

# Assessment of Patients' Comprehension of Discharge Instructions and Associated Factors

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## Abstract

**Aim of Study:** To assess patients' comprehension of discharge instructions and to explore associated factors.

**Methods:** Following a cross-sectional design, 300 patients aged above 14 years, who were admitted to Aseer Central Hospital, and were discharged to home, were included. A questionnaire was designed by researchers for data collection. It consisted of personal data and statements related to assessment of the patients' comprehension of discharge instructions.

**Results:** Most participants were males (68.3%). Age of 26% was <30 years or 30-39 years (27%), while age of less than one-quarter of them (22.3%) was 40-49 years or >50 years (24.7%). Educational level of more than one-third was either secondary school (36.7%) or university education (37.7%), while 6.3% were illiterate. Most participants (85.7%) lived with their families, while 14.3% were living alone. More than half of patients (57%) did not know the side effects of their drugs, 13% of participants did not know about times of their medication intake, duration of treatment (16.7%), when to return to hospital (39.1%), or precautions after discharge (30.1%). About one-third of patients (33.7%) had poor comprehension regarding their discharge instructions, while 37.7% had moderate comprehension

and 28.7% had good comprehension. More than three-quarters of patients felt satisfied about their understanding regarding discharge instructions, while 5.7% were not satisfied. About half of patients (47.7%) preferred verbal methods for having discharge instructions, 11.3% preferred written instructions, while 41% preferred both verbal and written methods. Knowledge levels were significantly lower among those aged >50 years ( $p=0.031$ ). Illiterate patients had significantly lower comprehension about discharge instructions ( $p=0.021$ ). Those who live with their families had significantly better knowledge than those who don't live alone ( $p=0.024$ ). Their comprehension differed significantly according to their department ( $p=0.009$ ), with best comprehension among those discharged from the Surgery Department, while the worst comprehension was observed among patients discharged from the Urology and Orthopedics Departments (63.6% and 48.1%, respectively).

**Conclusions:** About one-third of patients have poor comprehension regarding their discharge instructions. Verbal methods for discharge instructions are preferred by about half of patients, while 41% prefer both verbal and written methods. Patients' poor comprehension is significantly associated with patients' illiteracy, older age (>50 years) and social isolation.

**Key words:** Discharge instructions, patients' comprehension, risk factors.

## Introduction

The transition of patients from the hospital to home is a difficult challenge for both patients and physicians, as the care responsibilities shift from providers to the patients and caregivers. Many problems may arise after this important step, with probability of unwanted events on the patient health outcome, patient' satisfaction and their quality of care (1).

A patient who is ready for discharge from hospital, needs a clear and comprehensive discharge instruction. There is a significant association between understanding discharge instruction and mortality, disability, readmission rate and then on the health costs (2).

Engel et al. (3) found that physicians' assessments of their patients' recall do not prolong visits since physicians can immediately identify areas of poor comprehension and focused discussion. They stressed that efforts to anticipate, identify, and address communication failures are critical to improving patient care. They emphasized that content and organization of discharge instructions should be considered as a possible means of improving comprehension. Instructions may help to improve understanding if they clearly describe all domains of the visit, i.e., diagnosis, provided hospital care, home care, and return instructions.

Efforts for improving discharge instructions focused on increasing communication between care providers and patients. Good communication between patients, families, and physicians can have a huge impact on understanding discharge instructions, which in turn, will increase patients' compliance to treatment, reduce confusion, misunderstanding and complications resulting from obscurity and mismatching between the background of the person presenting the material and the one receiving it (4).

Unfortunately, patients, regardless of their health literacy, education level, or their diagnosis, have problems understanding and recalling their discharge instructions (5). Therefore, many patients often fail to understand the important elements of discharge instructions, making them at a potential risk for drug misuse, and misconception of their diagnosis, which have an impact on their health outcome and eventually on the health cost. Many factors that can influence patient discharge comprehension include poor literacy, language barrier, patient's age, or using medical jargon.

