

Discharge teaching, readiness for discharge, and post-discharge outcomes in cataract patients treated with day surgery: A cross-sectional study

Chujin Qiu, Xianqiong Feng¹, Jihong Zeng², Hongmei Luo², Zhifeng Lai²

Purpose: To investigate the quality of discharge teaching, readiness for hospital discharge (RHD), and post-discharge outcomes (PDO) of cataract patients in a day ward and to explore the relationships among these three variables. **Methods:** This cross-sectional study used an opportunistic sample from the ophthalmic day ward in a general hospital in Sichuan province, China. Data were collected using four questionnaires. **Results:** The total average score on the Quality of Discharge Teaching Scale was 192.95, and the dimension with the lowest score was “guidance obtained practically.” The total average score on the Readiness for Hospital Discharge Scale was 175.51, and the dimension with the lowest score was “knowledge of disease.” The total average score on the Post-Discharge Outcome Questionnaire was 77.08, and the four dimensions with the lowest scores were “compliance behaviors,” “avoiding excessive use of eye,” “avoiding strenuous exercise,” and “regular check-up.” Pearson correlation coefficients indicated low to moderate correlations between discharge teaching quality and PDO (0.245, $P < 0.01$), RHD and PDO (0.271, $P < 0.01$), and discharge teaching quality and PDO (0.559, $P < 0.01$). **Conclusion:** The quality of discharge teaching among cataract patients who underwent day surgery was relatively high, and patient preparation for discharge and PDO were good. However, medical staff should focus more attention on patients’ individualized needs for discharge teaching while emphasizing the importance of compliance behavior.

Key words: Cataract, day surgery, discharge teaching, post-discharge outcomes, readiness for discharge

Cataracts are one of the most common causes of blindness. Phacoemulsification is the main surgical treatment method for this disorder^[1,2] and is increasingly carried out as a day procedure because it is relatively quick and minimally invasive.^[3] After a brief observation period, day surgery patients return home to self or family care. Should they experience postoperative complications that cannot be speedily and adequately treated, their rehabilitation may be compromised.^[4] Discharge preparation services in the day ward are therefore extremely important.

Readiness for hospital discharge (RHD) is a term used in the anesthesia and ambulatory surgery literature to describe an intermediate stage of recovery that is sufficient to permit safe discharge.^[5,6] Evaluation of RHD may prevent premature discharge from hospital, thereby reducing the incidence of post-discharge complications and readmission rates, the burden on medical resources, and medical costs.^[7] Although numerous studies have focused on assessment content, instruments, and factors influencing RHD,^[8] the readiness for discharge of cataract patients after day surgery has not been assessed.

As a basic component of discharge planning services, high-quality discharge teaching (QDT) may improve cure rate and prevent complications.^[9] Several studies have shown a positive correlation between QDT and RHD.^[10-12] Individual

education methods used in inpatient wards are not applicable in day wards because of rapid patient turnover in the latter. Many day wards therefore conduct group education sessions, but these may be compromised by inadequate guidance and lack of specificity. Further research is therefore needed on QDT for cataract patients following day surgery.

Post-discharge outcomes (PDO) among cataract patients often include measures of visual acuity, complications, and health-related behaviors. Cataract surgery results may be classified as cured (postoperative corrected visual acuity ≥ 0.5), effective (corrected visual acuity between 0.3 and 0.5), markedly effective (corrected visual acuity between 0.1 and 0.3), and ineffective (corrected visual acuity < 0.1).^[13] The frequency of postoperative complications is related to individual patient characteristics and also to patient healthcare after discharge.^[14,15] Wang^[16] assessed postoperative complications among 388 cataract patients and showed that the occurrence of complications was significantly affected by emotional state, performance of heavy activities, excessive bowing, covering of the eyes with the hands or handkerchiefs, premature use of the eyes, and overactivity.

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Cite this article as: Qiu C, Feng X, Zeng J, Luo H, Lai Z. Discharge teaching, readiness for discharge, and post-discharge outcomes in cataract patients treated with day surgery: A cross-sectional study. Indian J Ophthalmol 2019;67:612-7.

West China School of Medicine, ¹West China School of Nursing, ²Department of Ophthalmology, West China Hospital, Sichuan University, Chengdu, China

Correspondence to: Dr. Xianqiong Feng, No. 37 GuoXue Xiang, West China Hospital of Sichuan University, Chengdu, Sichuan Province, China. E-mail: fengxianqiong66@sina.com

Manuscript received: 12.07.18; **Revision accepted:** 03.01.19

Access this article online

Website:

www.ijo.in

DOI:

10.4103/ijo.IJO_1116_18

Quick Response Code:



This study used transitional theory^[17] as a theoretical framework. This theory states that the nature of transition, the environment, and medical interventions all potentially influence transition outcomes. In this study, patients experienced sudden transitions from hospital to family and community after cataract surgery. Patient demographic characteristics can be considered as the environment of transition. Discharge teaching is a therapeutic intervention which may affect the patient's PDO. Readiness for discharge is an intermediate indicator between discharge teaching and PDO [Fig. 1].

