Patient Safety & Quality Improvement Journal
http://psj.mums.ac.ir
PSQI

Investigating the Prolonged Discharge Process in Pediatric Teaching Hospital of Tehran, Iran: A Cross-Sectional Study

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ARTICLEINFO

Article type:
Original Article

***Article History*:**
Received: 02 Jul 2022
Accepted: 22 Feb 2023

Key words:
Discharge Process, Iran, Pediatric Hospital.

ABSTRACT

Introduction:
This study aimed to investigate the factors contributing to prolonging the discharge process in a pediatric teaching hospital.

Materials and Methods:
The present study was a descriptive cross-sectional study carried out on 300 patients discharged from one of the pediatric teaching hospitals in Tehran in 2019. This study was conducted using a mixed method. In the quantitative stage, the statistical form was used, the average discharge time in different hospital wards was measured using the stopwatch method, and the data were analyzed using SPSS V. 25 software and descriptive statistics. A qualitative approach was used, including observations, file reviews, Focus Group Discussion (FGD), and brainstorming with experts from the Quality Improvement Office, ward secretaries, clearance unit experts, pharmacy experts, and ward supervisors, to identify the causes of the prolonged process. Finally, the factors were prioritized and approved using the nominal group method.

Results:
The average discharge time was 3 hours and 7 minutes; the shortest discharge time belonged to the blood ward, and the longest was to the kidney ward. The causes of delay in discharge were divided into two categories: organizational and human factors.

Conclusion:
To improvethe the quality of the discharge process and patient satisfaction, solutions such as having assistants write file summaries before the morning round, sending files out of the ward on time, hiring a circular secretary to collect patients' files from various wards, and controlling them using a standard checklist, nurses' training, and continuous supervision were proposed.

► ***Please cite this paper as:***
Vatankhoh S, Choopani A, Tahmazi Aghdam[3]E, Tavakoli ME, Joudyian N, Nafar H. Investigating the Prolonged Discharge Process in Pediatric Teaching Hospital of Tehran, Iran: A Cross-Sectional Study. Journal of Patient Safety and Quality Improvement. 2022; 11(1):49-53. Doi: 10.22038/PSJ.2023.66503.1366

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Introduction

The patient discharge process plays an important role in patient satisfaction (1) and the quality of hospital services (2-4). Recent developments in the rapid growth of science and technology, especially in medical and paramedical sciences, have heightened the need to improve hospital service quality (1). Thus, increasing concern is that prolonging the patient discharge process can result in admission delays for new patients and increased patient wait times for an empty bed, all of which impose additional costs on the hospital and affect other hospital processes (4).

Numerous studies have indicated that the most important and effective factors influencing delay in the discharge process include: delay in the patients' visit by doctors, delay in writing a patient file summary, lack of a hospital information system, lack of guidelines, and a lack of financial assistance to aid patients in paying their bills (5,6).

In the same vein, the studies presented thus far provide evidence that the factors leading to discharge process prolongation in Iranian hospitals are as follows: physician-related factors, lack of health insurance, high volume of discharge files in the discharge unit due to process failure, disturbing the discharge process by the patient's companions, non-referral of patient's companions to discharge their patient, delays in sending pharmacy and laboratory settlement sheets, delays in registering and sending information by the treatment department, lack of workforce in the discharge unit, and defects in the hospital notification system (1,4,7,8).

Given all that has been mentioned so far, one may suppose that the discharge process is a significant challenge in hospital management, and improving it is a crucial strategy (4). There is an increasing concern about the discharge process in pediatric hospitals because children cannot be left alone, and parents must commute between home and the hospital to care for their children (6).

This study aimed to shine new light on the reasons for the prolonged discharge process in a specialized pediatric teaching hospital and to provide practical solutions that may be used to improve the discharge process, reduce costs, decrease the waiting time, and improve patient satisfaction.

Materials and Methods

This cross-sectional descriptive study was conducted in 2019 at one of Tehran's pediatric teaching hospitals. This study used a mixed-methods approach and was divided into two quantitative and qualitative sections.

