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Review Article

Findings of Cardiac Patients' Understanding of Discharge Instructions during Initial Hospitalizations: A Retrospective Descriptive Study

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Introduction

Readmission rates of cardiac patients in need of inpatient care contribute to increased costs of medical care, complicated by expedient treatment and shorter length of stays [1-4]. Costs of hospital readmissions are estimated to be in excess of $17 billion annually according to Medicare expense reports [5,6]. Nationally, some of the top readmission categories include cardiac disorders such as acute myocardial infarction (MI) and heart failure (HF) [6,7]. Additionally, readmissions after diagnostics such as percutaneous coronary intervention (PCI) procedures can range from 8% to 19% in the United States (US) and continue to impact the rising costs of healthcare [8].

The purpose of this retrospective descriptive study was to focus on cardiac patients who were discharged from the hospital and readmitted within 30 to 90 days of their initial admission. This study identified possible factors why cardiac patients were readmitted after their initial hospitalization, looking specifically toward their understanding of discharge instructions they received during their initial inpatient stay. Findings of this study were similar to issues identified in the literature. Patient understanding, communication, health literacy, and patient discharge instructions, more specifically, numbers and types of medications prescribed at discharge were found to be possible common denominators that may support reasons for high readmission rates.

Literature Review

Hospital Readmission Rates

Patients were admitted and discharged at faster rates due to the healthcare regulations defined in the Affordable Health Care Act [6]. The Hospital Readmissions Reduction Program (HRRP) section 3025 of the Affordable Care Act (ACA) was established to monitor and decrease readmission rates of Medicare patients and

implement penalties to hospitals with excessive readmissions. Due to mandates set forth in the ACA, readmissions within 30 days of discharge is a primary focus of improvement for health care organizations. It is reported that up to 14% of patients admitted to hospitals will be readmitted within 30 days [9]. Since the program began in 2012; nearly one billion dollars in penalties have been assigned to numerous hospitals [10].

Sources have suggested that the length of stay (LOS) or hospital index may have contributed to readmissions, especially those patients diagnosed with MI and HF [11]. More than six million people have been diagnosed with HF with an estimated cost of treatment predicted to reach $53 billion by the year 2030 [12].

Communication

Communication between and among the patient and healthcare providers is an area that requires continuing attention [13]. Communication has been identified as a major contributor to the lack of understanding for patients in numerous studies [14-17]. Other sources indicate that communication issues may exist among healthcare providers within the facility as well as between specialties which may further impact the communication process [18-20]. Others suggest there must be a greater emphasis placed on the discharge process and improving communication among different departments within an organization [21]. During the transition phase of being discharged from the hospital, communication from healthcare providers may seem brief or hurried to the patient [15]. Communication with the family, a significant other, or caretaker is beneficial, but often they may not be available or included in all conversations.

Patient Understanding

While in the hospital and prior to discharge, members of the healthcare team may find it difficult to know how much information the patient is understanding and retaining. The patient may agree and listen to healthcare providers but often are anxious, depressed, overwhelmed, or too sick to truly understand any form of instruction, thus how much the patient retains is often unknown [22]. Others have documented that some patients may not understand the severity of their diagnosis. This can impact home care and could result in readmissions to the facility [23-25]. Herzig et al., notes from a national multicenter survey of over 900 readmissions, physicians rank patients' understanding and ability to self-mange as crucial to prevent readmission [14].

Additionally, Forster notes that health care providers should assess what the patient perceives as their needs in gaining understanding of instructions [27]. Individual needs vary among age groups, home environments, and socioeconomic circumstances, which impact the patients' perceived needs. Once the patient is discharged home, it may be difficult for them to recall instructions regarding medications, diet, activities, and follow-up care. A study conducted by Felix et al**.,** revealed that hospital satisfaction surveys may not completely capture patient experiences which can contribute to readmissions [27]. Understanding patients' perceptions may allow healthcare providers to better prepare for the discharge process. This could result in improved communication and understanding, which would ultimately benefit patient outcomes.

Patients post MI have identified that they prefer explanations using language that they can understand during their recovery. Healthcare providers may discuss the diagnosis or explain newly prescribed medications using terms that the patient does not understand [28]. Horstman reported that patients may lack understanding of follow-up care with providers post discharge.