Methods

Participants

Kendall's sample size calculation principle yields sample sizes 5–10 times the number of variables.^[18] In our study, there were 28 variables (6 related to social demographic data, 4 to disease-related data, 3 to the quality of discharge teaching, 4 to RHD, and 11 to post-discharge health outcomes). Sample size was therefore set at 168 to 200 ($28 \times 5 \times 1.2 = 168$).

This study used opportunistic sampling. Inclusion criteria were as follows: patients who (1) met the diagnostic criteria for cataract and underwent phacoemulsification combined with intraocular lens implantation in the day ward, (2) were stable after surgery, (3) were easily contacted by phone for follow-up after discharge, and (4) participated voluntarily and gave signed informed consent. Patients with poor physical condition, such as severe impairment of vision and/or hearing, or who were unable to complete the questionnaire, were excluded. Elimination criteria were patients who (1) were lacking more than 20% of their information, (2) had contradictory information, and (3) lost contact after discharge.

Data collection

The study was approved by the Institutional Review Board of the authors' institution (2017 No. 446). All investigators received the same training. From October 2017 to January 2018, patients who

met the inclusion criteria were recruited from the ophthalmic day ward of a top-three hospital in Sichuan Province, China. On their discharge day, each patient completed three questionnaires: the General Information Questionnaire (GIQ), the Quality of Discharge Teaching Scale (QDTS), and the Readiness for Hospital Discharge Scale (RHDS). Two weeks later, he or she completed the Post-discharge Outcomes Questionnaire (PDOQ) during a telephone interview. Data were captured electronically after being checked twice.

Instruments

GIQ was designed by the authors of this study and included demographic variables, such as gender, age, career, education level, and living and economic conditions, and disease-related variables such as diagnosis and visual acuity. The validity of this scale was evaluated by Delphi method, and the content validity index (CVI) of this questionnaire was 1, confirming its validity.

QDTS was developed by Weiss *et al.*^[10] and has since been widely used.^[11,19] It consisted of 24 items, including three dimensions: teaching contents that patients thought they needed (6 items), teaching contents that patients actually obtained (6 items), and teaching skills and effectiveness (12 items). The total possible score ranges from 0 to 240. In this study, the overall Cronbach's α coefficient of this scale was 0.91, and Cronbach's α coefficients were 0.84, 0.80, and 0.94 for the three dimensions, respectively. The CVI of this scale was 1, confirming its validity.

RHDS was developed by Weiss *et al.*^[10] and has also been widely used.^[8] This scale consists of 22 items covering four dimensions: physical conditions (7 items), mastery of disease knowledge (8 items), coping ability after discharge (3 items), and available social support (4 items). The total possible score ranges from 0 to 220. In this study, the overall Cronbach's α coefficient of the scale was 0.95, and Cronbach's α coefficients were 0.89, 0.92, 0.90, and 0.85 for the four dimensions, respectively. The CVI of this scale was 1, confirming its validity.

