

An Assessment of Readiness for Discharge from Hospital after Elective Cranial Surgeries in a Tertiary Care Centre

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Abstract

Readiness for discharge from hospital is both a state and a process characterised by physical stability and competence to manage self-care at home; adequate support to cope after leaving the hospital; psychological ability to manage the process; and adequate information. The readiness to discharge of patient and care giver after cranial surgeries are studied little and only few studies are available in this area. This cross-sectional survey was done to find out the patients and care givers for discharge from readiness and its predictors. Patients having undergone elective cranial surgeries and their care givers aged 18 and above (176 each) were included for this survey. The data on discharge readiness was collected from patient and care giver of the same patient using validated tool, Readiness for hospital discharge scale – adult form and Readiness for hospital discharge scale, family care giver of adult patient form respectively. Only 40 percent of the patients were ready for discharge at the time of discharge from hospital while more than 75 percent of care givers were ready for their patients to be discharged from hospital at the time of planned discharge from hospital. Bivariate analysis showed that for patients, there is significantly lower level of readiness for discharge among the patients after 50 years of age. Those who have attended college, were unemployed and having good functional status were more ready for discharge. For care givers, education status and occupation were associated with more discharge readiness. Assessing patients' preparedness for discharge is an essential component of the discharge planning process. Our findings suggest that the development and implementation of effective discharge preparation programmes with patient and family education and appropriate referrals are prerequisites for readiness for discharge.

Key words: Neurosurgery nursing, Cranial surgery, Hospital discharge

Readiness for discharge from hospital is both a state and a process characterised by physical stability and competence to manage self-care at home; adequate support to cope after leaving the hospital; psychological ability to manage the process; and adequate information on relevant patient care. The attributes belonging to 'readiness for hospital discharge' were physical stability, adequate support, psychological ability, and adequate information and knowledge (Galvin et al, 2017).

Recent advances in neurosurgery allow for shorter duration of anaesthesia and surgery, faster recovery, and earlier discharge from hospital. Discharge planning is a routine feature of health systems in many countries. The aim of discharge planning is to reduce length of hospital stay and unplanned re-admission to hospital, and to improve the co-ordination of services following discharge from hospital. Early discharge from the health care facility requires extensive teaching and preparation

of the patient regarding home care and follow-up care. Shorter hospital stays have been associated with decreased complication rates, fewer hospital-acquired infections, and lower costs.

The discharge readiness of patient and care giver after cranial surgeries are studied little and not well reported. Only few studies are available in this area. A retrospective review of patients having undergone craniotomies showed a mean hospital stay of six days and patient factors like male gender, low pre-operative modified Rankin's scale score, tumor factors like right-sided, supratentorial, smaller size, lower modified frailty index score, and operative factors like lack of cerebrospinal fluid drain and awake surgery as independent predictors of successful early discharge on post-operative day 1 (Richardson et al, 2019).

Post-craniotomy patients should be monitored because of the direct influence on the brain function and constraints caused by the underlying illness. In the context of early discharge from the health care facility the patients and care giver's readiness for discharge from hospital need to be monitored before planning discharge.

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A cross-sectional survey was conducted using validated tool: Readiness for hospital discharge scale – adult form showed a mean score of 7.76 ± 1.48 among post-craniotomy patients. The individuals' age, employment status, presence of a person to provide care at home, poor financial status, and first hospitalisation during the lifetime of the patient were statistically significant predictors of their readiness for discharge. This study also showed that patients had moderate levels of readiness for discharge and low levels of discharge-related knowledge. But the exact proportion of patients who were ready for discharge was not reported (Baksi et al, 2020). Another study conducted using the same validated scale to assess the predictors and outcome of discharge readiness showed living alone, discharge teaching and care coordination as the predictors of discharge readiness. Greater readiness for discharge was predictive of fewer readmissions (Weis et al, 2007).

The discharge readiness form for adult patients with medical and surgical condition and their care giver to assess their discharge readiness is a validated tool, and is available in the public domain also. Readiness for hospital discharge scale – adult form and Readiness for hospital discharge scale- family care giver was used in a previous study conducted to assess the discharge readiness of patients undergone cranial surgeries (Baksi et al, 2020). The questionnaire contains 21 questions in four domains of discharge readiness: Personal status (how the patient feels on the day of discharge); Knowledge (the patients' knowledge about care of self at home after discharge); Perceived Coping Ability (how the patient will be able to cope at home after discharge); Expected Support (how much help the patient will have if/when needed at home after discharge). There are six, eight, three and four questions in each domain respectively. Each question is scored at a 10-point scale. Maximum total score is 210 and minimum score is 0.