Customized discharge instructions that benefit a variety of learning styles may be helpful for teaching patients. Many discharge instructions are generic printed handouts, however, visual aids, videos, and smart phone apps have been developed to enhance patient teaching and learning. More user-friendly technologies are needed to assist patients with understanding discharge instructions.

Patients have also identified that once discharged home, they experience feelings of uncertainty regarding activities, returning to work, and emotions about their diagnoses [29]. Reports have shown that patients are in need of support during the first few days post discharge due to feelings of uncertainty pertaining to discharge instructions as well as feelings of anxiety [30]. Patients may feel weak and still require assistance when transitioning to their home environment which may contribute to the inability to remember details regarding the discharge instructions.

Health Literacy and Discharge Instructions

Health literacy contributes greatly to the learning process and understanding of discharge instructions. Studies suggest low health literacy impact up to 90 million adults in American health care facilities [31-33]. Low levels of health literacy have been associated with hospital readmission rates as it relates to lack of understanding discharge instructions [34,35] Standard hospital discharge instructions may be difficult for the patient or family members to comprehend upon returning home. Therefore; identification of patients who may require additional assistance with discharge instructions should be a priority in health care facilities [36]. Centrella-Nigro et al., discovered 86% of health records reviewed for readmitted HF patients did not indicate the educational level of the patient [37]. Maniaci, Heckman, and Dawson reported that only half of the patients contacted in a study post discharge could identify details regarding medications further indicating a need for healthcare providers to focus on health literacy [38].

Early assessment of health literacy may contribute toward the improvement of adherence with medications and home care. While there are new tools being developed and used in some facilities, there continues to be a need to establish methods to address patient education and understanding.

Medications

In a recent study of readmitted HF patients, it was noted that patients were taking at least 6-10 medications [38]. Health literacy and understanding medications go hand in hand when sorting through reasons that may influence hospital readmissions. Reports of patients readmitted within 30 days from the initial hospitalization found that 25% of those readmitted are not adherent with their medication regimes [39,40].

Another problem noted for some discharged cardiac patients was the delay to fill

Prescriptions [41,42]. Variables that factor into this problem include costs, socioeconomic status, nonadherence, and communication [28,43,44]. Some studies have discovered that patients may not be able to recall the information that was presented to them while in the hospital regarding medications, reasons to take the medications, and names of such [15]. Others have noted that it is not uncommon for patients post MI to discontinue taking medications required for cardiac improvements [45]. Some patients may not see the value in continuing medications if they are feeling better. Naderi, Bestwic and Wald conducted a study involving over 375,000 cardiovascular patients to review adherence to medications. The results of this meta-analysis identified that over one-third of patients post MI did not adhere to prescribed medications resulting in thousands of preventable readmissions and deaths [46]. Others have found that readmissions post PCI can be the result of lack of medication adherence and access to outpatient care [7,47].

Methods

A retrospective descriptive research design was used to seek general information regarding characteristics of 100 readmitted cardiac patients with an emphasis on understanding discharge instructions. Data was collected through the Clinical Outcomes database from the electronic medical records (EMRs) of patients who had been admitted with a cardiac diagnosis, discharged from the facility to home, then readmitted within 30 to 90 days. All data including admission diagnosis, discharge date, discharge instructions, medications, readmission dates with diagnosis, and demographics were retrieved from the patients' EMRs.

Ethical Considerations

Institutional Review Board (IRB) approval from the University and the healthcare facility was obtained prior to data collection for this study. Permission and approval were granted by the healthcare facility to review the information collected and stored in the Clinical Outcomes Database. A Readmission Data Form was designed by the researchers to obtain the required data needed pertaining to the readmitted cardiac patients. The form was tested on ten medical records. Other data such as hospital length of stay patient demographics, LOS, and documentation related to discharge instructions, communication, patient understanding, health literacy, and medication adherence was reviewed and recorded.

Criteria

Data from EMRs of patients with the following criteria:

Inclusion:

1. Patients 18 years of age and older.

2. Cardiac patients readmitted to the facility within 30 to 90 days with diagnosis of Chest Pain, Angina, MI, HF, Arrhythmias, Cardiac Interventional Procedures including Percutaneous Transluminal Coronary Angioplasty (PTCA), Percutaneous Coronary Intervention (PCI), Stent placement, Implantable Cardioverter Defibrillator (ICD) were included in the study.

