

ORIGINAL ARTICLE

ASSESSMENT OF CONSUMERS DRUG KNOWLEDGE
IN ADDIS ABABA: A CROSS-SECTIONAL SURVEY

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ABSTRACT

BACKGROUND: *There is no one-to-one correspondence between telling and knowing and between knowing and doing. Knowledge on drugs is an important element for proper drug use. This study attempts to assess "consumers" drug knowledge and the influencing factors there in the sampled population of Addis Ababa.*

METHODS: *A cross-sectional survey was carried out in multi-stage stratified sampled community pharmacies in Addis Ababa. Convenient sampling technique was employed to select respondents from among those who came to the community pharmacies to purchase drugs for self-medication. Respondents were interviewed about their overall knowledge on drugs they know before they were given information on drugs they requested. Data were collected using a pre-tested semi-structured questionnaire.*

RESULTS: *Analysis of the socio-demographic characteristics of respondents showed that drug consumers consisted of all age categories of both genders; varying educational background and occupation. As regards information on names of drugs, it was found out that drug consumers know not only the names of over-the-counter drugs but also of potent drugs. Among the top fifteen frequently recalled drugs, six were antimicrobials, namely, Ampicillin, Tetracycline, Metronidazole, Amoxicillin, Cotrimoxazole and Chloramphenicol. Drug consumers indicated preferences (96%) for dosage forms; the highest being for tablets (36.5%), followed by injections (28.3) and liquid dosage forms (20.2%). Thirty percent of the respondents discontinued taking the drug before the date advised by the health care provider of which 50.4% did so when illnesses were relieved.*

CONCLUSION: *Knowing the name of the drug alone does not necessarily mean adequate knowledge. Non-compliance on the use of drugs was evident. Adequate information and counselling should be provided to drug consumers on the drugs they request and that have to be assured. The public has to be educated on the proper use of drugs.*

KEY WORDS: Self-medication, Consumers drug knowledge, Dosage form preference, Compliance.

INTRODUCTION

Knowledge on drugs is an important element in their proper use. The dialogue that occurs between the patient and the health care provider is often telling and listening. Patients take information and process it with their own cognitive

framework, which is mainly based upon the interpretations of their own experiences.

The meaning that the patient attaches to any information may be quite different from that of the pharmacist (1-3).

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It has been argued that self-care of common illnesses constitutes self-reliance and contributes positively to primary health care. Greater knowledge on and access to medications reduce dependence on health care providers. During an illness episode, individuals commonly seek for advice from a lay referral (4). This affects self-diagnosis and treatment; as the lay referral shares his/her knowledge or experience, or medications (which may not be the right ones).

Studies on adults indicate that by and large, individuals are able to discriminate between minor and major ailments. In many cases (87%), they take care of the minor problems on their own (5). And more than 60% of the reported illnesses are dealt with over-the-counter (OTC) drugs, with no doctor being contacted (6). Although adequate data are not available on adult's knowledge of drugs, a few studies indicate that adolescents gain drug knowledge through drug consumption, i.e., not prior to taking drugs (7) and college students use the frequently advertised products (8,9). Obviously, such practices may lead to potential risks, particularly so during self-medication.

Pharmaceuticals can be dangerous, particularly to those who have little awareness on the potential risks. It is quite difficult to investigate the rate and extent of illnesses induced by misuse of drugs. There are ethical issues; problems of documentation due to delayed effects of some drugs; and problems of confounding side effects of medication with symptoms of the primary illness (10). Problems associated with consumption of OTC products include, lack of knowledge on the effects of medicines; misunderstanding the clinical conditions; inability to interpret labelled information; misuse; occurrence of harmful side-effects; interactions with prescription or other OTC drugs, food, and alcohol; and concurrent diseases and

patients condition (5,11).

One of the factors that contribute to improper use of drugs is lack of overall knowledge on drugs. This study was done in Addis Ababa, the capital city of Ethiopia. The city has got both types of epidemiological characteristics i.e. communicable and chronic diseases. The objective of this study was, therefore, to assess "consumers" drug knowledge and the influencing factors thereof in the sampled population of Addis Ababa.

