KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) REGARDING THE MANAGEMENT OF DIARRHEA BY PHARMACISTS AND LICENSED DRUG SELLERS IN EASTERN NEPAL

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Abstract. Diarrhea constitutes a major cause of morbidity and mortality in developing countries. Inappropriate drug prescribing is common in diarrhea, resulting in an increase in cost and adverse drug reactions. In Nepal, drug sellers often act as the first contact persons for the underprivileged. No information has been available regarding their knowledge, attitudes and practices (KAP) regarding diarrhea management. Using a structured questionnaire, between the 1st of January and the 31st of December 2003, 109 drug sellers in eastern Nepal were interviewed about their educational status, patient/attendant presentation at the outlet and their advice to patients/attendants. Only 2.7% of drug sellers were qualified in health education. Eighty percent of the patients/attendants sought advice from the drug sellers, only 20% presented to the outlet with prescriptions. The data reveals that about half of them were taking note of the nature of the diarrhea. Although 62 (56.8%) of them were aware of dehydration, only 2 (1.8%) of them knew all three signs of dehydration (dry tongue, non-elastic skin and sunken eyes). Sixty-six (60.5%) of them knew about oral rehydration solution (ORS), its principle and the required period of administration. About 50 to 60% of them were aware of the implications resulting from dehydration from uncontrolled diarrhea and of the importance of ORS in its management. Only 20% of the drug sellers advised ORS alone, otherwise it was dispensed along with drugs, such as antimotility agents (AMA) or metronidazole. As a result of the above findings, it is important to educate the drug sellers by conferring knowledge about the ethical aspects of drugs in the management of diarrhea.

INTRODUCTION

Diarrhea constitutes a major cause of morbidity and mortality especially in developing countries. Ronald (1988) reported that more than 4 million children yearly worldwide develop acute diarrhea, which can be treated simply by fluid replenishment, rather than medications. During the 2001-2003 report of health in Nepal, the reported morbidity for diarrhea was 3.3 episodes per child and the mortality rate was 30,000 deaths per year (Department of Health Services, 2002/2003). After implementation of the National Control of Diarrheal Diseases Program, there was an increase in diarrheal visits at local health posts, an overall decline in diarrheal deaths and case fatality rate, and an increase in dispensing of ORS. During 2002, an increase in diarrheal deaths was reported in eastern Nepal, which accounted for the maximum number of cases of diarrhea, 277 per 1,000 children. In its two major districts, Sunsari and Morang, the mortality rates were still high at 170 cases and 186 cases per 1,000 children, respectively. Thus, there are other factors influencing the control of this disease which should be identified and managed.

Over the past few years, the WHO/CDD program (1995) recognized that to improve the management of diarrhea, health providers, especially retail drug businesses should be educated. In most developing countries, pharmacies and over-the-counter drug stores are the most frequently visited by providers of products and advice for customers treating diarrhea, but the advice is often inappropriate and at times

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dangerous. Lapeyre-Mestre and Pin (2004) stated that only 48.5% of community pharmacists advised ORS, but 77% suggested drugs or gave inappropriate advice for the management of diarrhea. A survey of the general public regarding diarrhea in Bristol by Phillips *et al* (1993) found that 16% of people sought advice form a pharmacist, and only 8% went to the doctor.

Several studies have shown that despite the promotion of oral rehydration salt extensively by the WHO for the management of diarrhea, inappropriate drug prescribing is common. Okora and Jones (1995) reported in Nigeria the prescribing patterns in childhood diarrhea revealed that oral fluids (100%), antimicrobial agents (AMA) (40.3%), antiprotozoals (24.6%) and antidiarrheals (15.3%) were prescribed by the medical practioniers. A single report from Southeast Asia found that less than half the children diagnosed with acute watery diarrhea received ORS, while 80% received hydroxyquinolone, which is a forbidden drug. In 1994, the Ministry of Health of Nepal in collaboration with the WHO conducted a survey to assess the implementation and effectiveness of the diarrhea control program. The major focus was on the overall quality of case management in children in the survey areas. The results were very encouraging. Health workers selected a correct treatment plan in 70% of cases with diarrhea, 90% were given ORS and 77% of the guardians were instructed how to administer ORS, which was available in 88% of health centers.