Since discharge instructions can cause several problems such as rehospitalization and many complications, it is possible to reduce this burden by improving the way we provide these discharge instructions. However a gap in knowledge regarding misunderstanding of discharge instructions among patients in Saudi Arabia is present (6).

Therefore, this study aimed to assess patients' comprehension of discharge instructions and to explore associated factors.

## Patients and Methods

This study followed a cross-sectional design. It was conducted in Abha City, in the southwestern part of Saudi Arabia. It included 300 patients. The inclusion criteria were patients aged above 14 years, who were admitted to Aseer Central Hospital, and were discharged to home. The exclusion criteria were patients who were referred to other hospitals, children aged below 14 years, those who had temporary discharge or who were discharged against medical advice.

The researchers constructed a questionnaire based on relevant literature, that consisted of personal data (age, gender, education level, place of residence, whether they live alone or with others, by whom the instructions were given, and how far was the hospital from the patient's residence). Moreover, the questionnaire included statements related to assessment of the patients' comprehension of their discharge instructions. These statements were addressed to the patient or his/her caregivers. They were asked whether they understood the discharge instruction items, including the diagnosis of their condition, medications (number, side effects, frequency), symptoms to be watched, home care and dates of follow up visits.

Collected data were verified by hand, then coded before computerized data entry. The Statistical Package for Social Sciences (IBM, SPSS version 22) was used for data entry and analysis. Patients' responses regarding their discharge instructions were scored, with a score of (1) being assigned for a correct response, and a score of (0) for an incorrect response. Patients' scores were summed up and the patients' total percentage scores were calculated. A poor knowledge level was decided if the total percentage score was less than 50%, a moderate level for 50% to 74.9%, and a good level for  $\geq 75\%$ .

All official approvals were fulfilled prior to data collection. Participants were interviewed either face-to-face or by phone calls. This study was carried out at the full expense of the researchers, and there is no conflict of interest.