The Readiness for hospital discharge scale-family care giver of adult patient form contains 22 questions in four domains of discharge readiness (Weiss et al, 2006). The four domains are: Personal status (how the care giver feels about the patient and self on the day of discharge); Knowledge (the care givers' knowledge about care of self at home after discharge); Perceived Coping Ability (how the patient care giver will be able to cope at home after discharge); Expected Support (how much help the care giver will have if/when needed at home after discharge). There are seven, eight, three and four questions in each domain respectively. Each question is scored at a ten-point scale. Maximum total score is 220 and minimum score is 0.

Study on discharge readiness of patients and care givers especially in neuro surgery setting was not extensively undertaken. Assessment of discharge readiness and its predictors and outcome can help plan and implement individualised discharge education and increase patient and care giver preparedness in home care. This study was undertaken to find out the patients and care givers discharge readiness and its predictors.

Objectives

The objectives of this study were:

- to assess the readiness of patients for discharge after elective cranial surgeries
- to assess the readiness for discharge by the care givers of patients undergone cranial surgeries
- to identify the factors associated with discharge readiness of patients and care givers.

Definitions

Cranial surgeries: Any elective neurosurgical intervention to the cranial vault for a single lesion.

Care giver: A person who accompanied the patient to the hospital for the present hospital admission. *Readiness for discharge of patient* is defined as a score of 70 and above using a validated measure to assess the discharge readiness of patient (Readiness for hospital discharge scale – adult form).

Readiness for discharge of care giver is defined as a score of 80 and above using a validated measure to assess the discharge readiness of care givers (Readiness for hospital discharge scale- family care giver of adult patient form).

Methodology

Study design: The study was designed to be a cross-sectional survey with one time interview of patient and care giver of the same patient to assess the readiness for discharge of patients after elective cranial surgeries

Population and sample: Patients who had undergone elective cranial surgeries and their care givers aged 18 and above participated in this survey. The participants were recruited pre-operatively after admission to wards for surgery. Informed consent was obtained pre-operatively after screening for eligibility to participate in the study.

Sample size: The planned sample size for this study was calculated as 400 participants, 200 patients and 200 care givers of the same patients. Previous study conducted among craniotomy patients using a validated tool to assess readiness for discharge showed a mean score of 7.76 ± 1.48 among the participants (Baksi et al, 2020). A mean score of 9 and above indicates readiness for discharge. In

order to have an estimate of discharge readiness of 80 percent with an absolute precision of 10, the estimated sample size for this study was 160. By considering the chance of lost follow-up and non-response rate of 20 percent, the final sample size for this study was calculated as 200.

Sampling technique: Consecutive sampling method was used in this study. Consecutive patients admitted for elective cranial surgeries who met the inclusion criteria were recruited until we got sufficient sample size. The data collection period was considered as a segment representing all the patients who will be getting admitted for elective cranial surgeries.

Inclusion Criteria

- (i) Post-operative patients who had undergone elective cranial surgeries and their care givers aged 18 and above; and (ii) patients who had undergone cranial surgery for a single lesion.

Exclusion Criteria

- (i) Not willing for participation either patient or care giver.
- (ii) Cranial surgeries in which only biopsy has been taken where hospitalisation days are expected to be short.

Research process: The participants were recruited by the principal investigator from the neurosurgery department. The existing practices for patient care or discharge education was altered as a part of this study for data collection. Consecutive patients admitted for elective cranial surgeries who met the inclusion were recruited preoperatively for this study until we got required sample size. Informed consent to participate in the study was obtained pre-operatively. Basic sociodemographic of the patient and care giver were collected through interview using structured interview schedule.

The data on discharge readiness was collected from patient and care giver of the same patient using validated tool, Readiness for hospital discharge scale – adult form and Readiness for hospital discharge scale- family care giver of adult patient form respectively (Weiss et al, 2006). The questionnaire had 21 questions in four domains of discharge readiness: Knowledge (the patients’ knowledge about care of self at home after discharge); Perceived Coping Ability (how the patient will be able to cope at home after discharge); Expected Support (how much help the patient will have if/when needed at home after discharge. The Readiness for hospital discharge scale- family care giver of adult patient form had 22 questions in the same four domains of discharge readiness. The validated Malayalam version for this tool was not available. The tool was translated

and back translated to see the concurrence and modifications were done.

The interviews were conducted by the principal investigator in the neuro surgery ward where the patients were admitted. The care givers were interviewed in the waiting area. The interviews were conducted on the day of discharge according to the convenience of the patient and care giver.