3. Interventional diagnostic procedures with readmissions were included due to the cardiac pathophysiological involvement with medications and follow-up appointments. This included PCI, stent placement, angioplasty, and ICD placement for patients readmitted within 30 to 90 days.

4. Patients received a form of discharge instruction as documented in the COD.

5. Patients were discharged home and readmitted to the hospital within 30 to 90 days.

Exclusion:

1. Patients under the age of 18 were excluded.

2. Patients with a diagnosis of Coronary Artery Bypass Surgery (CAB) were excluded.

3. Patients discharged to long term care facilities, assisted living facilities, or rehabilitation

facilities were excluded.

Results

From a sample of 100 EMRs, 62 EMRs were from male cardiac patients and 38 were female patients. The highest frequency concerning age in the sample fell between 66 to 75 years; this group made up 36% of the total population. The youngest population ranged in age from 26 to 35 years and made up 3% of the sample while the oldest group aged 76 to 85 years comprised 10% of the sample distribution. Most of the sample was married and admitted with an initial complaint of chest pain or heart failure. Most admissions (66%) were readmitted within 30 days of their initial admission while the remaining (34%) were readmitted within 30 to 90 days of their initial admission date.

Other data collected included numbers of medications reported during the first admission of hospitalization and new medications prescribed at discharge from the first admission.

As shown in the table below, 50 patients were prescribed between six to ten additional medications with one to five more medications added at discharge. The other preliminary statistical analysis performed in this study was a cross-tabulation of gender with two first admission diagnoses, chest pain and HF. Chest pain was the predominant complaint for male patients requiring admission while females were divided evenly between complaints of chest pain and HF. There was no significance found with this analysis and results did not contribute toward conclusions for this study (Table 1).

Discussion

Early in the data collection, both authors had difficulty in the retrieval of specific details

of documentation as it related to seeking possible factors affecting the nature of discharge

instructions and possible mediating effects relating to high rates of readmissions.

Non- adherence with medication regimes

According to readmission documentation, many of the patients in this study did not adhere to recommended discharge instructions. Twenty-three documented notations by the health care providers in the readmission assessment cited non-adherence problems with medication interventions. While details were not specific, there were entries found that alluded to patients' failure to obtain anticoagulant medications post discharge and post percutaneous intervention with stent placement. Actual statistical evidence was unable to be retrieved from the EMRs. Other documented incidents included patients "'running out" of prescribed diuretics resulting in readmissions for those diagnosed with HF. In summary, of the 23 patients with extensive EMR documentation of non-adherence, only five records indicated that patients did not understand the medications or other prescribed treatment regimes.

Table 1: Findings of EMR from 100 Electronic Medical Records of patients who were discharged and readmitted to the facility with cardiac diagnoses within 30 to 90 days of their initial admission.

Electronic Medical Record (EMR) Data	Categorical Findings of EMR	Percentage of findings found in EMR (N=100)
Gender	Male	62%
	Female	38%
Age (years)		
	26 - 35	3%
	36 - 65	51%
	66 - 75	36%
	76 - 85	10%
Marital status		
	Married	55%
	Divorced	17%
	Widowed	15%
	Single	13%
Type of Readmission		
	< 30 days from initial admission	66%
	>30 days but <90 days	34%
Readmission Diagnoses		
	Chest pain	51%
	Heart Failure	28%
Evidence of Documented D/C Instructions		
	Follow-up appointments	87%
	Activity Levels	64%

	Dietary instructions	76%
	Patient Understanding	77%
# Medications prescribed during first or initial admission		
	No medications (Meds)	1%
	1-5 meds	25%
	6-10 meds	50%
	11-15 meds	19%
	16 or > meds	4%
#Medications prescribed at discharge of first admission		
	No medications (meds)	18%
	1-5	72%
	6-10	9%
	10 or >	1%

Lack of patient understanding

Electronic documentation of discharge instructions may not adequately capture unique issues pertaining to patients' understanding discharge instructions, which has been identified in other research.[48] In this study patient understanding was documented for 77 patients by indication of a check mark provided in the discharge screen of the electronic medical record. Other findings identified by the health care providers from the initial discharge summaries included circumstances that may have contributed to patients' lack of understanding instruction. Factors such as socioeconomic constraints, home status, or chronic illness were identified. However, it is important to note that these documented statements were more likely assumptions made by the healthcare provider and was not backed with any specific evidence.

