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Research Article

Knowledge on Medicine Use, Medicine Information Needs and Medicine Information Sources Accessible and Preferred By Visually Disabled Adults

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Abstract

Knowledge on medicine use and access to reliable medicine information is necessary to improve safe and effective medicine use and minimize medicine related mishaps in visually disabled consumers. The objective of the study was to identify deficiencies in knowledge on medicine use, medicine information needs and medicine information sources preferred and accessible to visually disabled consumers. A descriptive cross sectional study on 63 visually handicapped persons aged 18 years and above was carried out at a vocational training centre and a school for the visually disabled in Sri Lanka using an interviewer administered questionnaire. Of the participants 65% were blind and 35% were partially sighted. Their mean age was 27.62 years (SD= 10.535). Most of them have completed secondary school education. Of them, 43% were not aware of the difference between trade and generic name of medicines and 14% did not know that medicines caused side effects. Almost all the participants wanted information regarding name of medicines, reason for use, and instructions on how to administer them. The majority had difficulties in self administration of medicines for which they wanted information on how to overcome these. The most accessible and preferred medicine information source was the doctor. Family, friends, and teachers were utilized more than the pharmacist to access medicine information. The radio was the most utilized and preferred electronic medium for medicine related information. There were deficiencies in knowledge regarding use of medicines in visually handicapped persons that need to be rectified using medicine information sources that are preferred, suitable, and accessible to them.

Keywords: Visually disabled, blind, medicine information, medicine information sources

Introduction

Sound knowledge regarding relevant and practical aspects of medicines and how to use them, is crucial to promote safe and effective use of medicine, to improve adherence to medicines, and to prevent and minimize medicine related adverse effects and mishaps among consumers including the visually disabled. Access to unbiased, relevant, accurate and patient friendly medicine information provided via information sources accessible and acceptable to them is important to achieve this target. Non-adherence to the prescribed medicine has an increased risk for an adverse health outcome such as hospitalization, emergency department visit or death. The prevalence of non-adherence to prescribed medicines was seen to be more with the presence of vision problems [1].

A higher percentage of people with vision problems are reported to have falls and comorbidities such as heart disease, stroke, and hypertension making them frequent consumers of medicine [2]. Yet access to information about a medical condition or treatment is a basic human right that visually impaired people have traditionally been denied. In a series of focus group discussions conducted in United States of America, interviewees have stated that they faced special barriers to medical care due to being blind or having low vision. These barriers included difficulties interacting with physicians and office staff, difficulties getting to and around physicians' offices and receiving written materials in formats inaccessible to them [3].

Individuals who are blind or visually impaired have lower mean income [4]. Therefore providing medicine information sources which are accessible, user friendly and inexpensive to these individuals is very important. In a study on 500 visually impaired people, 67% of the participants have stated that they found it difficult to access medical information, due to the lack of an accessible source [5].

There are many medication safety issues associated with loss of vision. Visual impairment affects the ability to read prescription labels, product information sheets, to distinguish between various medications, and to see marking on measuring devices. The information provided on the prescription label and external packaging of medicines is essential to take the medicines properly. People who are visually impaired must rely on their memory, use compensatory strategies, or depend on family and friends for this purpose. As a result, the visually disabled consumers are in danger of medication related mishaps such as taking overdoses. They are also less likely to be compliant with using medicines due to gaps in their knowledge, skills & attitudes regarding medicines. This has been highlighted also in the MINOPS study, (Medicines Information Needs of Older People with Sight Loss) [6].

Medicine information needs of visually handicapped consumers have hardly been explored in Sri Lanka and in the developing world, even though access to reliable medicine information has seen many advances recently for the visually handicapped consumers in the developed world. A research conducted in Scotland on visual acuity & the ability of the visually impaired to read medication instructions, documented the inability of people with visual impairment to read the instructions on their bottle of eye drops. They made recommendations on the appropriate font sizes to be used in printed information for patients with partial visual impairment [7].

Planning of cost effective and practical methods to provide medicine information to visually handicapped people requires extensive and comprehensive research. A systematic review of the literature done to explore this matter published in 2004 states that there were very few studies done and that the data was incomplete. They have highlighted the need for further studies [8]. This pilot study aims to identify the medicine information needs of this specific group of consumers to assess the present situation in order to find out the main areas of medicine information that needs strengthening, and to find out the most accessible and suitable sources of medicine information for this population.