In the quantitative phase, which aimed to measure the average discharge time, the sample size was calculated according to the Cochran formula for sample size determination, i.e., ($n=Nz^2pq/ (Nd^2+z^2pq)$; accordingly, a total of 300 discharged patients were randomly selected. Then, the various stations into which each file is routed during the discharge process were identified, and the data collection form was created accordingly. After that, the arrival and departure times were determined for each station using this form. The form's validity was verified by the officials of the various departments involved in the clearance process. Individuals were trainined to measure time accurately to obtain reliable results. All experimental protocols were approved by the University of Iran Medical Science Research Ethics Committee (Ethic code: IR.IUMS. REC. 1400. 163). The clearance process of all discharged patients in all the wards was monitored for two weeks, and the time of entry and exit of the file to the designated stations was measured using the stopwatch technique. The data were entered into the SPSS V. 25 software, and descriptive statistics were used to analyze them.

In the next phase, to identify the causes of the prolonged discharge process in some departments and propose practical solutions, a qualitative approach was used, including observation, file reviews, FGD, brainstorming with the quality improvement experts, ward secretaries, clearance unit experts, pharmacy experts, and ward supervisors. Each meeting was attended by 5 to 8 people, and information was collected through FGD, brainstorming, and aggregation of opinions, where all participants' views were obtained, and all meetings were recorded. Then, using tables, factor groups were formed, and finally, based on group consensus, the causes, and practical solutions were identified,

prioritized, and approved using the nominal group method.

Result

The results of this study are summarized in two tables. Table 1 illustrates the time of entry and exit of the file to each station and the average time that the file remains in each of the timed stations. As shown in Table 1, the average discharge time in the hospital was three hours and seven minutes, the shortest discharge time belonged to the blood ward with an average of two hours and 22 minutes, and the longest discharge time belonged to the kidney ward with four hours and ten minutes. Another interesting observation is that the case summary writing after the approval order was the process that took the most time in all sections (with an average of 106 minutes), while the workflow process was the shortest. Also, It is apparent from this table that the file leaving the ward and pharmacy took an average of 10 minutes.

Table 1: Key data regarding the time of the file's entry and exit from each station in the wards

Ward		Time of file entry to each station						Process duration at each station					
		Discharge Order	File Summary	File Control	Exit from Ward	Exit from Pharmacy	Discharge	From order to Summary	From Summary to Control	From control to E. from Ward	From E. Ward to E. Pharmacy	From Pharmacy to Discharge U.	Total Process Period
Blood	N	47	47	47	47	47	47	47	47	47	47	47	47
	Average	8:42	9:14	10:11	10:40	10:53	11:05	0:31:42	0:57:20	0:28:15	0:13:42	0:11:39	2:22:39
General	N	38	38	38	38	38	38	38	38	38	38	38	38
	Average	10:10	11:57	11:38	12:28	12:40	12:50	1:46:20	-0:18:15	0:49:23	0:11:52	0:10:44	2:40:04
Kidney	N	31	31	31	31	31	31	31	31	31	31	31	31
	Average	8:27	11:15	11:02	12:19	12:24	12:38	2:47:46	-0:12:11	1:16:05	0:05:03	0:13:56	4:10:40
NICU	N	30	30	30	30	30	30	30	30	30	30	30	30
	Average	10:30	12:11	12:29	12:54	13:01	13:10	1:41:40	0:17:30	0:25:00	0:07:04	0:09:06	2:39:40
Surgery	N	31	31	31	31	31	30	31	31	31	31	30	30
	Average	9:01	11:09	11:24	11:42	11:59	12:08	2:07:36	0:15:36	0:17:27	0:17:36	0:10:32	3:07:56

N: Number of Samples

Based on the results of FGD, observations, and file reviews, the causes of delay in discharge were divided into two categories: human and organizational factors (Table 2).

Regarding organizational factors, the findings indicated that most wards experienced delays in discharge time due to the simultaneous discharge of multiple patients, except for the general ward and kidney ward, where the high volume of patients caused the delay.

Due to the existence of an average of 20-34 beds in each ward, the shortage of secretaries was sometimes evident, so the secretary of one ward was responsible for two wards at the same time, and as a result, the accumulation of work caused some tasks to be postponed.

One of the primary reasons for the prolonged patient discharge process was that the companions were informed of the patient's discharge based on what they had heard from the physician and immediately began asking questions about the patient's discharge. Due to their early arrival at the discharge unit, they believed there was a delay in the process.