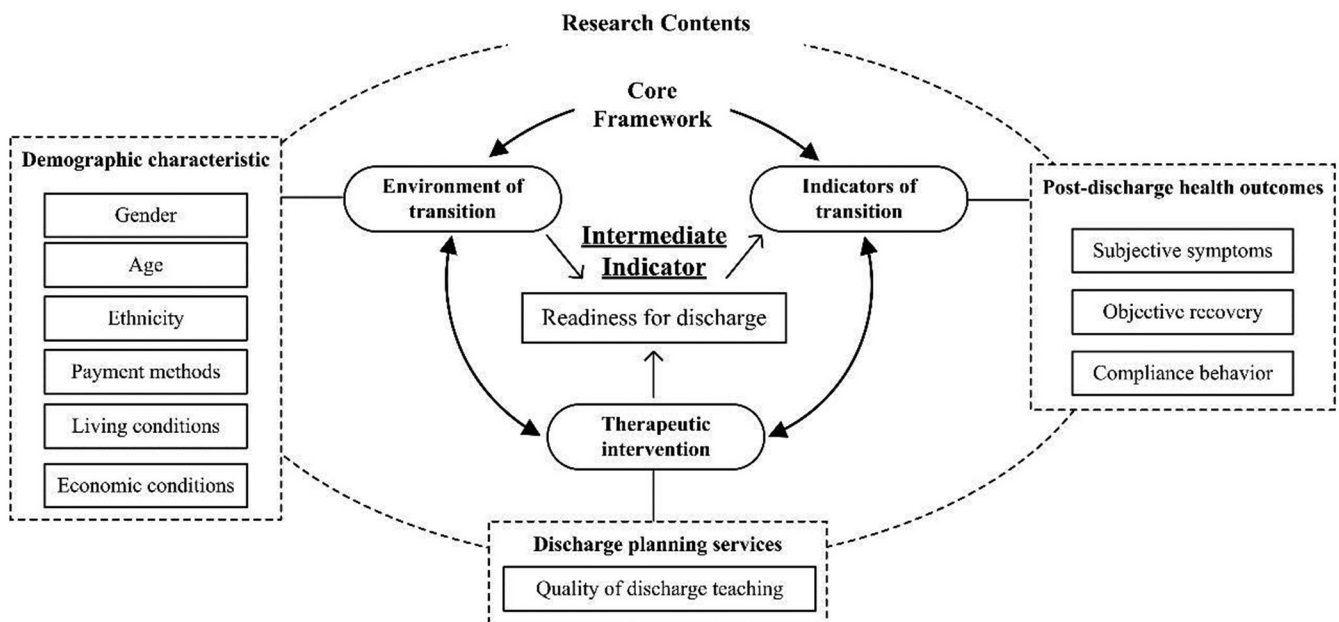


Figure 1: The theoretical framework of the study

PDOQ was designed by the authors of this study and consisted of 22 items covering three dimensions: objective recovery (2 items), subjective symptoms (6 items), and compliance behavior (14 items). The total possible score ranges from 0 to 80. The validity of this scale was tested using Delphi method: five experts (three ophthalmologists and two nursing experts) were invited to evaluate the scale. Its overall CVI was 0.91, and the overall Cronbach's α coefficient was 0.82. Cronbach's α coefficients were 0.79 and 0.67 for the second and the third dimensions, respectively, confirming the validity and reliability of this instrument.

Data analysis

Statistical analyses were performed using SPSS Version 20.0 (SPSS, Inc., Chicago, IL, USA). Descriptive statistics are given as means \pm standard deviation, frequencies, and composition ratios. Correlation analysis was used to explore the relationships between variables. $P < 0.05$ was considered statistically significant.

Results

General information of participants

A total of 194 participants completed the study, 97% of the total number recruited. Participants included 77 males and 117 females, with ranging age from 21 to 92 years (mean: 66.61 ± 12.45 years). The average length of hospital stay was 1.15 ± 0.47 days. Participants' demographic characteristics are shown in Table 1.

Quality of discharge teaching

The overall average QDT score was relatively high at 192.95 ± 26.58 . The number of items per dimension differed, and therefore dimension scores were normalized as follows: standardized mean = dimension's total score/number of entries in that dimension. This analysis showed that "teaching skills and effectiveness" yielded the highest scores [Table 2]. Moreover, correlation analysis showed that QDT scores were related to patient gender (male > female, $P < 0.05$). Other factors included in this study showed no relationship with QDT ($P > 0.05$).

Readiness for hospital discharge

Among all patients, 95.36% stated that they were ready for discharge. The overall mean RHDS score was 175.51 ± 26.75 . After standardization, the "available social support" dimension scored highest and the "mastery of disease knowledge" dimension lowest [Table 3]. Correlation analysis indicated that RHD of cataract patients with day surgery was related to their gender (male > female, $P < 0.05$) and preoperative visual acuity (good eyesight > poor eyesight, $P < 0.05$). Other factors included in this study showed no relationship with QDT ($P > 0.05$).

Post-discharge outcomes

The average postoperative visual acuity of patients was 0.81 ± 0.24 points, with an improvement of 0.60 ± 0.23 points from preoperative values. This indicates that the surgical treatment was effective. None of the 194 patients developed complications, and only 36 (18.56%) experienced slight discomfort after discharge from hospital. The most frequent symptoms reported were "swelling and pain" (31 cases). Other symptoms included "dry eye," "sensation of having something in the eye," and "tearing." The total average PDOQ score was

Table 1: General information of participants (n=194)