Materials and Methods

A descriptive cross sectional study on 63 visually handicapped persons over the age of 18 years was done at the vocational training

centre, Seeduwa, and the school for the visually disabled, Ratmalana, Sri Lanka. These two institutions were selected purposively since they were the two main institutes in Sri Lanka catering for the educational and vocational training needs of visually disabled persons in the country. Visually disabled persons from all parts of the country attend these institutes and hence the sample is generally representative of Sri Lanka. The study population comprised of visually disabled persons, 18 years and above attending the stated institutes. Since this population is limited all who consented and fulfilled the inclusion criteria were included in the study sample.

The Ethics approval for the study was obtained from the Ethics Review Committee, Faculty of Medicine, University of Colombo, Sri Lanka. The permission was obtained from the Ministry of Social Services and the relevant institutes to conduct the study.

Informed written consent was obtained from the participants prior to enrollment for the study. The information sheet was read out to them and all their queries were answered by the investigators during the consenting process. An interviewer administered questionnaire that was developed and pretested by the investigators was used to gather data. The questionnaire had separate sections for socio-demographic data and to assess general knowledge of the participants regarding medicines and medicine use, the type of medicine information they needed, current sources of medicine information available to them and their accessibility, and the medicine information sources they preferred to access the information.

Results

Sixty three persons who fulfilled the inclusion criteria and consented to participate were included in the study. Two persons did not give consent for the study. The mean age of the participants was 27.62 years (SD= 10.535). Of the study sample, 54% of were males and 87% were Sinhalese, while the rest were Tamils. 52% have studied up to General certificate of education Ordinary level. Eleven (participants had an education up to General certificate of education Advanced Level while 8 participants have had university education. Of 63 participants 32% were employed, their occupations were: textile workers (35%); teachers (55%); machine operators (5%), self-employment (5%). 35% of the participants were partially sighted while the rest were completely blind. Of the participants 56% were blind from birth. Forty four participants (70%) have experienced an 'acute illness' for which they had to administer medication by themselves. 21 participants (33%) stated that they were suffering from a chronic illness. Out of them, 19 persons were on long term treatment. The results were demonstrated under different heads as shown below.

General Knowledge on medicine use

(a) Reasons for medicine use

All the participants stated that medicines were used to cure diseases. However, 14% were not aware that medicines were used to control a disease while 27% were not aware that medicines were used to prevent a disease (Table 1).

Table 1. Reasons for medicine use

	To cure diseases		To control diseases		To prevent diseases	
	No.	%	No.	%	No.	%
Yes	63	100%	54	85.7%	46	73%
No	0	0	5	7.9%	14	22.2%
Do not know	0	0	4	6.3%	3	4.8%

(b) Knowledge regarding generic and trade names

Only 38 participants (57%) correctly knew what was meant by trade name and generic name. Of the rest, 14 participants stated that they did not know the difference; eleven participants incorrectly assumed they knew the difference (of them 7 participants thought both generic name and trade name were the same).

(c) Level of knowledge on the differences between drugs marketed under trade name and generic name (n=38)

Of the 38 participants who were aware of what was meant by trade name and generic names, 81.6 % of the participants knew that drugs marketed under the trade name were usually more expensive. However, there were considerable deficiencies regarding their understanding about generic versus trade name of drugs (Table 2).

Table 2. Knowledge regarding differences between drugs marketed under trade name and generic name

When a drug is marketed under the trade name as opposed to the generic name, the drug marketed under the trade name :	Yes		No		Do not know	
	No	%	No	%	No	%
Is more expensive?	31	81.6%	6	15.8%	1	2.6%
Contains the same drug	27	78 %	9	19%	2	5.3%
Contains the same amount of drugs	22	57.9%	12	31.6%	4	10.5%
Is more active?	10	26%	26	68.4%	2	5.3%
Has the same shape?	11	28%	27	71.4%	0	0.0%
Has the same size?	11	28.6%	25	65.8%	2	5.3%
Has the same color?	6	15.8%	18	47.4%	14	36.8

(d) Drugs which can be bought without a prescription

Nearly 95% were aware that it was appropriate to buy paracetamol without a prescription, while only 79.4% believed it was appropriate to buy oral rehydration fluids without a prescription. Majority of the participants believed that it was not suitable for them to buy antibiotics, anti-hypertensives, medications for asthma or diabetic without a prescription (Table 3).