In developing countries, like India and Nepal, where the doctor patient ratio is below optimum, alternative sources of health care become very important. The alternative source may consist of paramedical personnel or those not connected with any aspect of health care. One such category of people often found advising patients is pharmacists (with a degree or diploma in pharmacy) and licensed or unlicensed drug sellers (without any degree or training in drug management). The drug sellers advise anti-motility agents more frequently rather than ORS (Monal and Lamba, 1994). They dispense drugs without a prescription from a qualified doctor. Bhutta and Tihar (1990) believes several infant deaths were attributed to the adverse effects of loperamide, an antimotility drugs dispensed for treating diarrhea by drug sellers.

In a study conducted in India, Srivatsava *et al* (1995) showed that among 236 chemists and drug sellers interviewed, only 63% had either a degree or diploma in pharmacy, and only one of them had a correct knowledge of diarrhea. In Nepal, it is mandatory for all chemists and drug sellers to be qualified in pharmacy, however they lack understanding of diseases and drugs. In Nepal, drug sellers have an association with prominent patients in rural and semi-urban areas. The literature reveals a paucity of information on the knowledge, attitude and practices (KAP) of the drug sellers on diarrhea management. Hence, the present study was undertaken to find out the KAP of drug sellers in eastern Nepal regarding diarrhea and its management.

The B.P. Koirala Institute of Health Sciences (BPKIHS) is a tertiary care center in eastern Nepal. The institute is associated with several districts in eastern Nepal for providing optimal health service. The results of this study can form the foundation of a training program for educating and providing skills to drug sellers, and to change their attitudes, thus reducing fatal errors and optimizing management of diarrhea.

MATERIALS AND METHODS

A semi-structured questionnaire was prepared. The survey was conducted from the 1st of January to the 31st of December 2003. One hundred nine authorized drug sellers situated in Sunsari and Morang districts of eastern Nepal were interviewed by the medical students of BPKIHS, who were briefed earlier on the collection of data. The data included personal data regarding the drug sellers, their level of education, sales per day, knowledge regarding diarrhea and dehydration, advice given to patients with diarrhea regarding its management, and details about any formal training in diarrhea management or desire to undergo training.

RESULTS

A total of 109 drug sellers were interviewed, of which 50 were in Sunsari district and 32 were

in Morang district. Three (2.7%) drug sellers were qualified in health education. Fifty-eight (53.7%) had a college education, and the rest had some schooling. Seven of them had sales of more than Rs. 5,000 (NC) per day, while the majority of them (67%) had daily sales between Rs. 1,000 and 5,000 (NC). While 11 (10.1) of the drug sellers already had some training regarding diarrhea, 98 (89.9%) of them expressed a desire to have some training in diarrhea management (Fig 1A,B,C).

Data on the information sought by drug sellers from patients/attendants is provided in Table 1. The data reveals that about half of them were taking note of the nature of the diarrhea. Though 62 (56.8%) of them were aware of dehydration, only 2 (1.8%) of them knew all the three signs of dehydration (dry tongue, non-elastic skin and sunken eyes). Sixty-six (60.5%) of them knew about ORS, its principle and required period of administration. When the drug sellers felt that it was necessary for the patient to seek

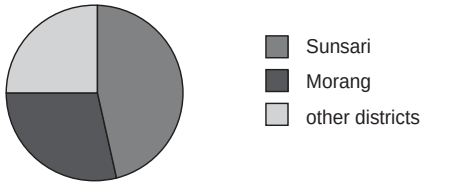


Fig 1A–District distribution of pharmacies (n=109).

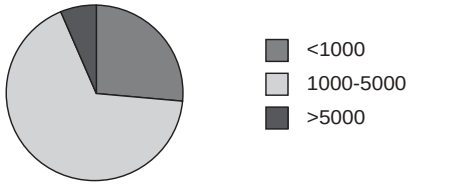


Fig 2B–Average sales of drug sellers per day in Rs (n=109).

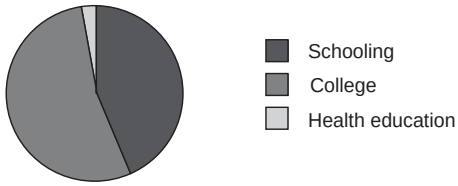


Fig 3C–Educational status of drug sellers (n=109).