Item	n	%
Gender		
Male	77	39.69
Female	117	60.31
Age (years)		
<45	8	4.12
45-59	40	20.62
60-74	92	47.42
75-89	53	27.32
≥ 90	1	0.52
Nationality		
Han nationality	185	95.36
Tibetan	4	2.06
Hui nationality	3	1.54
Manchu	1	0.52
Uighur	1	0.52
Career		
Retire	133	68.55
Farmer	23	11.85
Staff	12	6.19
Unemployed	8	4.12
Self-employed	4	2.05
Freelance	3	1.55
Worker	3	1.55
Student	2	1.03
Doctors	2	1.03
Civil servant	2	1.03
Professional skill worker	1	0.52
Teacher	1	0.52
Education level		
Illiteracy	13	6.70
Primary school	39	20.10
Junior high school	44	22.68
High school	44	22.68
College	24	12.37
Bachelor degree or above	30	15.47
Marital status		
Unmarried	5	2.58
Married	149	76.80
Divorced	5	2.58
Widowed	35	18.04
Household income per capita (yuan)		
≤ 500	12	6.19
501-1000	8	4.12
1001-2000	27	13.92
2001-3000	37	19.07
3000-5000	63	32.47
>5000	47	24.23
Payment methods		
At own expense	37	19.07
Public expense	5	2.58

Contd...

Table 1: Contd...

Item	n	%
Medical insurance	147	75.78
Other	5	2.57
Living with		
Living alone	8	4.12
Spouse	84	43.30
Children	43	22.16
Children and spouses	48	24.74
Parents	3	1.55
Other people or babysitters	8	4.13
Cataract diagnosis		
Single eye	65	33.51
Both eyes	129	66.49
Have you ever had cataract surgery before		
Yes	35	18.04
No	159	81.96
Is there any other eye disease		
Yes	44	22.68
No	150	77.32

77.08 ± 3.72. Standardized scores for the “subjective symptom” and “compliance behavior” dimensions were 3.76 ± 0.32 and 3.90 ± 0.16, respectively, which were relatively high. The results also showed that the occurrence of eye discomfort after discharge was significantly correlated with patient’s compliance behavior ($r = 0.61$, $P < 0.01$). Correlation analysis also indicated that patients’ PDO were positively related to their family income, with high-income patients showing better outcomes than low-income people ($P < 0.05$). Other factors included in this study were unrelated to PDO ($P > 0.05$).

Correlation between QDT, RHD, and PDO

Pearson’s correlation coefficients indicated that these three total scores were positively correlated with one another [Table 4].

Discussion

Quality of discharge teaching for cataract patients with day surgery

In this study, the average QDT score in cataract patients was 8.04 ± 1.11, higher than this score reported for adult patients by Weiss *et al.* (7.6).^[10] Patient health education was thus relatively good in the ophthalmic day wards assessed here. This result may be related to cultural differences and survey population: Most Chinese people are introverted, so many patients tend to award high scores in quality evaluations. In addition, most of the patients participating in this study were elderly people and were relatively affable and compliant.

Scale dimensions for the QDT ranked from highest to lowest scores were as follows: “teaching skills and effectiveness,” “teaching contents that patients thought they needed,” and “teaching contents that patients actually obtained,” consistent with other studies.^[11,20] This may be because a variety of health education activities were offered in the ward, including oral and video presentations, written instructions, demonstrations, and active discharge preparation services. Nonetheless, this analysis shows that

patients’ needs were not fully met, and that the discharge teaching provided by medical staff was insufficient. In future, more attention to the individual needs of patients, combined with better understanding of their expectations of discharge teaching, is needed. We should also constantly enrich the content of health education to further improve the quality of discharge teaching and patient satisfaction.

Readiness for hospital discharge in cataract patients after day surgery

This research shows that 95.36% of patients considered themselves ready for hospital discharge, slightly higher than the corresponding value of 93% reported by Weiss *et al.*^[10] This difference may also be related to cultural differences. The mean RHD score that we report (7.98 ± 1.22) is indistinguishable from the value reported by Weiss *et al.* (8).^[10] Among the four dimensions, “mastery of diseases knowledge” had the lowest score, which may be related to fast patient turnover in the day ward. In addition, group education may easily lead to insufficient guidance, inaccurate explanations, and instruction without individualization. As a result, patients may not acquire sufficient understanding of the discharge knowledge.

In this study, patient’s RHD was affected by both gender and preoperative visual acuity. Low RHD scores for women relative to men may have resulted from greater concern about their condition, hence greater caution in assessment of their readiness for discharge. Low RHD scores among patients with poor preoperative vision might have arisen from concern about their disease prognosis leading to doubts about their ability to care for themselves after discharge.

In summary, healthcare staff should explore more scientific and effective education methods to help patients better understand postoperative self-care and rapidly acquire the skills related to self-care. Such methods might include educational posters, provision of health education manuals, and strengthening of post-discharge follow-up guidance.