Table 3. Which drugs can be bought without a prescription?

	Yes		No		Do not know	
	No	%	No	%	No	%
Paracetamol	60	95.2%	3	4.8%	0	0%
Oral rehydration fluids	50	79.4%	9	14.3%	4	6.3%
Antibiotics	7	11.1%	53	84.1%	3	4.8%
Drugs for Hypertension	8	12.7%	52	82.5%	3	4.8%
Drugs for Asthma	12	19.0%	46	73.0%	5	7.9%
Drugs for Diabetes	7	11.1%	53	84.1%	3	4.8%

(e) Storage of drugs

The overall level of knowledge among the participants with regard to storage of drugs was satisfactory (Table 4).

(f) Information provided in the label

All the participants stated that the packaging or the container has a label and nearly all the participants were aware that the label contains how to take that particular medication (Table 5).

Table 4. Knowledge regarding storage of drugs at the household level

	Yes		No		Do not know	
	No	%	No	%	No	%
Stored away from children	63	100%	0	0%	0	0%
Kept under sunlight	12	19%	50	79.4%	1	1.6%
Kept in a moist environment	1	1.6%	61	96.8%	1	1.6%
Syrups to be kept in the deep freezer	4	6.4%	57	90.4%	2	3.2%

Table 5. Knowledge regarding the information available in a label

	Yes		No		Do not know	
	No	%	No	%	No	%
Name of the drug	56	88.9%	6	9.5%	1	1.6%
Reason for use	49	77.8%	13	20.6%	1	1.6%
How to take medication	62	98.4%	0	0%	1	1.6%
Duration of treatment	51	81.0%	10	15.9%	2	3.2%
Expiry date	57	90.5%	3	4.8%	3	4.8%

(g) Usage of medicine prescribed to another person

Nearly all the participants believed that it is not suitable to take medicines given to them, by another person with similar symptoms.

(h) Using liquid medication/ syrups/ Side effects/ Features of an allergic reaction

Almost 22% stated that liquid medication must not be shaken before using it. Nearly 14% of the participants believed that medicines do not cause side effects. The symptoms regarding allergic reactions have been surveyed and displayed in Table 6.

Table 6. Knowledge regarding symptoms of an allergic reaction

	Yes		No		Do not know	
	No	%	No	%	No	%
Rash	57	90.5%	1	1.6%	5	7.9%
Itching	56	88.9%	1	1.6%	6	9.5%
Faintishness	41	65.1%	7	11.1%	15	23.8%
Loose stools	34	54.0%	10	15.9%	19	30.2%
Difficulty in breathing	44	69.8%	8	12.7%	11	17.5%
Constipation	36	57.1%	10	15.9%	17	27.0%

Medicine Information Sources Accessibility and Preference

(a) Medicine information sources used

The most commonly used medicine information source was the doctor (100%). A higher number of participants gained information through their family, friends, and teachers (90.5%) than from the pharmacist (77.8%). Of the electronic media, the radio was more commonly used for gaining medicine related information (88.9%) than the television (74.6%). Other sources of information were: nurses (17.5%); newspapers (4.8%); workshops (1.6%); telephone (1.6%); computer (1.6%) (Table 7).

Table 7. Sources used to gain medicine information

	Yes		No	
	No	%	No	%
Doctor	63	100%	0	0%
Pharmacist	49	77.8%	14	22.2%
Family/ Friends/ Teacherst	57	90.5%	6	9.5%
Radio	56	88.9%	7	11.1%
TV	47	74.6%	16	25.4%

(b) Most utilized sources of medicine information

The doctor was the most utilized source of medicine information among 49.2% while only 7.9 % (5 participants) said that the pharmacist was the most utilized information source. 25.4 % stated that it was family/ friends/ teachers who were the most utilized information source (Table 8).

Table 8. Most utilized source of medicine information

Information source	Frequency	Percentage
Doctor	31	49.2
Pharmacist	5	7.9
Family/ Friends/ Teachers	16	25.4
Radio	6	9.5
Sick room nurse	5	7.9
Total	**63**	**100.0**

(c) Most preferred sources of medicine information

The doctor was the most preferred source of medicine information among 90% while none named the pharmacist as their most preferred source of medicine information. Only 62% included the pharmacist as one of the three most preferred sources of medicine information.