From the standpoint of human factors, the findings indicated that this could be attributed to incorrect case summaries written by the doctor and assistants and incorrect drug return registration by the responsible nurse, which results in the files being returned to the ward for correction. The nurses' unfamiliarity with the Health Information System (HIS), as well as a lack of feedback regarding the completion of the files' checklist, the early presence of patients' companions to perform discharge tasks, and the absence of a doctor's signature at the end of the report all contributed to the length of the discharge process.

Table 2: Effective organizational and human factors in prolonging the discharge process

Organizational factors	Human factors
▪ Lack or absence of necessary training for nurses on how to work with HIS ▪ Lack of transparency in the job description between the nurse and the secretary regarding the registration and the follow-up of some cases ▪ The shortage of secretaries in some wards and the simultaneous coverage of two wards by one secretary ▪ The failure to set a specific discharge time for physicians ▪ Inadequate notification to patients' companions ▪ Lack of feedback regarding completing the case checklists ▪ Non-registration of case summaries by residents	▪ Incomplete registration of the file by the resident ▪ The responsible nurse's failure to correct the returned drugs in the patient file ▪ Failure to update the records of patients who have been circulated between two or more wards regarding returned drugs ▪ The absence of a doctor's stamp at the end of the file report ▪ Concurrent leave of secretaries in crowded wards ▪ The absence of physicians between 8 and 11 am to write a summary of the patient' files and to issue a discharge order ▪ Failure of the responsible nurse to record accurate information in the patient's file based on the checklist
Note: HIS: Health Information System	

Discussion

This study implied that the combination of several issues effectively prolonged the patient discharge process in this hospital, including prolonged discharge orders, illegibility of orders, and lengthening the time required to write and control the patient's file summary. In some wards, delays in file exit from the ward had the greatest impact on prolonging patients' discharge time. Due to the teaching hospital and the issuance of discharge orders, usually, after the morning rounds, reviewing files and writing a summary prolonged the discharge process. Also, a need for more human resources and the shortage of skilled and well-trained staff prolonged this process.

These results match those observed in earlier studies. Patel et al. described many barriers to hospital discharge, including delays in diagnostic tests and counseling and poor communication between team members and between patients and service providers (9). Zoucha et al. identified the most important reasons for prolonging the discharge process, including lack of medical staff, a monitoring and evaluation system, effective training, staff waiting for the ward's attending physician, and asking for ancillary services such as counseling (10).

In the same way, the study conducted by Ragavan et al. suggested patient unpreparedness, prolonged time to receive a consultation and its delivery, location of hospital facilities, communication between staff and patient, timely notification of discharge, and lack of standardization of discharge process, and delays in the testing and counseling process, especially on weekends were the main reasons for late discharge (11), which is in line with the present study.

Besides in this study, the researchers found solutions to improve the discharge period, which can be mentioned by writing a summary of the file by the assistants before the start of medical students' classes, reducing the time of stay files in the writing file summary stage, improving attention to detail of the nurse in charge of file control to minimize the amount of returned issues, creating an electronic health file and recording patient information from the time of admission in the hospital to secretaries' excessive commuting between the wards.

Finn et al. suggested strategies such as assigning support staff to complete discharge documents, arranging follow-up and appointment appointments, communicating with other nurses and physicians for discharge, and answering discharge patients' questions to improve many aspects of the discharge process (12).

Patel et al. believed effective collaboration between multidisciplinary teams and patients positively affects discharge (9). Zoucha et al. recommended some strategies, such as preparing discharge sheets and medications the night before discharge, using checklists, having enough people on the medical team, providing instant feedback to staff and personnel, and using multidisciplinary medical staff to improve the discharge process (10). Rohatgi et al. suggested that solutions such as allocating sufficient resources and staff over the weekend to ensure patients' safe and timely discharge can help maintain the operational capacity of medical centers (13).

Harlan et al. also considered strategies such as quality improvement, including training and electronic discharge guidelines, to effectively improve the discharge process in pediatric hospitals (14). Finally, Wu et al. believed that solutions, such as creating proactive programs for discharge, including educating families and patients about the disease and the discharge schedule, establishing and

updating scheduled discharge times, and ensuring that financial problems do not prevent discharge could improve the discharge process (15), where the results of their study are in line with the findings of the present study.