Post-discharge outcomes among cataract patients with day surgery

A literature review reports incidence of complications after cataract surgery of approximately 1%–3%.^[21] In this study, most patients’ postoperative vision was greatly improved relative to preoperative vision, and no complications occurred. This favorable outcome may be attributable to strict adherence by medical practitioners to the eligibility criteria for cataract day surgery patients, which include noncomplex cataracts, good compliance, and no systemic disease. Active telephone follow-up may also have contributed to this positive outcome.

We found that the occurrence of eye discomfort in cataract patients after discharge was negatively correlated with compliance behavior, confirming the importance of such behavior for patient recovery after discharge. Within the “compliance behavior” dimension, the three lowest scoring items were “sleep enough, avoid overusing eyes” (3.67 ± 0.55), “avoid strenuous exercise and heavy work” (3.75 ± 0.50), and “regular follow-up” (3.76 ± 0.68) points. This may be related to the fact that most elderly people are retired at home and sleep relatively little, so they may use their eyes for long periods. In addition, memory function is compromised in many elderly people, who therefore easily forget instructions about

Table 2: Findings on quality of discharge teaching (n=194)

Dimension	Mean	Standardized mean	Maximum	Minimum
Teaching contents that patients thought they needed	46.50	7.75	10	60
Teaching contents that patients actually obtained	45.4	7.57	23	60
Teaching skills and effectiveness	101.11	8.43	48	120
Total score	192.95	8.04	120	240

Table 3: Findings on readiness for hospital discharge (n=194)

Dimension	Mean	Standardized mean	Maximum	Minimum
Physical conditions	57.32	8.19	24	70
Mastery of disease knowledge	59.47	7.43	21	80
Coping ability after discharge	24.51	8.17	8	30
Available social support	34.22	8.55	9	40
Total score	175.51	7.98	90	218

Table 4: Correlation between quality of discharge teaching, readiness for hospital discharge, and post-discharge outcomes (n=194)

	QDTS	RHDS	PDOQ
QDTS			
Pearson's coefficient	1	0.559	0.245
Significant (bilateral)	-	0.000	0.000
RHDS			
Pearson's coefficient	0.559	1	0.271
Significant (bilateral)	0.000	-	0.000

QDTS: Quality of Discharge Teaching Scale; RHDS: Readiness for Hospital Discharge Scale; PDOQ: Post-discharge Outcomes Questionnaire

postoperative care. Therefore, in future discharge planning, medical staff should repeatedly emphasize the precautions and importance of reviewing and compliance to patients and their caregivers, to ensure that they have mastered the relevant knowledge and necessary skills.

Because research on patient compliance behavior after cataract surgery is still lacking, the above results need to be further confirmed by more studies.

Correlations between QDT, RHD, and PDO of cataract patients with day surgery

We report positive correlations between QDT, RHD, and PDO for patients who have undergone cataract day surgery. This aligns with the theoretical framework of this study that emphasized the role of discharge teaching as a therapeutic intervention to improve patients' PDO. Readiness for discharge, as an intermediary indicator between QDT and PDO, is correlated with both scores.

No researchers have conducted equivalent studies on cataract patients, so it is not possible to compare our conclusions with those of others. However, the positive correlation between QDT and RHD that we report was consistent with findings from previous studies.^[10,19]

Limitation and recommendation

This study was conducted in a single ophthalmic day ward in a top-level hospital in mainland China, and most patients in

day wards undergo uncomplicated surgery. Our findings may differ from those for inpatient wards. We therefore suggest that future research aims to expand the study population and field of investigation. A horizontal comparison of results between two wards would explore within-hospital factors influencing cataract surgery outcomes. Second, because most cataract patients are old and retired at home, their work history may be extensive, so it would be informative to investigate the influence of this factor. Other factors that might influence the QDT, RHD, and PDO of cataract patients include patient nationality, medical staff's level of training, and the motivational status of healthcare workers in a monotonous daycare setting.

Conclusion

This study showed that the quality of discharge teaching for cataract patients in the day ward was good. Patients had acquired considerable self-care abilities by the time they were discharged, and their health outcomes were good. However, compliance behavior needs strengthening, and optimal management of both the transition from hospital to family, and home-based rehabilitation, requires attention. In addition, the training of medical staff as patient health educators should be further strengthened. Close attention should be paid to patient needs. At the same time, we should also continue to explore better health education methods to improve discharge teaching of cataract patients who are briefly hospitalized in day wards. This is needed to improve both patient readiness for discharge and the health outcomes of cataract surgery.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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