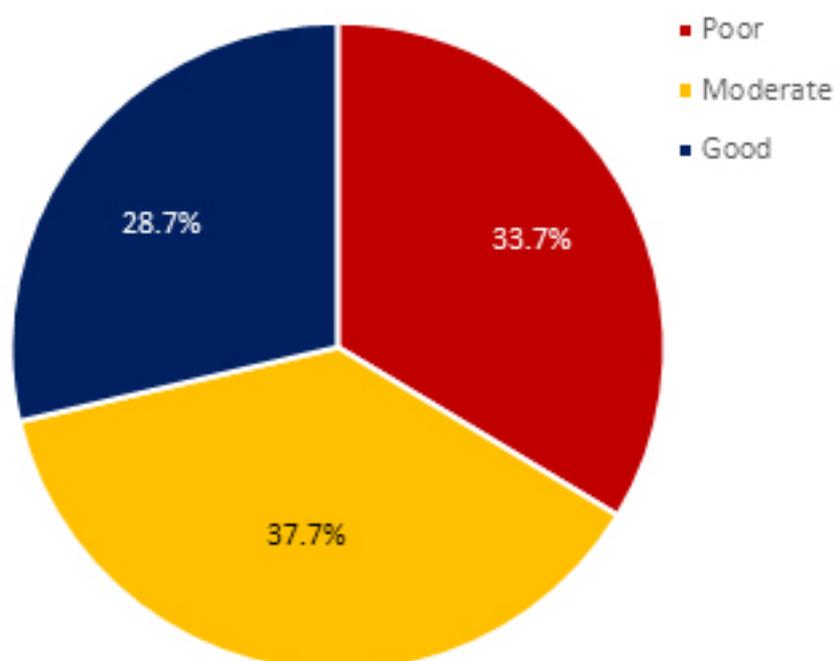
## Results

Table 1 shows that most participants were males (68.3%). Age of more than one-quarter of participants (26%) was <30 years or 30-39 years (27%), while age of less than one-quarter of them (22.3%) was 40-49 years or >50 years (24.7%). Educational level of more than one-third of participants was either secondary school (36.7%) or university education (37.7%), while 6.3% were illiterate and education levels of 19.3% were primary or intermediate schools. About two-thirds of participants lived <20 km away from the hospital, while 21.3% lived 21-40 km away, 8.7% lived 41-60 km away and 5% lived more than 60 km away. Most participants (85.7%) lived with their families, while 14.3% were living alone. Physicians constituted the main information source for patients regarding information on discharge (77.3%). Other sources of information sources were pharmacists (11%) or nurses (11.7%).

Table 1: Personal data of patients admitted to Aseer Central Hospital

Personal data		No.	%
Gender	Male	205	68.3
	Female	95	31.7
Age (in years)	< 30	78	26.0
	30-39	81	27.0
	40-49	67	22.3
	50+	74	24.7
Educational level	Illiterate	19	6.3
	Primary/Intermediate	58	19.3
	Secondary	110	36.7
	University	113	37.7
Distance to hospital	<20 km	195	65.0
	21-40 km	64	21.3
	41-60 km	26	8.7
	> 60 km	15	5.0
Who lives with patient	Lives alone	43	14.3
	Lives with family	257	85.7
Main source of information on discharge	Physician	232	77.3
	Pharmacist	33	11.0
	Nurse	35	11.7

Figure 1: Overall patients' comprehension regarding their discharge instructions



**Table 2: Patients' comprehension regarding their discharge instructions**

Comprehension items		No.	%
<b>Diagnosis</b>	Incorrect	18	6.0
	Correct	282	94.0
<b>Date of next appointment</b>	Incorrect	33	11.0
	Correct	267	89.0
<b>Drugs given on discharge</b>	Incorrect	75	25.0
	Correct	225	75.0
<b>Side effects</b>	Don't know	171	57.0
	Acceptable	26	8.7
	Good	17	5.7
	Excellent	86	28.7
<b>Times of medications intake</b>	Don't know	39	13.0
	Acceptable	60	20.0
	Good	71	23.7
	Excellent	130	43.3
<b>Know duration of treatment</b>	Don't know	50	16.7
	Acceptable	54	18.0
	Good	55	18.3
	Excellent	141	47.0
<b>Know when to return to ER</b>	Don't know	117	39.1
	Acceptable	44	14.7
	Good	65	21.7
	Excellent	73	24.4
<b>Know precautions after discharge</b>	Don't know	90	30.1
	Acceptable	34	11.4
	Good	78	26.1
	Excellent	97	32.4

**Table 3: Patients' perception regarding discharge instructions**

Perception items		No.	%
<b>Satisfaction regarding understanding instructions</b>	Dissatisfied	17	5.7
	To some extent	53	17.7
	Satisfied	230	76.7
<b>Preferred method for having instructions</b>	Verbal	143	47.7
	Written	34	11.3
	Both	123	41.0

**Table 4: Patients' comprehension levels about discharge instructions according to their personal characteristics**

Personal characteristics		Poor		Moderate/Good		p Value
		No.	%	No.	%	
Gender	Male	70	34.1	135	65.9	0.796
	Female	31	32.6	64	67.4	
Age (in years)	< 30	25	32.1	53	67.9	0.031*
	30-39	24	29.6	57	70.4	
	40-49	17	25.4	50	74.6	
	50+	35	47.3	39	52.7	
Educational Level	Illiterate	11	57.9	8	42.1	0.021*
	Primary/Intermediate	24	41.4	34	58.6	
	Secondary	37	33.6	73	66.4	
	University	29	25.7	84	74.3	
Distance to hospital	<20 km	72	36.9	123	63.1	0.173
	21-40 km	20	31.3	44	68.8	
	41-60 km	4	15.4	22	84.6	
	> 60 km	5	33.3	10	66.7	
Who lives with patient	Lives with family	8	18.6	35	81.4	0.024*
	Lives alone	93	36.2	164	63.8	
Main source of information on discharge	Physician	81	34.9	151	65.1	0.647
	Pharmacist	9	28.1	23	71.9	
	Nurse	11	31.4	24	68.6	
Department	Medicine	35	34.7	66	65.3	0.009*
	Surgery	18	21.2	67	78.8	
	Orthopedics	25	48.1	27	51.9	
	Urology	7	63.6	4	36.4	
	One day surgery	11	30.6	25	69.4	
	Others	5	33.3	10	66.7	