Table 1
Drug sellers knowledge of diarrhea and ORS.

Information sought by drug sellers	No. of drug sellers who responded (n = 109)	
	Yes (%)	No (%)
Economic status of patients	40 (36.6)	69 (63.4)
Age of patients	52 (47.7)	57 (52.3)
Frequency of diarrhea	65 (59.6)	44 (40.4)
Consistency of stools	52 (47.7)	57 (52.3)
Severity of dehydration	54 (49.5)	55 (50.5)
Awareness of signs of dehydration[a]	62 (56.8)	47 (43.2)
Three signs	2 (1.8)	60 (55)
Two signs	12 (11)	50 (45.8)
One sign	48 (44)	14 (12.8)
Oral Rehydration Solution (ORS)		
Meaning of ORS	66 (60.5)	43 (39.5)
Principle of ORS	66 (60.5)	43 (39.5)
Dose and duration	63 (57.7)	46 (42.3)
Role of different components of ORS	34 (31.1)	75 (68.8)
Super ORS	3 (2.7)	106 (97.2)
Advised referral to		
Primary Health Centers	0.9	
District Health Post	45 (41.2)	
Private practitioners	24 (22)	

[a] Dry tongue, non-elastic skin, sunken eyes

Table 2
Data provided by drug sellers on patients/attendants visiting the retail outlet for drugs (n=109).

Parameters	Data
Percentage of people presenting with prescriptions	21.6%
Percentage of prescriptions for diarrhea	5.8%
Percentage of patients with diarrhea who presented with prescriptions	19.8%
Patients with diarrhea who took self mediation before approaching the drug seller	21.6%
Most commonly taken drugs in self medication	Metronidazole ORS Antimotility agents
Five most commonly prescribed drugs in the prescriptions presented by the patients/attendants.	ORS Metronidazole + Diloxanide furoate Enzymes Antimotility agents Antibiotics

professional medical help, 69 (63.3%) of them advised patients/attendants to visit either district health post or private practitioners.

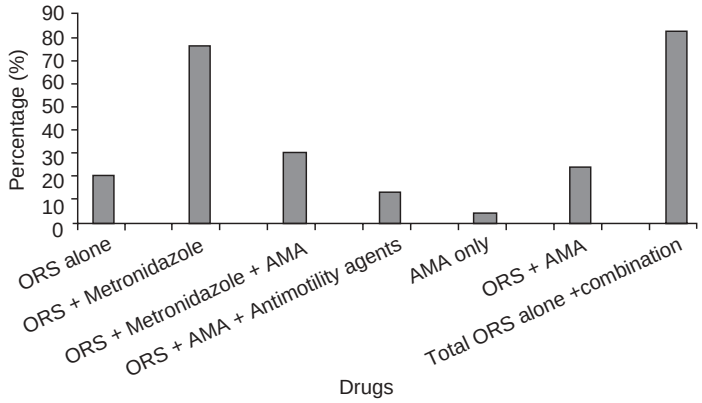
Data on the patients visiting the drug sellers is given in Table 2. With reference to the people visiting the pharmacy for drugs, only 20% of them presented with prescriptions. The rest (80%) sought advice from drug sellers regarding symptom relief. About 20% of the patients with diarrhea took self-medication (metronidazole, ORS, and or antimotility agents) before visiting the drug seller. The prescriptions presented mainly contained ORS, metronidazole with or without diloxanide furoate, enzymes, antimotility agents and antimicronbial agents.

The most frequently recommended drug by drug sellers was metronidazole (108, 99%) followed by ORS (90, 82.5%) and anti-motility agents (51, 46.8%) (Fig 2). The most commonly advised antimicrobial agents by drug sellers in diarrhea management were metronidazole alone (69, 43.4%), metronidazole with diloxanide furoate (39, 24.5%) and norfloxacin (29, 18.2%) (Fig 3).

