consisted of two phases. In phase-1 of the study, 7 cases were trained in simulation and sent to 6 private drug sellers (PDS), labeled as PDS-1, PDS-2, PDS-3, PDS-4, PDS-5 and PDS-6. They simulated to be suffering from diarrhea and sought treatment from drug sellers that dispenses medicines. The private drug sellers that dispense medicines did not know they were not real patients. Simulators purchased medications that were later returned to the drug store for a full refund. The prescribing and handling of simulators by private drug sellers that dispense medicines was collected from simulators who visited 6 outlets.

**Table I:** Simulation cases with keys.

|               |  |
|---------------|--|
| Simulator (1) | A young man of 35 years age has had three loose watery stools in the past six hours. There is no mucus/blood in the stool and he is not running fever. There is mild abdominal pain prior to defecation.<br><b>Key:</b> This is low risk patient and can be managed without referral to a physician. Oral hydration, soft diet and over-the-counter loperamide would usually suffice |
| Simulator (2) | A 40 years old man presents with one day history of diarrhea with over eight loose stools having mucus but no blood, and a fever of >100°F. His condition has not worsened but mucus continues in stools but no blood.<br><b>Key:</b> Since this patient has passed more than six stools in 24 hours, he should be referred.   |
| Simulator (3) | A 55 years old diabetic patient presents with a one day history of passing loose stools. He has passed four loose watery stools in the previous 24 hours and there is no mucus or blood. He is afebrile and there is no abdominal pain.<br><b>Key:</b> Since this patient is diabetic, he should be referred to a physician.   |
| Simulator (4) | A 45 years old man presents with one day history of passing loose stools with mucus and blood. He has a temperature of 37.8°C and complaints of abdominal pain prior to and during passing stool.<br><b>Key:</b> Since this patient has blood and mucus in stools, he should be referred to a physician.   |
| Simulator (5) | A 25 years old man presents with a history of passing five loose stools since morning without mucus or blood. He complains of light-headedness, decreased urine output and increased thirst.<br><b>Key:</b> This patient should be referred to a physician since he has symptoms of dehydration.   |
| Simulator (6) | A 20 years old man presents with severe abdominal pain with passage of three loose stools for the previous few hours. He is afebrile and there is no mucus or blood in stools.<br><b>Key:</b> This patient should be referred because of severe abdominal pain.  |
| Simulator (7) | A 30 years old man presents with one day history of diarrhea. He has passed four loose watery stools in the previous six hours and there is no mucus or blood in the stools. He is running a temperature of 39°C.<br><b>Key:</b> Refer this patient because of 39°C fever.   |

In phase-2 of the study, private drug sellers that dispense medicines from three drug outlets, labeled as PDS-1, PDS-2 and PDS-3, were used as an "Intervention group" and were educated about what to do when confronted by a patient with diarrhea. Information about diarrhea management guidelines, stated above, was provided to them.

Private drug sellers that dispense medicines from 3 drug outlets, labeled as PDS-4, PDS-5 and PDS-6, were not provided any information on diarrhea and was used as a "non-intervention control group."

Seven trained simulators were again sent to the 6 drug outlets. They simulated to be suffering from diarrhea and sought treatment from private drug sellers that dispense medicines. The private drug sellers did not know they were not real patients. Simulators purchased medications that were later returned to the drug store for a full refund. The prescribing and handling of simulators by private drug sellers that dispense medicines was collected from simulators who visited 6 drug outlets after the intervention.

The data was analyzed to see whether intervention in the form of education of 3 drug outlets, that dispense medicines, improved prescribing practices and handling of simulators with diarrhea in comparison to the non-intervention control group.

## RESULTS

The work experience of private drug sellers was between 5 to 15 years. Two drug sellers were employed at each of the drug outlet to dispense medications. Education of drug sellers varied between matriculation and graduation. All the private drug sellers (PDS) prescribed medicines to the customers with confidence. The private drug sellers prescribed medicines to customers on a daily basis, which included analgesics, antibiotics, tranquilizers, multivitamins and tonics.