SUBJECTS AND METHODS

Study design, study participants and sampling

In Ethiopia, there are three types of drug retail outlets (DROs): community pharmacies, drug shops and rural drug vendors. During the study period, there were a total of 177 DROs (139 community pharmacies and 38 other levels of DRO) in Addis Ababa City. All types of DROs found in Addis Ababa were listed out and stratified by their level, as pharmacies and non-pharmacies. The pharmacies were again stratified by location into four areas in the city, and further classified as private, public (City Council) and Red Cross Society community pharmacies. Probability proportionate to size (PPS) sampling was used to select the six community pharmacies from each of the four areas for cross-sectional survey. Twenty-four community pharmacies were included in this study; of which 17 were private, 6 public and 1 Red Cross Society community pharmacies.

A total of 927 individuals participated in the study. Convenient sampling technique was employed to select respondents from among those who came to the community pharmacies for self-medication. Respondents were then interviewed about their overall knowledge on drugs they know before they were given

information on drugs they requested. Informed consent was obtained from each respondent before the interview, and in case of children from families accompanying them.

Data collection, entry and analysis

Drug consumers were interviewed using a pre-tested semi-structured questionnaire during the study period (January 1 to February 28, 2002). Questionnaires were accompanied by detailed guidelines for data collectors on how to interview respondents. Overall orientation was provided to interviewers prior to the commencement of data collection. Information on demographic characteristics, "consumers" drug knowledge such as commonly recalled drugs, dosage form preferences, routes of administration, duration of administration, contraindications, drug interactions, compliance, and drug storage at home were collected. Supervisions were carried out throughout the data collection period. Enumerators and supervisors were all pharmacy professionals.

Of the total 1200 questionnaires distributed, 927 (77.3%) were collected; 9 of which were incomplete and hence excluded from the study. Data were entered and analysed using EPI-info version 6 software.

RESULTS

Socio-demographic characteristics

Categorizing respondents by age showed that 1.8% of them were 12 years of age and below; 3.1% were above 64 years of age, and 95.1% were between the ages of 13-64 years. The mean age was 33.9 years (Table 1).

Table 1 also shows that 4.8% of the drug consumers were illiterate, 22.6% of them could read or write, or had only primary level education and 72.6% had secondary school or college and above level of education. Occupation wise, 16.8% were students, 67.6% were employees and 15.6% were unemployed.

Table 1. Socio-demographic characteristics of drug consumers who came to community pharmacies to purchase drugs for self-medication (n = 918), Addis Ababa, January-February, 2002

Characteristics	Frequency	Percent
Age in years (n = 905*)		
< 13	16	1.8
13-64	861	95.1
> 64	28	3.1
Mean age	33.9	
Sex (n = 901*)		
Female	301	33.4
Male	600	66.6
Educational level (n = 911*)		
Illiterate	44	4.8
Read and write	66	7.2
Primary School	140	15.4
Secondary School	397	43.6
College and above	264	29.0
Occupation (n = 885*)		
Student	149	16.8
Government employee	222	25.1
Self employed	177	20.0
Employed by private business	199	22.5
Unemployed	138	15.6
Special drug consumers (n = 180)		
Pregnant	11	6.1
Breast-feeding	12	6.7
Has chronic diseases	157	87.2

*Figures indicated are less than 918 since some specific socio-demographic variables were not filled-in. Otherwise; the rest of the results are based on 918 questionnaires.

Commonly recalled drugs

Drug consumers were asked to mention the top five drugs they recall from their past experiences. A total of 174 different generic/brand drugs or categories of drugs were mentioned. The top 15 frequently recalled drugs were tabulated by their generic names or category. Among these, 6 were found to be antimicrobials, namely,

ampicillin (18.8%), tetracycline (14.1%), metronidazole (4.7%), amoxicillin (3.2%), co-trimoxazole (2.6%) and chloramphenicol (1.3%); 3 were anthelmintics. These were mebendazole (4.7%); levamisole and niclosamide each 3.7% and the rest were analgesics/antipyretics (paracetamol, ASA and dipyron); cough syrups; antacids; and

methyldopa.