Limitations

The findings in this report are subject to at least two limitations. First, During the FGD and interviews, specialist physicians and medical students were absent, and thus their perspectives were lost; second, during the quantitative phase, technical difficulties with the recorder occasionally resulted in missing data.

Conclusion

These findings suggest several courses of action for improving the discharge process and patient satisfaction, including residents' writing file summaries before the morning round, timely removal of files from the ward, hiring a circular secretary to collect patients' files from various wards, and controlling them using a standard checklist, nurse training, and continuous supervision. It is recommended that additional studies should be designed and conducted to assess the proposed solutions' impact on reducing discharge process time, improving discharge process quality, and increasing patient satisfaction.

Acknowledgments

The authors thank to the pediatric teaching hospital (Hazrat Ali Asghar) in Tehran for providing the research setting and supportive atmosphere and Parvin Ebrahimi, Professor of Health Care Services Management, Iran University of Medical Sciences, for valuable advice.

References

1. Vanaki Z, Habibipour B. The assessment of effect discharge planning on patients satisfaction. Avicenna Journal of Nursing and Midwifery Care. 2008;16(2):25-35.
2. El-Eid GR, Kaddoum R, Tamim H, Hitti EA. Improving hospital discharge time: a successful implementation of six sigma methodology. Medicine. 2015;94(12).
3. Nezhad Jafari N, Khatibi T. Prioritizing the causes of disruption in the discharge process of hospitalized patients[in Persian]. International conference on industrial engineering and management2016.
4. Van Emden DMD, Ros WJ, Berns MP. Transition of care: an evaluation of the role of the discharge liaison nurse in the Netherlands. Journal of Advanced Nursing. 1999;30(5):1186-94.
5. Fazel asl N, Ghaffari F, Nasiripour AA. Determining Factors On Hospital Discharge Process Via Data-Mining Method Administered At Shahid Modares Hospital, Tehran. Payavard-Salamat. 2018;11(5 #M00225):-.
6. Henwood M. Effective partnership working: a case study of hospital discharge. Health & social care in the community. 2006;14(5):400-7.
7. Ebrahimipour H, Vafaei NA, Nouri GA, Esmaeili H, Jamili S. Studying waiting time of patient during discharge process in clinical departments of Imam Reza hospital affiliated with Mashhad University Of Medical Science In 2014. 2015.
8. Yarmohammadian M, Khosravizadeh O, Alirezaei S, Doosty F. Impact of business process model on improving the discharge process in teaching hospital of Ghaem, Mashhad. Journal of Health Administration (JHA). 2015;18(61).
9. Patel H, Yirdaw E, Yu A, Slater L, Perica K, Pierce RG, et al. Improving early discharge using a team-based structure for discharge multidisciplinary rounds. Professional case management. 2019;24(2):83-9.
10. Zoucha J, Hull M, Keniston A, Mastalerz K, Quinn R, Tsai A, et al. Barriers to Early Hospital Discharge: A Cross-Sectional Study at Five Academic Hospitals. Journal of hospital medicine. 2018;13(12):816-22.
11. Ragavan MV, Svec D, Shieh L. Barriers to timely discharge from the general medicine service at an academic teaching hospital. Postgraduate medical journal. 2017;93(1103):528-33.
12. Finn KM, Heffner R, Chang Y, Bazari H, Hunt D, Pickell K, et al. Improving the discharge process by embedding a discharge facilitator in a resident team. Journal of hospital medicine. 2011; 6(9): 494-500.
13. Rohatgi N, Kane M, Winget M, Haji-Sheikhi F, Ahuja N. Factors associated with delayed discharge on general medicine service at an academic medical center. The Journal for Healthcare Quality (JHQ). 2018;40(6):329-35.
14. Harlan GA, Nkoy FL, Srivastava R, Lattin G, Wolfe D, Mundorff MB, et al. Improving transitions of care at hospital discharge—implications for pediatric hospitalists and primary care providers. Journal for Healthcare Quality. 2010;32(5):51-60.
15. Wu S, Tyler A, Logsdon T, Holmes NM, Balkian A, Brittan M, et al. A Quality Improvement Collaborative to Improve the Discharge Process for Hospitalized Children. Pediatrics. 2016; 138(2): e20143604.