

## Original Research Article

# Challenges faced by the visually disabled in use of medication, consequences of medication errors and their self-adopted coping strategies at a tertiary care hospital in Goa, India

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## ABSTRACT

**Background:** Visual impairment (VI) does limit individual's ability to complete everyday tasks and impact their quality of life and ability to interact with their environment. The objectives of this study are to determine challenges faced by people with Visually Disability, medicine administration errors and self-adopted coping strategies.

**Methods:** An observational case series study design was used for the data collection. The data was collected from January-June 2014. The study participants were included all patients more than 18 years who were certified as visually handicap.

**Results:** The major challenges faced by total 146 visually disabled patients studied were, 51.36% couldn't locate the place of medication and 45.89% couldn't identify the separate containers of medications. The major Medications errors included of 30.13% study participants had missed doses and spilled medications. The most commonly used coping measures were keeping medications at specific places, identifying separate drugs by feeling the shape of the container.

**Conclusions:** The challenges included, inability to locate the place of medication, inability to identify the separate containers of medications, unaware of correct dose, inability to maintain dose schedule and difficulty in using liquid medications. Medication errors included, missing doses, spillage of medications, consumption of wrong medication, wrong dosage, inability to complete course of prescribed medications. The coping strategies adopted included, keeping medications at specific places, identifying separate drugs by feeling the shape of the container, tracking the time of routine medications with the timings of the TV serials/shows.

**Keywords:** Coping strategies, Challenges, Medication errors, Visually disabled, Visual impairment

## INTRODUCTION

Blindness is a distressing condition with deep emotional and economic implications. Visual impairment (VI) leads to various difficulties and also affects the quality of life.<sup>1</sup>

As per the recent estimates by World Health Organization (WHO) 253 million people living with VI, which includes 36 million blind and 217 million having

moderate to severe VI. Of the total blind people, 81% of them are aged 50 years and above. Chronic eye diseases often lead to vision loss. Refractive errors and cataract are the top two causes of VI. Cataract remains the leading cause of blindness in developing world.<sup>1</sup> India itself has 62.619 million (21.9%) visually disabled people.<sup>2</sup>

Studies have shown that vision is one of the factors affecting the ability to handle medications and that people

with visual impairment are more likely to have difficulty in managing medications when compared to people with normal vision.<sup>3-9</sup> Visually disabled and partially sighted people are potentially more likely to have unsafe practices related to medicinal use. This has been highlighted in many studies.<sup>5,7,10</sup>

The problems they face during medicine administration and how they deal with them have been underexplored. Enough data is not available for health care measures to be taken to reduce these problems. Hence, the present study was undertaken to explore the problems faced by blind people in use of their medicines. The objectives of this study are to determine challenges faced by people with visual disability, medicine administration errors and their self-adopted coping strategies.

## METHODS

An observational case series study design was employed for the data collection. The data was collected from January - June 2014. The study participants included all patients over 18 years certified by ophthalmologist of the Department of Ophthalmology at Goa Medical College or at the two District hospitals in Goa, India. A total of 181 persons with visual disability who met the above-mentioned criteria were eligible. Addresses of these patients were obtained from the Directorate of Social Welfare office at the state capital city, Panaji. These

patients were contacted by mailing postcards to their addresses. Every fortnightly, 25 letters were sent to 25 visually disabled patients till all VI patients were sent mail. They were invited for interviews on a fixed date and time. These visits were planned in such a manner so that the patients are interviewed and examined by the ophthalmologist on the same day. On three occasions letters were re-sent to the non-respondents. Out of these 146 (81%) patients responded and were enrolled in the study. Data was collected by conducting interviews. Interviews were carried out in the seminar room of the department of Ophthalmology. Data was collected using pre-tested questionnaire administered orally by the same interviewer. The study variables comprised of socio-demographic details, status of visual impairment, challenges faced during medicine administration, medicine administration errors and coping strategies. The data was entered in Microsoft excel and analysed using SPSS software (Version 21). The study protocol was reviewed and approved before the commencement of study by the Institutional Ethics Committee of Goa Medical College, Goa. Written Informed consent was obtained from all the study participants.

## RESULTS

The age of study participants ranged from 18–81 years, with mean age of 40.08±14.16 years. The socio-demographic details are given in Table 1.