Data Analysis

The data was entered in excel, cleaned both manually and electronically and analysed using SPSS version 25. Data analysed was done using descriptive and inferential statistics. Univariate, bivariate and multivariate analysis were performed. The proportion of patients’ and care giver who are ready for discharge at the time of planned discharge were reported. Predictors of discharge readiness was reported.

Results

The number of participants finally included in this study was 176 patients and as many care givers of same patients. None of them refused to participate. It took seven months to recruits all participants to complete data collection. We got almost equal male and female patients, but majority of the care giver were males. The patients and care givers were mainly in the age group of 50 years and above, while almost equal number of patients participants were in the age group of 25-50 years also. The basic sociodemographic details are given in Table 1.

Table 1: Socio demographic and clinical details of the study participants (N=176)

Characteristics	Category	Number	Percentage
Age in years	8-25	15	8.5
	26-50	89	50.6
	51 and above	72	40.9
Gender	Male	84	47.7
	Female	92	52.3
Educational status	Secondary	88	50.0
	Graduation	58	33.0
	Post graduation and above	26	14.78
	Illiterate	4	2.27
Occupation	Unemployed	78	44.3
	Manual labor	20	11.4
	Skilled worker	33	18.8
	Professional	45	25.6
Income category	APL	114	64.8
	BPL	62	35.2
Actual monthly house hold income (Rs)	<500	64	36.4
	500-15000	84	47.7
	>15000	28	15.9
Presence of health care worker in own family	Yes	70	39.8
	No	106	60.2

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Characteristics	Category	Number	Percentage
Age	8-25	6	3.4
	26-50	135	76.7
	51 and above	35	19.9
Gender	Male	107	60.8
	Female	69	39.2
Education	Secondary	80	45.5
	Graduation	64	36.4
	Post graduation and above	31	17.6
	Illiterate	1	0.6
Occupation	Unemployed	74	42.0
	Manual labour	13	7.4
	Skilled worker	34	19.3
	Professional	51	31.3

The mean number of days of hospitalisation was 11.49 ± 4.5 days with an average number of pre-operative days of 5.46 ± 2.71 and an average number of post-operative days of 5.14 ± 3.27 . Around 90 percent of the participants had a pre-operative mRS score of two or less, while at discharge the same was 65 percent. The mean mRS score during admission was 1.51 ± 1.00 and that at discharge was 2.26 ± 0.95 . All the participants both patients and care givers expressed that the in-patient care was coordinated. The other clinical characteristics of the participants are given in Table 2.

Table 2: Clinical details (N=176)

Characteristics	Category	Number	Percentage
Pre-operative days	≤ 3	50	28.4
	4 and above	126	71.6
Post-operative days	≤ 5	130	73.9
	6 and above	46	26.1
mRS at admission	0-2	154	88.6
	3-5	22	11.4
mRS at discharge	0-2	114	65.1
	3-5	62	34.9
Discharge education received – patient	Yes	153	86.9
	No	23	13.1
Discharged with invasive devices	Yes	17	9.7
	No	159	90.3
Discharge education received –care giver	Yes	163	92.6
	No	13	7.4

Table 3: Discharge readiness of patient and care giver

Discharge readiness score	Patient N (%)	Care giver
Total score		
Ready	71 (40.3)	134 (76.1)
Not ready	105 (59.7)	42 (23.9)
Personal status	Mean (SD) 38.27 ± 7.99	Self- Mean (SD) 38.67 ± 9.61
		Patient- Mean (SD) 46.35 ± 7.53
Knowledge	Mean (SD) 44.64 ± 15.75	Mean (SD) 62.66 ± 13.60
Perceived coping ability	Mean (SD) 18.32 ± 6.25	Mean (SD) 24.37 ± 4.90
Expected support	Mean (SD) 33.7 ± 7.25	Mean (SD) 34.70 ± 7.59

The mean discharge readiness score of patients was 64.9 ± 14.0 and that of care giver was 93.6 ± 13.6 . The details of readiness score of patients and care givers and score on subscales are given in Table 3. Figure 1 and Figure 2 show the five number summary of discharge readiness score of patient and care giver respectively. Only 40 percent of the patients were ready for discharge at the time of discharge from hospital while more than 75 percent of care givers were ready for their patients to be discharged from hospital at the time of planned discharge from hospital.