Table II lists the handling of simulators by drug sellers before and after intervention in the intervention group. Statistically significant improvement in the prescription of amoebicidals, anti-spasmodic, antibiotics, oral rehydration salts and referral is noted.

Table III lists the handling of simulators by drug sellers before and after intervention in the control group. No statistically significant improvement in any of the prescription categories is noted. In fact, the use of anti-diarrheals after the intervention increased in the postintervention group.

Table IV lists the handling of simulators by drug sellers after intervention in the intervention and the control groups. Statistically significant improvement in the prescription of amoebicidals, anti-spasmodic, antibiotics, and referral is noted.

**Table II:** Handling of simulators by drug sellers before and after intervention (intervention group).

| Prescription category        | Group 1 Pre-intervention |      | Group 1 Postintervention |      | P-value* |
|------------------------------|--------------------------|------|--------------------------|------|----------|
|                              | n                        | %    | n                        | %    |          |
| Amoebicidals                 | 22                       | 38.6 | -                        | -    | -        |
| Anti-diarrheals <sup>a</sup> | 10                       | 17.5 | 6                        | 14.0 | 0.42     |
| Anti-spasmodics              | 3                        | 4.9  | -                        | -    | -        |
| Antibiotics                  | 10                       | 17.5 | -                        | -    | -        |
| Analgesics <sup>b</sup>      | 3                        | 5.3  | 4                        | 9.3  | 1.00     |
| ORS <sup>a</sup>             | 9                        | 15.8 | 16                       | 37.2 | < 0.01   |
| Referral                     | -                        | -    | 17                       | 39.5 | -        |

\*p-values are for a particular category compared to others

<sup>a</sup>Mc Nemar test applied unless stated otherwise

<sup>b</sup>Fischers exact test due to low cell count

**Table III:** Handling of simulators by drug sellers before and after intervention (control group).

| Prescription category        | Group 2 Pre-intervention |      | Group 2 Post-intervention |      | P-value* |
|------------------------------|--------------------------|------|---------------------------|------|----------|
|                              | n                        | %    | n                         | %    |          |
| Amoebicidals <sup>a</sup>    | 23                       | 36.3 | 23                        | 37.7 | 1.00     |
| Anti-diarrheals <sup>a</sup> | 8                        | 13.3 | 18                        | 29.5 | 0.05     |
| Anti-spasmodics <sup>b</sup> | 3                        | 5.0  | 3                         | 4.9  | 1.00     |
| Antibiotics <sup>a</sup>     | 12                       | 20.0 | 9                         | 14.8 | 0.45     |
| Analgesics <sup>b</sup>      | 5                        | 8.3  | 3                         | 4.9  | 0.23     |
| ORS <sup>b</sup>             | 9                        | 15.0 | 5                         | 8.2  | 0.57     |
| Referral                     | -                        | -    | -                         | -    | -        |

\*p-values are for a particular category compared to others

<sup>a</sup>Mc Nemar test applied unless stated otherwise

<sup>b</sup>Fischers exact test due to low cell count

## DISCUSSION

The results of this interventional trial are very encouraging despite an overall gloomy situation that exists with regard to rationale use of medicines in the country. The intervention in

**Table IV:** Handling of simulators by drug sellers after intervention (intervention and control group).

| Prescription category | Group 1 Pre-intervention |      | Group 2 Post-intervention |      | P-value <sup>a</sup> |
|-----------------------|--------------------------|------|---------------------------|------|----------------------|
|                       | n                        | %    | n                         | %    |                      |
| Amoebicidals          | -                        | -    | 23                        | 37.7 | -                    |
| Anti-diarrheals       | 6                        | 14.0 | 18                        | 29.5 | 0.33                 |
| Anti-spasmodics       | -                        | -    | 3                         | 4.9  | -                    |
| Anti-biotics          | -                        | -    | 9                         | 14.8 | -                    |
| Analgesics            | 4                        | 9.3  | 3                         | 4.9  | 0.18                 |
| ORS                   | 16                       | 37.2 | 5                         | 8.2  | 0.28                 |
| Referral              | 17                       | 39.5 | -                         | -    | -                    |

\*p-values are for a particular category compared to others

<sup>a</sup>Fischers exact test due to low cell count

terms of education of the drug sellers proved to be statistically significant. The baseline survey further supported the speculation that private drug outlets in parts of Pakistan have been converted into bursting medical practices carried out by untrained drug sellers.