**Table 1: Socio-demographic details of the study participants.**

Variable	Groups	Frequency	Percentage (%)
<b>Age groups (years)</b>	18-25	29	19.9
	26-35	28	19.2
	36-45	38	26.0
	46-55	29	19.9
	56-65	16	11.0
	66-75	5	3.4
	76-85	1	0.7
<b>Sex</b>	Males	97	66.4
	Females	49	33.6
<b>Religion</b>	Hinduism	90	61.6
	Christianity	46	31.5
	Islam	10	6.8
<b>Education</b>	Literate	6	4.1
	Illiterate	12	8.2
	Primary school	21	14.4
	Middle school	23	15.8
	High	50	34.2
	Intermediate	8	5.5
	Graduate and post graduate	25	17.1
	Professional & honours	1	0.7
<b>Marital status</b>	Unmarried	61	41.8
	Married	82	56.2
	Widow	3	2.1

Variable	Groups	Frequency	Percentage (%)
<b>Occupational status</b>	Managers	1	0.7
	Unemployed	71	48.6
	Student	15	10.3
	Retired	6	4.1
	Professionals	4	2.7
	Technicians and associate professionals	2	1.4
	Clerical support workers	10	6.8
	Services and sales workers	4	2.7
	Crafts and related trade workers	4	2.7
	Elementary operations	29	19.9
<b>Socioeconomic status</b>	Upper class	26	17.8
	Upper middle	59	40.4
	Lower middle	33	22.6
	Upper lower	26	17.8
	Lower	2	1.4
<b>Visual impairment (%)</b>	100	57	39
	100B*	8	5.5
	75	30	20.5
	40	51	34.9

\*100B- visual impairment of 100% with absent projection of light and perception of rays.<sup>11</sup>

**Table 2: Challenges faced by the visually handicap**

Challenges faced	Frequency	Percentage	95% CI
<b>Couldn't locate drugs were kept</b>	75	51.3699	Score (Wilson)=43.33-59.34
<b>Couldn't identify separate drug containers</b>	67	45.8904	Score (Wilson)=38.02-53.97
<b>Didn't know correct dose</b>	42	28.7671	Score (Wilson)=22.04-36.58
<b>Couldn't keep track of time of medications</b>	54	36.9863	Score (Wilson)=29.58-45.06
<b>Found it difficult to use liquid medication</b>	57	39.0411	Score (Wilson)=31.51-47.14

\*multiple responses are allowed hence total doesn't add up to 100%.

**Table 3: Medications errors committed by visually handicap.**

Medication administration errors	Frequency	Percentage	95% CI
<b>Had taken the wrong medicine</b>	11	7.53425	Score (Wilson)=4.259-12.99
<b>Had taken the wrong dose</b>	15	10.274	Score (Wilson)=6.326-16.26
<b>Missed dose/doses</b>	44	30.137	Score (Wilson)=23.28-38.01
<b>Spilled medication</b>	44	30.137	Score (Wilson)=23.28-38.01
<b>Couldn't complete the full course of treatment</b>	27	18.4932	Score (Wilson)=13.03-25.57

\*multiple responses are allowed hence the total doesn't add up to 100%.

Of the 146 study participants, 57(39%) had visual impairment of 100% and 8 (5.5%) had visual impairment of 100% with absence of perception of light and projection of rays. Eighty-five (58.2%) study participants had visual disability since birth and rest developed visual disability later in life.

#### *Attitudes towards medicine use*

Majority of study participants 133 (91.9%) said that they would like to gain knowledge regarding using medicines

safely and effectively. Majority of them 125 (85.6%) also wanted to develop or improve the skills of self-administration of medications. Some [78 (53.4%)] of the study participants felt need of help from others to administer drugs.