Dosage form preferences

The frequently encountered empirical situation is dosage form preferences by drug consumers and the reasons associated with their choices. In the current study, more than 96% of the respondents indicated preferences for one or the other dosage form. The frequently preferred dosage forms were tablets (36.5%), injections (28.3%) and liquids (20.2%) [Fig. 1]. The reasons given for preference of tablets and capsules were their convenience in administration, handling and storage. Consumers who preferred injections stated that it cures or acts quickly (23.6%) and doesn't affect gastrointestinal (GI) tract (8.8%).

Routes of administration

Respondents were asked whether they knew that the same drug could be given by different routes. About 70% of them replied that they are aware of the fact that the same drug may be prepared in different dosage forms and administered accordingly.

Compliance

In this study, nearly 30% of the respondents reported they discontinue taking drugs before the date advised by the health care provider (Table 2). The top four frequently reported reasons for discontinuation were: when illness is relieved (50.4%), when they believe that the drug is not working (16.7%), when side effects create problems (20.6%); and to save the drug for future use (10.5%).

Drug consumers were asked whether they refrain from taking drugs during fasting period. Of those who responded (896), 13.7% of them reported that they discontinue taking drugs of which, 41.1% of them mentioned religion as a reason and 12% of them were of the opinion that drugs cannot be taken on an empty stomach. Others revealed that they discontinue when

the disease is not serious (5.6%). Some (8.9%) indicated that they shift the dose to non-fasting period.

Drug consumers were also asked what would they do if they miss a dose of a drug and remember it immediately. Of the 900 respondents, 45.6% of them said they would take it as soon as they remember; 40.3% reported they leave the missed dose; and 7.2% of them indicated they double the next dose and continue the rest as scheduled.

Drug interactions and contraindications

Asked whether they know anything about drug interactions, more than 50% of the drug consumers reported that drugs might interact with other drugs, alcoholic drinks and some foods. However, most of them were unable to give any example. Less than two-thirds of drug consumers claimed to know that some drugs could not be given to children, pregnant women or breastfeeding mothers and to patients with chronic diseases. Asked whether they concomitantly take alcoholic drinks while taking drugs, 6.1% of the drug consumers reported they do (Table 2).

Sharing of drugs

Around 28% of the drug consumers reported that they share drugs with their relatives, friends and neighbours (Table 2). Asked as to why they share drugs, 48% of the respondents stated that they share drugs when they deem the illnesses was common, known and not-serious, while 30.4% of them indicated that they share drugs such as analgesics and antacids only.

Asked about differences between antimicrobials and analgesics, only less than a quarter of the respondents knew the differences (Table 2). This may be the major underlying reason for the frequent requests of antimicrobial drugs, like analgesics for self-limiting illnesses and/or self-medication. Other reasons stated for sharing drugs were geographic (9.3%), economic (7%) accessibility, perceived

harmlessness of the drug they share (2.3%) and for emergency purposes (2.3%).
Storage of drugs at home
 Respondents were also asked as to how they keep medicaments at home by presenting them choices on possible storage conditions. The results revealed that 97.5% of them store drugs out of the reach of children. A significant percentage

(85.2%) of the patients were aware of the fact that all drugs are not kept in refrigerators. Only 13.8% of them indicated that they keep different dosage form of drugs in one place but separated. Awareness among drug consumers on expiry dates of drugs was less than 70% (Table 2).

Table 2. Responses of patients on various questions testing their knowledge on drugs, Addis Ababa, January-February, 2002.