The educational qualification of private drug sellers included in this study was far from satisfactory. Despite a government legislation that qualified pharmacists should be employed at all drug outlets to dispense medicines<sup>21</sup>, little adherence to this law was found in this study. The ground reality at present is that it would be impossible to replace all the drug sellers in the country with qualified pharmacists.

It is interesting that all the private drug sellers included in this study were not only prescribing medicines to patients but also doing so with a lot of confidence. The categories of medicines prescribed include antibiotics and analgesics. This will certainly lead to resistance to commonly used antibiotics and dependence on narcotic analgesics.

In a study conducted in Nepal<sup>22</sup>, all retailers were engaged in diagnostic and therapeutic behavior beyond their scope of training or legal mandate. Historical information obtained by retailers was inadequate to determine the nature or severity of disease or appropriateness of antimicrobial therapy. It was found that 97% of retailers dispensed unnecessary antimicrobials in diarrhea, while only 44% recommended oral rehydration therapy and only 3% suggested evaluation by a physician. Those results are very similar to the present study results.

The present situation requires close scrutiny if rational use of medicine in the country is to be promoted. The private drug sellers offer a valuable human resource that can be effectively used for this purpose. Offering them short patient prescribing and handling guidelines can achieve this. The present study supports the use of such a strategy in dealing with cases of diarrhea in the community. It can be expanded to include all common diseases prevalent in our communities. The training of private drug sellers in the country in the rational use of medicines and providing them with guidelines when to refer serious patients to physicians or hospital will require proper back up facilities of qualified physicians and well-staffed and equipped hospitals in the country.

It is also important to understand as to why patients are avoiding physician consultation and going directly to private drug sellers to request for medicines. If easy and cost effective physician consultation could be provided in the community to

patients, then promotion of rational use of medicines will be easier.

Patient education is perhaps another very important facet in the overall promotion of rational use of medicines in the country. It is very surprising that patients risk their life by taking medicine at the advice of an unqualified and untrained private drug seller. It is probably due to lack of awareness and knowledge about potential serious side effects of the use of medicines. Moreover, a lack of knowledge exists among patients about potentially life-threatening and life-disabling nature of certain diseases.

A patient with chest pain due to a myocardial infarction may get a simple analgesic or a narcotic analgesic from private drug sellers that may delay his or her seeking proper treatment from an emergency medical center. Similarly, a patient having diarrhea with dehydration may die due to electrolyte imbalance if he or she delays seeking care from an emergency medical center due to easy advice and prescription available at the local drug outlet. The list of diseases with adverse consequences due to irrational prescribing is a long one.

Irrational use of medicines should be eliminated from medical practice in the country, if this armament is to continue to assist in the fight against disease and illness. Education of private drug sellers and patients, along with the development of cost effective easy-to-use medical services in the community, holds key to the safe use of medicines in the country.

In Nepal, drug retailers are trained through 45 hours courses costing US\$ 18. They help promote rational use of medicines,<sup>23</sup> and cover the gap where trained pharmacists are not available. There is a need to introduce this practice in Pakistan as well.

## CONCLUSION

This study demonstrates that rational use of medicines can be promoted by providing education to private drug sellers. Simple guidelines for safe use of limited number of medications should be developed for education of private drug sellers on common diseases in the country. We strongly recommend further studies in this area and holding of education programs for private drug sellers and patients across the country. A need exists to develop cost effective, easily accessible health services in the community to promote rational use of medicines in the country.