(d) Most utilized medicine information source among the participants who stated that their preferred source is the doctor

Of the 57 participants who named the doctor as the most preferred source of medicine information, only 30 participants were able to utilize doctors for this purpose (Table 9).

Table 9. Most utilized medicine information source among the participants who stated that their preferred source is the doctor

Source in medicine information	Frequency	Percentage
Doctor	31	49.2
Pharmacist	5	7.9
Family/ Friends/ Teachers	16	25.4
Radio	6	9.5
Sick room nurse	5	7.9
Total	**63**	**100.0**

(e) Specific medicine related information required by the participants

Name of drug, reason for prescribing, dose, frequency, time of administration, duration of treatment, whether before or after meals, physical characteristics of the drug and side effects were the aspects of medicine information that were assessed. In addition, several

participants stated that they usually ask regarding interactions with food or with other drugs that they take. Almost all the participants believed that the name of the drug, reason for prescribing, dose, frequency, time of administration, duration of treatment, whether before or after meals and side effects should be known by them for effective drug therapy. Only 82.5% of the participants believed that the physical characteristics of the drugs should be known for effective drug therapy (Table 10).

Table 10. Specific medicine related information required by the participants

	Yes		No	
	No	%	No	%
Name of drug	61	96.8%	2	3.2%
Reason for prescribing	60	95.2%	3	4.8%
Dose	63	100.0%	0	0%
Frequency	63	100.0%	0	0%
Time of administration	63	100.0%	0	0%
Duration of treatment	61	96.8%	2	3.2%
Whether before or after meals	63	100.0%	0	0%
Physical characteristics of the drug	52	82.5%	11	17.5%
Side effects	60	95.2%	3	4.8%

f) Source that provide the specific medicine information

Information in relation to dose, frequency, duration and whether drugs need to be taken before or after meals were provided to all the participants. However, 34.4% (21 participants) were not informed of the names of the drugs they were taking while 28.3% (17 participants) were not informed as to why the drugs were prescribed. In addition, 35% (21 participants) were not informed of the side effects of the drugs. The above mentioned specific medicine information in most instances was conveyed by the doctor followed by family/ friends/ teachers and then by the pharmacist. Of the 21 participants who were suffering from chronic diseases such as rheumatoid arthritis, epilepsy, tuberculosis, eye disease and skin disease, 5 were not informed of the possible side effects (Table 11).

(g) Accessibility

Only 52% had a doctor whom they visited regularly (family doctor). However, nearly 90% were confident in asking questions regarding the prescribed medication. Most of the participants were satisfied with the time allocated by the doctors for answering their questions and stated that the doctors explanations were most of the time easily understandable (Table 12).

h) Accessibility of the pharmacist as a medicine information provider

Of the participants who gained medicine information from the pharmacy, only 69% of them believed that a pharmacist was a suitable source of medicine information; 82% stated that some medicine dispensers at the pharmacy were not able to give accurate medicine related information. 55% did not have a regular pharmacist. 75% stated that the pharmacist gives them adequate time to ask questions. Also 92% were confident to ask questions from the pharmacist to clarify any doubts.

(i) Accessibility of electronic media

All the participants had a radio at home (or place of residence) and all were capable of operating it without anybody's help. 96% of the participants had a television at home (or place of residence) while 4% of them were not able to operate it without help of others. None of the participants has used a tape recorder device to record medicine information.

(j) Accessibility of a telephone

88% of the participants were able to use a telephone while nearly 95% said that they will be willing to use a telephone helpline that would provide them with medicine information.

Discussion

This study provides insight on medicine information needs of a special group of medicines consumers in our society. The study disclosed that they had a need to use medicines for acute as well as chronic diseases. There were deficits in their knowledge regarding certain aspects of medicines and on how to use them, that may reflect insufficient access to accurate medicine information. Forty three percent of the participants were unaware of the difference between trade name and generic name. Of the 38 participants who were aware of what was meant by trade name and generic names, 18.4 % did not know that drugs marketed under the trade name were usually more expensive. Some participants did not know that antibiotics, anti-hypertensives, asthma drugs or anti-diabetic drugs should not be bought without a prescription. 14% did not know that medicines could cause side effects. It was seen that they preferred the doctor as the best source of medicinal information. Doctor happened to be the mostly utilized source for medicinal information as well. However they were not able to access the doctor readily for this purpose on some instances. Therefore the doctors should be aware of their important role as drug information providers and develop the necessary skills to facilitate the process and be more readily accessible.