Response	Yes (%)	95 % CI
Discontinue taking drugs before the date advised? (n = 896)	29.8	26.8 - 32.9
Discontinue taking drugs during fasting period? (n = 899)	13.7	11.5 - 16.1
Take drugs with alcohol? (n = 912)	6.1	4.7 - 8.0
Share drugs with others? (n = 900)	28.1	25.2 - 31.2
Check expiry dates before taking drugs? (n = 910)	68.2	65.1 - 71.2
Know the difference between antimicrobials and analgesics? (n = 878)	23.7	20.9 - 26.7

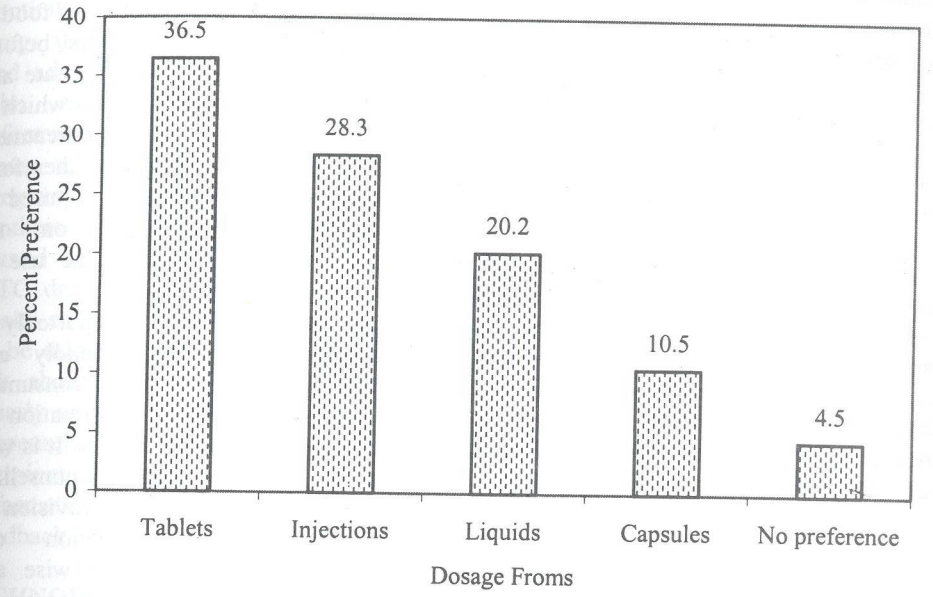


Fig 1. Dosage form preferences of drug consumers (n = 713), Addis Ababa, January -February, 2002

DISCUSSION

Drug retail outlets (DROs) were classified by area, ownership and level. Proximity to residence is one factor in self-medication practices, as drug consumers tend to go to the nearby pharmacy (13). Classification by level was required to keep the homogeneity of the sample. Differences in ownership may also imply perceived or real association of lower prices to drug products. Kloos *et al.* reported that people in lower socio-economic groups were less likely to visit a physician when experiencing physical symptoms of illnesses, probably related to their ability to pay (13).

Age categorization was done because children in most cases have less developed and the elderly may have hampered organ systems to effectively eliminate administered drugs (14) and thus need special care. Studies indicate that children

have a high rate of consultation and self-medication, but often they are inadequately advised. Curative approach will only lead to higher rate of episodic consultation and self-medication without empowering the young people with the skills of self-care and self-help and positive health behaviours (15-17). The elderly may also have impaired cognitive and hampered hearing or vision and hence may not fully understand the information delivered. Thus, counselling children and the elderly requires additional skill and effort.

Drug consumers who cannot read labels on drugs may fail to comply with the advice of the health care provider. As the illiterate respondents (about 5.0% in this study) may not even understand the verbally given drug information, let alone label instructions, they deserve special attention. Even those who can read and write or had primary level education may show non-compliance due to

misunderstanding of the drug information provided. In promoting proper use of drugs, the use of compliance aids such as symbolic labelling has been found to be beneficial (18).

It is apparent that many drug consumers know the names of several drugs ranging from OTC to prescription-only drugs. However, about 75% of the respondents were not able to differentiate between antimicrobials and analgesics. Of particular concern is self-medication of antimicrobials, if it is associated with knowing the names of drugs alone. Antimicrobials should be restricted to prescriptions, and must if possible, be used based on sensitivity data since resistance (19) is becoming a serious public health problem in Addis Ababa.