## REFERENCES

1. Simon SR, Chan KA, Soumerai SB, Wagner AK, Andrade SE, Feldstein AC, et al. Potentially inappropriate medication use by elderly persons in U.S. Health Maintenance Organizations, 2000-2001. *J Am Geriatr Soc* 2005; **53**: 227-32.
2. Davidoff F. Primary prevention with over-the-counter statins: a cautionary tale. *Clin Pharmacol Ther* 2005; **78**: 218-20.
3. Werler MM, Mitchell AA, Hernandez-Diaz S, Honein MA. Use of over-the-counter medications during pregnancy. *Am J Obstet Gynecol* 2005; **193**( Pt 1): 771-7.
4. Charlton BG. Self-management of psychiatric symptoms using over-the-counter (OTC) psychopharmacology: the S-DTM therapeutic model-self-diagnosis, self-treatment, self-monitoring. *Med Hypotheses* 2005; **65**: 823-8.
5. Coombes R. More information needed on risks of over-the-counter drugs. *BMJ* 2005; **330**: 1410.
6. Qidwai W, Azam SI, Khan FM. Use of over-the-counter medications in community. *J Coll Physicians Surg Pak* 2002; **12**: 651-3.
7. Llor C, Reig R, Hernandez S, Sugranes J. Over-the-counter antibacterials in southern Europe. *Scand J Infect Dis* 2005; **37**: 399-400.
8. Al-Bakri AG, Bustanji Y, Yousef AM. Community consumption of antibacterial drugs within the Jordanian population: sources, patterns and appropriateness. *Int J Antimicrob Agents* 2005; **26**: 389-95.
9. Ringdahl EN, Pereira SL, Delzell JE Jr. Treatment of primary insomnia. *J Am Board Fam Pract* 2004; **17**: 212-9.
10. Scher CS, Anwar M. The self-reporting of psychiatric medications in patients scheduled for elective surgery. *J Clin Anesth* 1999; **11**: 619-21.
11. Turunen JH, Mantyselka PT, Kumpusalo EA, Ahonen RS. Frequent analgesic use at population level: prevalence and patterns of use. *Pain* 2005; **115**: 374-81.
12. Szkolnicka B. Prescription and over-the-counter medicals in deliberate self-poisoning and accidental overdosing--preliminary study. *Przegl Lek* 2005; **62**: 568-71.
13. Sturm AW, van der Pol R, Smits AJ, van Hellemond FM, Mouton SW, Jamil B, et al. Over-the-counter availability of antimicrobial agents, self-medication and patterns of resistance in Karachi, Pakistan. *J Antimicrob Chemother* 1997; **39**: 543-7.
14. Bhutta TI, Balchin C. Assessing the impact of a regulatory intervention in Pakistan. *Soc Sci Med* 1996; **42**: 1195-202.
15. Nizami SQ, Khan IA, Bhutta ZA. Drug prescribing practices of general practitioners and paediatricians for childhood diarrhoea in Karachi, Pakistan. *Soc Sci Med* 1996; **42**: 1133-9.
16. Costello I, Wong IC, Nunn AJ. A literature review to identify interventions to improve the use of medicines in children. *Child Care Health Dev* 2004; **30**: 647-65.
17. Browning SM. Constipation, diarrhea, and irritable bowel syndrome. *Prim Care* 1999; **26**: 113-39.
18. DuPont HL. Guidelines on acute infectious diarrhea in adults. The practice parameters committee of the American College of Gastroenterology. *Am J Gastroenterol* 1997; **92**: 1962-75.
19. Park SI, Giannella RA. Approach to the adult patient with acute diarrhea. *Gastroenterol Clin North Am* 1993; **22**: 483-97.
20. Rolston DDK. Acute diarrhea in adults. In: Edmundowicz ED, editor. Twenty common problems in gastroenterology. New York: McGraw-Hill, 2002: 159-76.
21. National drug policy. [online] 2001 [Cited 2006 Oct 12]. Available from URL: [http://www.medisure.com.pk/drug\\_law/Drug Policy.html](http://www.medisure.com.pk/drug_law/Drug Policy.html).
22. Wachter DA, Joshi MP, Rimal B. Antibiotic dispensing by drug retailers in Kathmandu, Nepal. *Trop Med Int Health* 1999; **4**: 782-8.
23. Kalle KK, Gartoulla RP, Pradhan YM, Shrestha AD, Karkee SB, Quick JD. Drug retailer training: experiences from Nepal. *Soc Sci Med* 1992; **35**: 1015-25.

.....★.....