DISCUSSION

Our data established the vital role played by drug sellers in the health care system prevalent in Nepal. This is confirmed by the fact that 80% of the patients/attendants presented to drug sellers at retail outlets without prescriptions. They consider the drug seller as an authority on drugs and management of diseases. Hence, the decisive influence of drug sellers in reducing morbidity and mortality cannot be ignored. The study also focuses on the fact that most of the drug sellers are not familiar with health systems and are not qualified to run drug shops. It is important to note that 90% of the drug sellers expressed a desire to learn about disease management through discussions or handouts.

About 50 to 60% of them were aware of the implications of dehydration from uncontrolled diarrhea and of the importance of ORS in its management. This could be explained by the promotion of ORS by the WHO and the regional health authorities regarding the role of ORS in the prevention of dehydration. Though, it is not essential for them to know the composition or function of the individual components of ORS, furthering their knowledge in this regard would make them more competent in making clear the importance of ORS to the patients and their attendants. It is advantageous to teach them how to prepare ORS using the resources readily available at home so that the message can be conveyed to the patients/attendants. These objectives can be easily achieved through either interviews or group discussions with drug sellers.



AMA: Antimicrobial agents other than metronidazole

Fig 2–Drug pattern for diarrhea treatment by drug sellers (n=109).

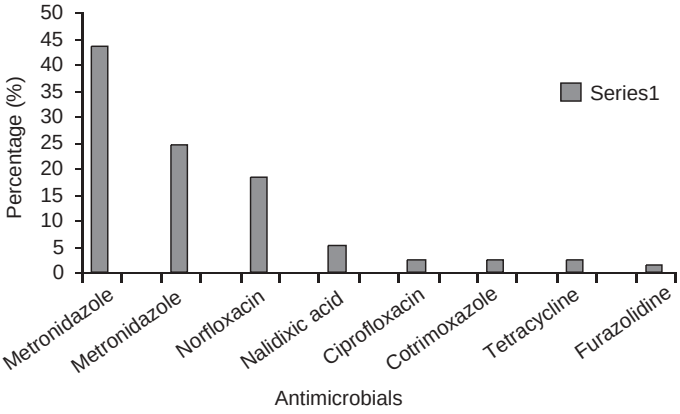


Fig 3–Antimicrobials recommended by drug sellers (n=159).

An overview of the pattern of drug advice by drug sellers to patients/attendants testified that ORS alone was suggested in only 20.1%, followed by the use of ORS in combination with drugs, including metronidazole (76.1%), antimicrobials (30.3%) and anti-motility agents (12.8%). Our results agree with those of the Nigerian study, except in the use of antimicrobials, which was lower (40.3%). The role of antimicrobials remains doubtful in acute secretary diarrhea, which is noninfectious and self limited in nature. Frequent use of antimicrobials would lead to the escalation of cost of therapy, resulting in diversion of meager resources, increased side effects, prolongation of the carrier state, in addition to an increase in resistance. The results also point out that the drug sellers advocated the use of tetracyclines and fluoroquinolones, such as ciprofloxacin and norfloxacin, in the management of diarrhea, which are contraindicated in children. Educating the drug sellers can discourage this misuse. Bhutta and Tahir (1990) reported several infant deaths following loperamide, which is an antimotility agent. The WHO restricts the prescribing of antimotility drugs along with antiemetics, antispasmodics and absorbants in diarrhea management. These can be associated with fatal outcomes. This practice by drug sellers prevails due to a lack of knowledge. A study in Kenya and Indonesia as a part of the WHO/CDD (1990) program in which face-to-face education was imparted to the private pharmacies, the major problems were found regarding inappropriate prescribing. Education let to a significant increase in sale of ORS (30%) and a decline in the promotion of antidiarrheal drugs compared to controls.

It is important to educate drug sellers by conferring knowledge about the ethical aspects of drugs in the management of diarrhea. The drug sellers directed patients/attendant to either the district clinic or to private practitioners instead of close primary health centers. Necessary steps should be taken to restrict this practice, as diarrheas can easily be managed with ORS or at local health centers. This would reduce hardships of the patients.

In view of the crucial role played by drug sellers in the health care system, the KAP of drug sellers needs to be rationalized by organizing a training program and providing simple booklets or handouts in the local language designed by the WHO with information on the management of diarrhea, as well as common diseases. These interventions could reduce the mortality caused the inappropriate management of diarrhea.

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