#### *Practices followed for medicine administration*

Less than half [63 (43.2%)] study participants self-administered medications in acute illness. About 42 (28.8%) study participants had chronic health problems and were on a long-term treatment for the same. Among

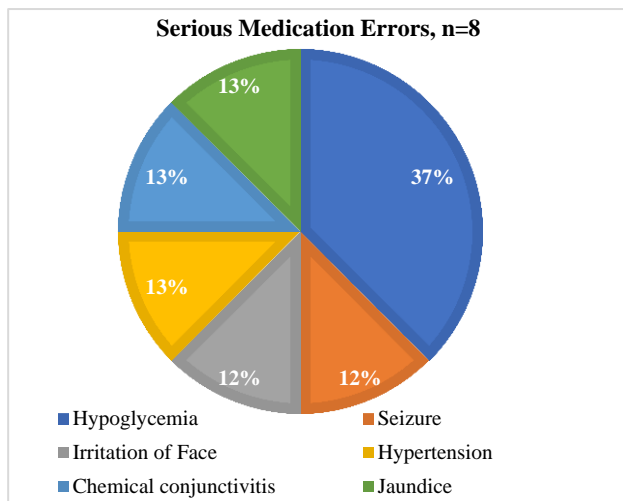
these participants, only 8 (19%) could identify their medications and knew how to take them. Majority [33 (78.6%)] of them believed they cannot self-administer their routine medications without any support from others. Only 16 (38.1%) patients with chronic health problems were taking their long-term medications regularly. Of the 26 participants who were irregular, 21 (80.8%) missed 1-5 doses per month and rest missed even more doses on monthly basis.

**Challenges faced during medication administration**

Out of the total 146 visually disabled patients studied, 51.36% were unable to locate their medications. About 45.89% of them couldn't identify the separate containers of medications. The rest had other challenges like unaware of correct dose (28.76%), inability to maintain dose schedule (36.98%), and difficulty in using liquid medications (39.04%) (Table 2).

**Medication errors committed by study participants**

Following medications errors were committed by study participants during medication administration. A total of 30.13% study participants had missed doses and spilled their medications. Others had committed medication errors such as consumption of wrong medication (7.53%), wrong dosage (10.27%), non-completion of full course of prescribed medications (18.49%) (Table 3).



**Figure 1: Serious medication errors, n=8.**

**Other difficulties faced**

*Liquid medications*

57 (39%) study participants also complained of difficulty in using liquid medications. Difficulty was in taking the correct amount and measuring the syrup/liquid. On many occasions, while drinking liquid they would spill it. Therefore, overdosing and under dosing was frequently encountered.

*Difficulty in completing a course of treatment*

As patients found it difficult to continue with medications, they would discontinue treatment as soon as they feel better. Few said that they stopped treatment to prevent inconvenience to caregiver.

*Coping strategies*

The study participants had difficulty in different aspects of drug administration as seen from the tables. Different coping strategies were adopted to overcome these difficulties are as follows:

*For difficulty in locating the drugs*

Two participants kept medications at specific places e.g. medications to be taken at night time were kept near the bed whereas medications to be taken early in the morning were kept near the wash basin, etc. One caregiver would put the medications in the lunch box or snack box to prevent any struggle to find his medications.

*For difficulty in identifying separate drug/drug containers*

Three patients would identify separate drugs by feeling the shape of the container. Two patients would identify by feeling the shape of the lid or cap of the bottle. Two patients would identify separate drugs by the difference in their shape and size. Two patients would identify drugs based on the place where they are kept. One caregiver kept tablets in different plastic bags which were kept at different places when she went out for work. Each place was fixed for a tablet to be taken at a fixed time. But many times, patient had forgotten time and place assigned which led to missed or mixed up medications. One patient would get the strip of medications to be taken in the morning cut into individual tablets from the pharmacist and strip to be taken in the evening was kept uncut for easy identification.

*For taking correct dose*

In one case, Pharmacist would write the doses of medications on the strips by marker with bold handwriting. One participant would fold the strip/packet of tablets depending on the number of times that tablet had to be taken in a day. For, e.g. tablet to be taken twice, the strip was folded twice. A caregiver would load insulin syringes and keep before going for work so that patient's dose was not missed, or wrong dose was not taken. But despite this the patient still had lot of difficulty in taking the correct dose as he had difficulty in handling the needle, giving the injection by correct technique etc. Taking half of a tablet was a great problem and was reported by many visually disabled participants. Most often they would take the help of a caregiver. They could not identify if the cut was proper or not. Sometimes in the

process of cutting, they would lose a part of tablet or crush it completely.

#### *To keep track of time*

One patient would track the time of his routine medications with the timings of the TV serials/shows. Many had the habit to take their routine medications along with meals.