Our study as well as the MINOPS study showed that visually disabled had misconceptions regarding the ability of pharmacists to provide drug information. MINOPS study showed that participants were

Table 11. Source of the specific medicine information

	Nobody tells		Doctor		Pharmacy		Family/ Friends/ Teachers		Sick room nurse		Total
	No	%	No	%	No	%	No	%	No	%	
Name	21	34.4%	26	46.2%	2	3.3%	11	3.3%	1	1.6%	61
Reason	17	28.3%	34	56.7%	1	1.7%	8	1.7%	0	0%	60
Dose	0	0%	32	50.8%	8	12.7%	18	12.7%	5	7.9%	63
Frequency	0	0%	31	49.2%	8	12.7%	19	12.7%	5	7.9%	63
Duration	0	0%	31	49.2%	8	12.7%	19	12.7%	5	7.9%	63
Before or after meals	0	0%	30	47.6%	11	17.5%	17	17.5%	5	7.9%	63
Side effects	21	35.0	35	58.3%	1	1.7%	3	1.7%	0	0%	61

generally not used to asking their pharmacists about their medicines. It was believed by them that pharmacists had more chemical knowledge about medicines and that general practitioners knew what was best. In addition, some participants have stated that they felt uncomfortable asking questions especially when other customers were around.

Our study showed that they used lay people (relatives, friends, and teachers) to obtain medicine information and instructions more than the pharmacists. This is likely to have a negative impact on the knowledge regarding medicines and has lead to the underutilization of valuable and currently available sources. The visually disabled persons should be made aware of the importance and ability of pharmacists to provide medicinal information and pharmacists should be given special training in this regard.

Since the participants of this study commonly used caregivers for medicine information, they should be given the necessary knowledge and skills via special educational programs to avoid risk of medication errors and medicines related mishaps due to incorrect medicine information provided by them.

Table 12. Accessibility of the doctor as a medicine information source

Aspects considered	Yes		No	
	No	%	No	%
Confidence in answering questions	56	88.9%	7	11.1%
Allocates adequate time	52	82.5%	11	17.5%
Easily understandable	56	88.9%	7	11.1%

The main electronic source they used for medicine information was the radio which was readily accessible to them and most knew how to operate it. As such the radio should be used maximally to provide medicine information to them. Special radio programs targeting their special medicine information needs could be produced as a cost effective way of reaching this population. It was seen that a large number of them had access to television. Even though they could not make use of visual inputs, they could make use of the auditory inputs to access relevant medicine information. Such television programs should be produced so that visually disabled consumers could grasp the content of the program solely by auditory means.

The cassette recorder was not used much by this population at present. However this could be a very useful memory aid to information and instructions on medicines given by the doctors and pharmacists. Since present day cellular phones also provide the facility of recording, this could also be used for this purpose.

Majority had access to telephone and they were willing to use a help line for medicine information if one was available. Therefore such help lines manned by health professionals such as doctors, pharmacists and nurses can be established at leading hospitals, pharmacies, and Medical Faculties. These help lines would enable them to clarify any queries they have regarding medicines and get accurate information to facilitate medicine use process.

The students at the schools for the visually disabled, and at universities and vocational training centers were computer literate and had access to computers and internet. However medicine information from these sources was not utilized much at present. These should be developed and utilized for this purpose to empower this special group.

Conclusion

Visually disabled required specific and general medicine information regarding the medicines they used and strategies to overcome barriers in self-administration of medicines. Since doctors and caregivers were preferred and accessible sources of information their attitudes and capabilities in this regard should be improved. It is necessary to promote utilization of pharmacists for this purpose. The radio, telephone, tape recorders and television to which they had ready access should be utilized to provide medicine information. Awareness must be raised among visually disabled population regarding importance of accessing and utilization of medicine information.

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Conflicts of interest

The author declares no competing interests.

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