\* Statistically significant

Table 2 shows that most patients (94%) had correct knowledge regarding their diagnosis, date of next appointment (89%), drugs given on discharge (75%). However, more than half of patients (57%) did not know the side effects of their drugs, 13% of participants did not know about times of their medication intake, duration of treatment (16.7%), when to return to hospital (39.1%), or precautions after discharge (30.1%).

Figure 1 shows that about one-third of patients (33.7%) had poor comprehension regarding their discharge instructions, while 37.7% had moderate comprehension and 28.7% had good comprehension.

Table 3 shows that more than three-quarters of patients felt satisfied toward their understanding regarding discharge instructions, while 5.7% were not satisfied. About half of patients (47.7%) preferred verbal methods for having discharge instructions, 11.3% preferred written instructions, while 41% preferred both verbal and written methods.

Table 4 shows that patients' comprehension about discharge instructions did not differ significantly according to their gender. Their knowledge levels were significantly lower among those aged >50 years ( $p=0.031$ ). Illiterate patients had significantly lower comprehension about discharge instructions ( $p=0.021$ ). Their comprehension did not differ significantly according to the distance between their residence and the hospital. Those who live with their families had significantly better knowledge than those who live alone ( $p=0.024$ ). Their comprehension levels did not differ significantly according to their source of information. Their comprehension differed significantly according to their department ( $p=0.009$ ), with best comprehension among those discharged from the Surgery Department, while the worst comprehension was observed among patients discharged from the Urology and Orthopedics Departments (63.6% and 48.1%, respectively).

## Discussion

The present study showed that about one-third of patients had poor knowledge regarding their discharge instructions, while 37.7% had moderate knowledge and 28.7% had good knowledge. Although most patients had correct knowledge regarding their diagnosis, and date of next appointment, and drugs given on discharge, more than half of them did not know the side effects of their drugs, some patients did not know about times of their medication intake, duration of treatment, when to return to hospital, or precautions after discharge.

These findings are in accordance with those reported by several studies. Jencks et al. (7) noted that adverse events after hospital discharge are common, avoidable and costly. These adverse events have been attributed in part to discharge processes centered around poor communication. Engel et al. (3) added that patients often have difficulty understanding their provided discharge instructions. Frequently, written materials exceed patients' literacy levels, which may contribute to problems with comprehension. Direct assessment of patient and caretaker comprehension after discharge has demonstrated difficulties with recalling diagnoses and discharge instructions. These deficits have been shown also to exist immediately after discharge and thus are not merely a function of people forgetting information over time.

Engel et al. (5) noted that many patients leave the hospital with incomplete understanding of their discharge instructions. Home care and follow up are the items that patients usually have severe deficient understanding compared to the other domains, (e.g., medication, diagnosis, and return to hospital), which raise a concern about future complications.

About half of our patients preferred verbal methods for having discharge instructions, 11.3% preferred written instruction, while 41% referred both methods. Results of this study show that more than three-quarters of patients felt satisfied about their understanding regarding discharge instructions.

Patients have high self-rated understanding of discharge instructions but that doesn't mean what they know is correct. They have shown poor understanding of these instructions. Such poor practices like not using intelligible language can result in deficiency in understanding the reason for hospitalization (8).

Discharge instruction can be delivered in various ways. It could be verbal, written, video, pictures, or illustrations. Each one of them has a different impact on patients and caregivers' comprehension and outcomes (9-11).