## **DISCUSSION**

### ***Difficulties in medication administration***

This study explores the difficulties and challenges faced by the visually disabled individuals in relation to their medication. A total of, 75 (51.36%) study participants had difficulty in locating the place of medications which was high as compared to 16 (25.39%) reported by Weeraratne et al whereas Apoorva et al reported that 42 (33.33%) could not locate their medication.<sup>5,7</sup> These differences could be because of lower sample size in the previous studies carried out.

Around 67 (45.89%) could not identify the separate medicine containers. Higher figures were reported by Apoorva et al [81(64.29%)] and lower figures were reported by Weeraratne et al [11(17.46%)].<sup>5,7</sup> Almost 42 (28.76%) participants didn't know the correct dose. Majority (96.8%) of participants who did not know the correct dose were reported by Apoorva et al as compared to Weeraratne et al (6.34%).<sup>5,7</sup>

A total of 54 (36.98%) of participants could not keep the track of time to take their dose. Apoorva et al reported 87 (69.05%) participants were unable to keep track of time as compared to Weeraratne et al [13 (20.63%)].<sup>5,7</sup> Fifty-seven of the participants (39.04%) had difficulty in using liquid medications. Little more percentage was reported by Apoorva et al [64 (50.79%)] as compared to Weeraratne et al [16 (25.39%)].<sup>5,7</sup>

### ***Medication errors***

About 7.53% of the study participants consumed wrong medications. A study conducted in Sri Lanka, reported that 12.69% of study participants consumed wrong dose.<sup>7</sup> Another study from India<sup>5</sup> reported that 44.44% participants consumed wrong medications. This is a quite serious matter and needs to be dealt with more urgently. Similarly, the study participants not only consumed wrong medications, they also consumed medications in wrong dosage (10.20%). Weeraratne et al reported that 14.28% of the study participants used wrong dosage as compared to study findings of Apoorva et al (100.00%).<sup>5,7</sup>

Many participants (30.13%) missed their doses, as compared to the findings reported by Weeraratne et al (39.68%) and Apoorva et al (98.40%).<sup>5,7</sup> On many occasions participants also spilled their medications

(30.13%) which was less than figures reported by Weeraratne et al (34.92%) and Apoorva et al (100.00%).<sup>5,7</sup> Due to the visual disability, many participants (18.49%) could not complete the prescribed course prescribed by the doctors. Higher percentages were reported by Weeraratne (28.57%) and Apoorva et al (57.14%).<sup>5,7</sup>

### ***Coping strategies***

The patients adopted different strategies for coping with the challenges by keeping medications at specific places, identifying separate drugs by feeling the shape of the container, tracking the time of his routine medications with the timings of the TV serials/shows. Similar findings were reported by Apoorva et al that methods adopted included locating drugs by keeping them at different places, and taking liquid medication by using finger felt volume followed by 99.1% could identify drugs by feeling its texture, size and shape and 97.4% could locate the drugs by differentiating drug containers in its size, shape and texture.<sup>5</sup>

### ***Limitations***

This is a case series analysis and there is no comparison group. The sample size is also less. Since the study participants are selected based on the hospital records and not derived from the community, the study findings may be limited in its generalizability.

### ***Strengths***

This is one of its first kind of study in the state of Goa which explored the challenges faced by the visually handicapped. This study will help the Government to adopt favourable policy decisions towards the welfare of visually handicapped.

## **CONCLUSION**

The visually impaired people faced many challenges in relation to medication administration. The challenges included, inability to locate the place of medication, inability to identify the separate containers of medications, unaware of correct dose, inability to maintain dose schedule and difficulty in using liquid medications. Medication errors included, missing doses, spillage of medications, consumption of wrong medication, wrong dosage, inability to complete course of prescribed medications. The coping strategies adopted included, keeping medications at specific places, identifying separate drugs by feeling the shape of the container, tracking the time of routine medications with the timings of the TV serials/shows.

### ***Recommendations***

A larger study with probability sampling should be carried out so that the study findings can be more generalized to the entire State of Goa. To overcome these



challenges the patient should get adequate help of caregiver. In the event of non-availability assistive technology should be made available after performing feasibility studies.

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