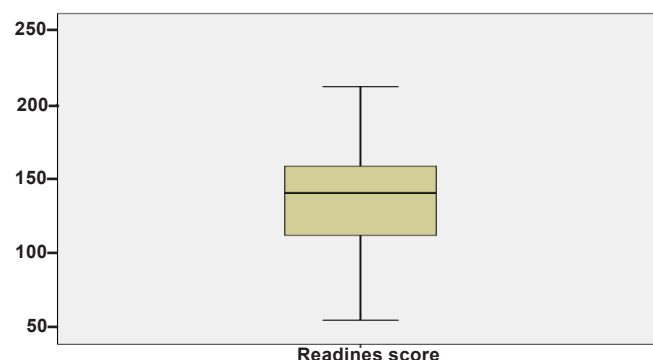


Fig 1: Five number summary of total discharge readiness score of patients.

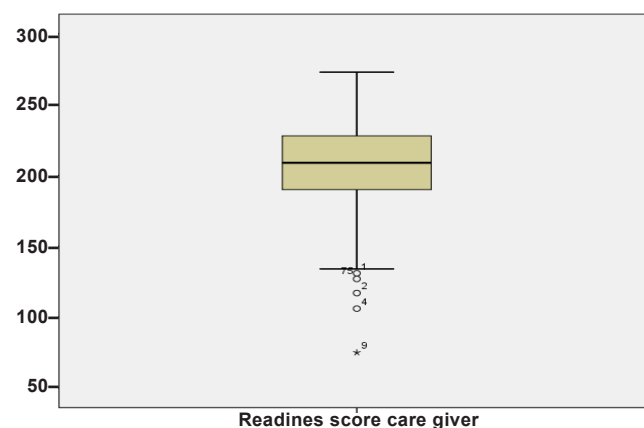


Fig 2: Five number summary of total discharge readiness score of care givers.

Bivariate analysis of patients showed that there is significantly lower level of readiness for discharge among the patients above 50 years of age. Those who had education up to college level were more ready for discharge compared to other education categories. Similarly more proportion of unemployed were more ready for discharge than skilled labourers and manual labourers. The admission and discharge mRS score of 2 or low is associated with more ready for discharge compared to an mRS score of 3 and above. For care givers higher education and professional job were associated with more discharge readiness. The association between discharge readiness and other characteristics are given in Table 4.

Discussion

Our study showed that 40 percent of the patients were ready for discharge at the time of discharge from hospital while more than 75 percent of care givers were ready for their patients to be discharged from hospital at the time of planned discharge from hospital. The domain wise readiness showed more than 50 percent of the patients and care givers expect very good support from their care giver and other family members respectively. More than 50 percent of the patients showed suboptimal readiness in physical domain, knowledge and coping abilities. Even though more than 50 percent of the care givers were not physically ready and think their patients are not physically ready

Table 4: Predictors of discharge readiness for patient and their care givers

Characteristics	Category	Readiness Yes /No		Chi square	p value
Patients					
Age	18-25	8	7	8.13	0.01
	26-50	43	46		
	51 and above	20	52		
Gender	Female	32	60	2.74	0.11
	Male	39	45		
Educational status	Secondary	25	63	15.52	0.00
	Graduation	33	25		
	Post graduation and above	13	13		
	Illiterate	0	4		
Occupation	Unemployed	7	13	20.24	0.00
	Manual labor	21	57		
	Skilled worker	13	20		
	Professional	30	15		
Income category	APL	50	64	1.67	0.19
	BPL	21	41		
Actual monthly house hold income (Rs)	<500	19	45	6.35	0.09
	500-15000	37	47		
	>15000	15	13		
Presence of health care worker in own family	No	37	69	3.3	0.07
	Yes	34	36		
Number of days hospitalised	=<8 days	22	27	0.59	0.49
	>8days	49	78		
Pre-operative days	=<3	16	34	2.02	0.16
	4 and above	55	71		
Post-operative days	=<5	56	74	1.55	0.21
	6 and above	15	31		
mRS at admission	0-2	66	88	7.4	0.00
	3-5	17	2		
mRS at discharge	0-2	55	59	18.83	0.00
	3-5	50	11		
Discharge education received - patient	Yes	92	61	0.11	0.74
	No	10	13		
Discharged with invasive devices	Yes	6	65	0.68	0.41
	No	13	92		
Discharge education received - care giver	Yes	95	68	1.74	0.19
	No	3	10		

Characteristics	Category	Readiness Yes /No		Chi square	p value
Care givers					
Age	8-25 26-50 51 and above	0 28 14	6 107 21	7.62	0.02
Gender	Male Female	14 28	55 79	0.79	0.47
Education	Secondary Graduation Post graduation and above Illiterate	22 32 16 1	58 32 15 0	11.11	0.00
Occupation	Unemployed Manual labor Skilled worker Professional	27 1 12 31	47 5 29 24	13.88	0.00

for discharge, they believe that they have enough knowledge and coping skills to care their patient in home. Patients' age, education and occupational status mRS score at admission and discharge were significantly associated with readiness for discharge from hospital for patients. Care giver readiness for discharge from hospital was significantly associated with their educational and occupational status.