Communication and health literacy

There were limited documented resources to indicate the educational level and health literacy of patients. Demographics collected in the EMR was reflective of age, gender, occupation (active or retired), marital status, and insurance information. Only inferences regarding highest educational levels achieved could be hypothesized based on type of occupation documented under insurance details. Therefore, this aspect of the study became a limitation in seeking patients' ability to communicate and understand their discharge instructions.

Discharge instructions

The EMRs in this study were divided into traditional notetaking formats: one section was designated as "physician notes" and the

other was "nursing notes". Part of the EMR was comprised of forms that would allow check marks to be placed indicating activities or interventions "completed" or "appropriate" for that particular patient. (Example: Oral care, AM care, ambulation, etc.) There was also the ability to chart by exception in the nurses' notes. Other healthcare providers' notes were narrative in nature. In the nurses' notes, a check was placed indicating the patient received and understood their discharge instructions. Unless there was an exception, there was no evidence that defined what those instructions entailed and the acknowledgement of patient comprehension of those instructions. The authors had to rely on discharge summaries from other healthcare providers when seeking specific details.

What was helpful in physician notes was the indication of how much time in hours and minutes the provider spent with the patient when providing discharge instructions. Some of the records were very detailed with specific instructions noted. Again, in most cases of the EMR review, only inferences could be made regarding the quality and type of instruction provided.

Limitations

Limitations to this study included the geographic area of the patients. The sample was from one rural hospital in the southern region of southeastern United States and included a small sample of 100 patients. Additionally, many patients were admitted and discharged within a two-day period or LOS. By the time they received a diagnosis requiring an extensive intervention related to their cardiac event, these patients may have had very little time, energy, or knowledge to process the severity of their condition. Unfortunately, the EMRs did not reflect this kind of data.

The EMRs were consistent in most aspects of documentation; however, the actual forms used in the charts were sometimes very limited in the provision of detail surrounding actual discharge teaching along with documentation of patient understanding of those details. Documentation indicated patients received instructions related to medication administration, activity, exercise restrictions, and diet requirements, but how much did they actually understand?

Conclusions

Data collected in this study reflected similar findings within the literature. Readmission rates were high; 66% of the sample were readmitted within 30 days or less from their initial hospitalization. One third of patients had a diagnosis of HF representative of national findings, and general documentation regarding discharge instructions noted that patient understanding about medication treatment may have contributed to their need for medical attention and readmission status. Unfortunately, due to the inability to collect more specific data from the EMRs made available for this study, the authors were not able to adequately identify those aspects of patient understanding that could be identified as possible factors leading to misunderstanding of instructions.

Based on the literature review, the inclusion of data such as educational levels and the assessment of health literacy levels would be a positive addition in the EMR [49-53]. The transition from hospital to home has also been recognized as a major area of concern [54-58].

Since this study was not able to make any inferences toward this aspect of patient care, future studies are recommended to explore specifically how patients diagnosed with cardiac events perceive or experience the transition period encompassing discharge from an inpatient facility to the first few days at home. Focus groups could address the effectiveness of current discharge documents used, patients' perceptions of medication treatments, and any other concerns they feel are important in their recovery. While the statistical data collected in this study was not strong, aspects of documentation of discharge instructions have come through and verified that possible improvements are needed in the EMR to strengthen information regarding patients' perceptions and degree of understanding of their health status.

In summary

Hospitalizations for a cardiac event can be a stressful time for the patient and family. During hospitalization, patients often interact with multiple members of the healthcare team regarding discharge instructions. The ability of the patient to understand and process

instructions may not be adequately assessed. The patients' point of view is a unique and an imperative component that requires careful consideration and exploration toward the improvement of the discharge process. Findings in this study enhance the conclusion that patient understanding remains a vital key to the decrease of overall readmission rates and subsequent outcomes of care for patients experiencing cardiac events.

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