Engel et al. (3) argued that patients usually need to get information about their medical care and identify communication as a critical element of their interactions with health care providers. Their comprehension of discharge instructions serves as a meaningful measure of what the patients take away from their visit and thereby provides a valuable tool for communication research.

Pines et al. (12) reported an association between patients' satisfaction and communication. They stressed that efforts to improve patients' understanding will have important implications for better outcomes and decreased resource utilization. On the other hand, low patient satisfaction may reflect communication failures. Taylor et al. (13) stressed that communication is a key factor in patient satisfaction, and problems with communication have been found to be a leading cause of patient complaints. Causes for communication failures are complex and multifaceted, on the part of the patient, physician, healthcare team, and the environment.

Engel et al. (5) indicated that patients often leave the ED with an incomplete understanding of their care and instructions. The etiology of these deficits is multifactorial and reflects problems with both written and verbal communication.

Therefore, identifying and addressing communication problems are essential steps toward improving patient care. It is possible to minimize communication failures by characterizing them and determining why they occur and how to reduce or prevent them (3).

Samuels-Kalow et al. (14) stressed that improving discharge instructions is the best way to improve the patient's comprehension. Patients prefer instructions which have structured content, are presented verbally, with written and visual cues to enhance recall, written in their language and at an appropriate reading level. Success or failure of patients' comprehension at discharge depends on the discharge education and how they are instructed. Hall et al. (15) also noted that written discharge instructions often exceed patients' health literacy or reading levels.

Our study revealed that patients' comprehension of their discharge instructions was significantly lower among illiterate patients, those aged >50 years, and those who live alone. Their comprehension also differed significantly according to their hospital department, with best comprehension among surgery patients, while the worst comprehension was observed among Urology and Orthopedics patients. However, patients' comprehension did not differ significantly according to their gender, main source of information, or the distance between their residence and the hospital.

The variation in patients' comprehension of discharge instructions according to their personal characteristics should be considered during the communication between health care providers and the patient. Morrow et al. (16) noted that promising interventions that might improve discharge instructions for patients who have inadequate health literacy might include pictures or cartoons of instructions, larger font size, and icons. Hoek et al. (17) stated that patient instructions, frequently consisting of new and complex information, are often briefly explained and can therefore be difficult for patients to remember or reproduce. Patient-related factors, such as a language barrier, impaired cognitive function, or low literacy, can also complicate patient education. Fearon et al. (18) noted that health literacy, readability and educational level

play an important role in misunderstanding of discharge instructions. Patients with poor health literacy are at a higher risk for seeking emergency care and readmissions that are associated with hospitalization. Therefore, patient discharge instructions should not be written to below marginally literate level.

The differences in our patients' comprehension of discharge instructions according to their hospital department may reflect differences in type or content of instructions, rather than personal differences among healthcare providers. Moreover, older patients and those who live alone (i.e., socially isolated) may need more effort to explain the discharge instructions to them (19).

Hvidt et al. (20) stated that older patients are less aware of their comprehension deficits with respect to medication instructions, diagnostic tests, preventive measures, and when to seek emergency care, compared to younger patients. A reason for that is patients were rarely asked if they had further questions and patients' comprehension was never confirmed.

## Discussion

About one-third of patients discharged from Aseer Central Hospital have poor comprehension regarding their discharge instructions. Items of comprehension deficits include side effects of their drugs, times of their medication intake, duration of treatment, when to return to hospital, and precautions after discharge. About half of patients prefer verbal methods of discharge instructions, while 41% prefer both verbal and written methods. Patients' poor comprehension is significantly associated with patients' illiteracy, older age (>50 years), and social isolation. Moreover, their comprehension differs significantly according to their hospital department, being worst among Urology and Orthopedics patients.

Our study recommends that the discharge instructions should be clear to all patients, be verbal for less educated patients and also be written for the better educated. Explaining the discharge instruction in video, pictures, or illustrations is also encouraged.

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