In our setting, only 40 percent of the patients were ready for discharge from hospital at the time of planned discharge after elective cranial surgeries. Majority of them received discharge education and reported that in-patient care was coordinated. The mean hospitalisation days was 11 and mean post-operative days was five. A similar multicentric study conducted in Switzerland among medical surgical patients also reported a lower level of discharge readiness (47%) (Mabire et al, 2019). A cross-sectional survey conducted among post-craniotomy patients showed a mean score of 7.76 ± 1.48 . That also indicated around 50 percent of the patients were ready for discharge (Baksi et al, 2020). Our centre being a tertiary care referral hospital aimed to provide advanced surgical and nursing interventions to patients and encourage back referrals after stabilisation of patients to cater to the needs of waiting patients. The modifiable factors from hospital administrations like number of days of hospitalisation, discharge education and care coordination didn't get significant association with discharge readiness. However, the discharge functional status was associated with discharge readiness hence we argue for appropriate back referrals and education for continued home care and physiotherapy may help patients to get more confidence in getting ready for discharge.

The patient factors like age, education, occupation and functional status were associated with readiness for discharge for patients. More proportion of patients in the age group of 51 and above were ready for discharge, this may be due to their eagerness to go home and perceived disruption of their family affairs due to hospitalisation.

Patients with up to secondary education and manual laborers were more ready for discharge. This may be due to their fear of increasing hospital expenditure and to reduce the number of days of loss of job. Our patients showed more physical disability at discharge than admission. This may be due to surgical complications, deficits due to lesion resection or post-operative brain oedema. The better functional status at the time of discharge was significantly associated with discharge readiness of patients as anticipated. Other factors like gender, income and discharge education were not associated with discharge readiness of patients. One previous study showed individuals' age, employment status, presence of a person to provide care at home, poor financial status, and first hospitalisation during the lifetime of the patient were statistically significant predictors of their readiness for discharge (Baksi et al, 2020). Length of hospital stay was not significantly associated with discharge readiness.

Previous studies also showed that more hospital stay is associated with more complications and not reducing readmissions (Dasenbrock et al, 2015). Another study showed that patients' readiness for hospital discharge from hospital was significantly lower in larger units and on surgical units. Higher nurses' experience, better patient self-reported health, higher patient ratings of self-care teaching and symptom management teaching were significantly associated with greater patient readiness for hospital discharge (Mabire et al, 2019).

More than 70 percent of the care givers were ready for discharge at the time of planned discharge of their patients from our centre. It is quite a good number. There is no similar data available from other studies for comparison. Even though more participants in all age categories were ready for discharge, participants in the age group of 25-50 years were more ready than other age groups. Care giver with secondary school level education and the unemployed were more prepared to take their patient home. This may be due to their convenience for spending more time with their sick relative in home. Individuals with simple education will be more receptive to basic instructions and more likely to develop behavioural changes. Previous studies have also shown that higher education has no significant effect in behavioural change and increasing knowledge in terms of health awareness instructions.

There is a paucity in the published studies in medical literature on the readiness to hospital discharge status following cranial surgeries. This study highlights the need for tailored counselling and other intervention to fill this gap and help hospitals to optimise bed utility and turn over apart from saving cost of in-house hospital stay for patients.

Discharge planning may be the be advocated to increase patient readiness for discharge. This will cater to the educational need of the patient in terms of self-care, symptom management and other home care aspects. Patients with functional limitations can be referred to appropriate centres and collaborations can be established to continue home physiotherapy, speech therapy, swallow screening or whichever follow-up care is required in a non-surgical setting. Studies have shown that discharge planning increases patient's readiness for discharge and increase staff satisfaction (Gonçalves-Bradley et al, 2016).

Ethical consideration: Written informed consent was obtained from all participants before the survey. The study was conducted after receiving clearance from Institute Ethics Committee of SCTIMST, Thiruvananthapuram.

Conclusion

Assessing patients' preparedness for discharge is an essential component of discharge planning process. Patient readiness for hospital discharge is associated patient related factors. Our findings suggest that, the development and implementation of effective discharge preparation programmes with patient and family education with appropriate referrals are prerequisite for readiness for discharge. Further research can be done to test its association with nurses work environment and staffing practices.

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