Some respondents mentioned that they dislike injection because it is painful. Although people's awareness level for mode of transmission of HIV has been reported to be nearly 96% (20), however, no respondent mentioned the risk of infections such as HIV associated with the use of injections. Expensiveness of this dosage form was not indicated either.

Knowledge on drugs and understanding the treatment are important in whether drugs are used properly. However, it cannot be implied that knowledge alone ensures appropriate drug use (21). In other studies, non-compliance has been observed in more than 50% (22, 23) of the drug consumers compared to 30% in this study.

Drug consumers who want to save drugs for future use and share drugs pose special attention particularly in case of antimicrobials. These respondents are not aware of the fact that these drugs should be taken in full dose and may expire in due course. In addition, the illnesses they might face could be different from the previous ones, though symptoms may appear similar.

Fasting drugs will determine the outcome of treatment and fasting of food is quite important as taking drugs before, after or with food may affect the rate and extent of drug absorption of drugs which in turn influence the outcome of the treatment (14). The current findings, therefore, suggest much more effort is required in educating drug consumers on the importance of compliance in the use of drugs.

The pharmacist who is reportedly to be the most accessible, friendly and consulted source (5) by drug consumers can provide the necessary information on both prescription and OTC drugs. It is well known that clear instructions, counselling during drug dispensing, and provision of consumer product information can significantly contribute to the wise and proper use of medicines. It has been shown that patient information leaflets increase compliance and lead to greater patient satisfaction with their medications (24-28). Increased switching of prescription only drugs to OTC drugs is particularly serious when consumers do not have adequate knowledge on drugs and when they are not properly counselled (29). It should be emphasized that even all OTC drugs are not benign (28). In fact, some are associated with potentially severe adverse reactions and side effects. For instance, non-steroidal anti-inflammatory drugs (NSAIDs) are associated with GI bleeding (30). Thus, it is apparent that much is to be done in educating drug consumers on various aspects of drugs.

In conclusion, the current study has documented that among the top 15 frequently recalled drugs, 5 were antimicrobials. Preference for injections was very high. Non-compliance on the use of drugs was evident. Sharing of drugs, which is not at all recommended, particularly for prescription only drugs, is practised. As consumers have no adequate

drug knowledge, it is suggested that continuous education on proper use of drugs should be given. Symbolic labelling and advice could be an option for those who cannot understand the written information. Special attention should be given to the illiterate, children, elderly, pregnant women and breast-feeding mothers. Awareness among the public should be increased on the fact that even OTC drugs do require the advice of the health care provider. Drug consumers have to be informed that they have the right to ask about their medicaments until they clearly understand their correct use. Drug dispensers have to make sure whether the recipient has understood the drug information given by requesting for feedback.

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REFERENCES

1. Donna Dolinsky. Psychosocial aspects of the illness experience in: Albert I. Wertheimer, Mickey C. Smith, and editors. Pharmacy Practice, Social and Behavioural Aspects, third edition 1989, Williams and Wilkins publishing, USA.
2. World Health Organization / Drug Action Program (WHO/DAP). How to investigate drug use in health facilities? WHO/DAP/93.1, 1993.
3. World Health Organization/Drug Action Program (WHO/DAP). Public education in rational drug use; Report of an informal consultation, 23-26 November 1993, Geneva.
4. Nancy V, Markm, N. Changing patterns of pharmaceutical practice in the United States. *Soc. Sci. Med.* 1997; 44: 1285-1302.
5. Gore PR, Mahavan S. Consumers' preference and willingness to pay for pharmacist counselling for non-prescription medicines. *J. Clin. Pharm. Therap.*; 1994; 19: 17-25.
6. Sleath B, Rubin HR, Cambell W, Gwyther L, Clark T. Physician-patient communication about over-the-counter medicines. *Soc. Sci. Med.* 2001; 53: 357-369.
7. Stoelben S, Krappweis J, Rossler G, Kirch W. Adolescents' drug use and knowledge. *Eur. J. Pediatr.* 2000; 159: 608-614.
8. Burak LJ, Damico A. Effect of direct-to-consumer advertising of pharmaceutical products on college students. *Health Mark. Q.* 1999; 17: 19-29.
9. Burak LJ, Damico A. College students use of widely advertised medications. *J. Am. Coll. Health* 2000; 49: 118-121.
10. Laurie JP. In the shadow of biomedical self-medication in two Ecuadorian pharmacies. *Soc. Sci. Med.* 1989; 28: 905-915.
11. Ihara N, Miki K, Takbatake K, Takenaka C, Tsukamoto T, Morita S. Analysis of factors influencing the self-medication of medication and construction of educational program for patients with chronic hepatitis. *Yakugaku Zasshi* 2000; 120: 644-651.
12. Association of the European Self-medication Industry (AESGP). Influences on the consumer to see a doctor, May 1998.
13. Kloos H, Tsegaye C, Dawit A, Kefale GT, Belay S. Utilization of pharmacies and pharmaceuticals in Addis Ababa, Ethiopia. *Soc. Sci. Med.* 1986; 22: 653-672.

14. Gibaldi M. Biopharmaceutics and Clinical Pharmacokinetics, 4th Ed., Lea and Febiger 1981, USA.
15. Lee A, Tsang KK, Lee SH, To CY. Older school children are not necessarily healthier: Analysis of medical consultation; pattern of school children from territory-wide school health surveillance, *Public Health* 2001; **115**: 30-7.
16. Bouvier N, Trenque T, Gabriel R, Quereux C, Millart H. Iatrogenic risk of self-medication by the pregnant woman. *Press Med.* 200; **309**: 37-40.
17. Dengler R, Robert H. Adolescents use of prescribed drugs and over-the-counter preparations. *J. Public Health Med.* 1996; **18**: 437-42.
18. Kacew S. Effect of over-the-counter drugs on the unborn child: What is known and how should this influence prescribing? *Paediat. Drugs* 1999; **1**: 75-80.
19. Mengistu Y, Belle B, Erge W. Antimicrobial susceptibility of gram-negative isolates at Tikur Anbessa Hospital, Addis Ababa in 1993 and 1996. *Ethiop. Pharm. J.* 1999; **17**: 20-26.
20. DKT Ethiopia. HIV/AIDS knowledge attitude practice survey 1998.
21. World Health Organization/Drug Action Program (WHO/DAP). International conference on improving use of medicines. *Essential Drugs Monitor* 1997, number 23.
22. Amare G, Gedif T, Alemayehu T, Tesfahun B. Pattern of drug use in Addis Ababa community. *East Afr. Med. J.* 1997; **74**: 362-7.
23. Roger WM. Doctors, patients, do not communicate. *FDA Consumer* July-August 1983; 6-7.
24. Bradley B, Singleton M, Lie Wan POA. Readability of patient information leaflets on over-the-counter medicines. *J. Clin. Pharm. Therapy* 1994; **19**: 7-15.
25. World Health Organization/Drug Action Program (WHO/DAP). Labelling is the foundation responsible self-medication. *Essential Drugs Monitor.* 1988; Number 7, P.3.
26. Lau GS, Lee KK, Luk CT. Self-medication among university students in Hong Kong. *Asia Pac. J. Public Health* 1995; **8**: 153-157.
27. International Pharmaceutical Federation /World Self-medication Industry (FIP/WSMI). Responsible self-medication, June 1999.
28. Sarah F. Consumer product information affects us all: Consumers' view. *Australian Prescriber* 1996; **19**: 31-34.
29. Francist BP. The impact of the prescription to over-the-counter switches on practicing pharmacists. *American Pharmacy*; NS **31** (4): 41-44.
30. Stiel D. Exploring the link between gastrointestinal complications and over-the-counter analgesics: Current issues and considerations. *Am. J. Ther.* 2000; **7**: 91-98.