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Early readmission among patients with diabetes: A qualitative assessment of contributing factors

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ABSTRACT

Aims: To explore causes of early readmission, i.e., hospital readmission within 30 days of discharge, among patients with diabetes.
Methods: We performed thematic analysis of semi-structured interviews among 20 adults with diabetes hospitalized with an early readmission at an urban academic medical center.
Results: Five themes emerged as contributors to readmission risk: (1) poor health literacy (lack of knowledge about diabetes and discharge instructions), (2) health system failure (of the discharge process and post-discharge support), (3) failure of expected protective factors, (e.g., following the discharge instructions, being aware of medication changes upon discharge, and having help and social support), (4) social determinants of health impeding care, and (5) loss of control over illness. A majority of patients reported needing assistance with transportation, obtaining and taking medications, and preparing food. Most patients denied an active role in exacerbating their condition prior to readmission, and many believed that being readmitted was out of their control.
Conclusions: Our findings suggest several interventions that may reduce the risk of early readmission for patients with diabetes, including inpatient diabetes education, improving communication of discharge instructions, and involving patients more in medication reconciliation and post-discharge planning.

1. Introduction

Hospital readmission within 30 days of discharge (early readmission) is a high-priority healthcare quality measure and target for cost reduction (Axon & Williams, 2011; Stone & Hoffman, 2010; Epstein, 2009). In 2012, patients with diabetes incurred approximately $124 billion in annual expenditure for hospital care in the United States (US) (ADA, 2013). Although diabetic patients represent about 8% of the US population (CDC, 2011), they account for 23% of hospitalizations (8.8 million) each year (HCUP Nationwide Inpatient Sample (NIS), 2011). Likewise, while the overall early readmission rate is 8.5–13.5% (Pennsylvania Health Care Cost Containment Council, 2012; Friedman, Jiang, & Elixhauser, 2008), the rate in patients with diabetes is 14.4–21.0% (Robbins & Webb, 2006; Bennett, Probst, Vyavaharkar, & Glover, 2012; Rubin, Handorf, & McDonnell, 2013; Chen, Ma, Chen, & Yermilov, 2012). Because the proportion of hospitalized patients with diabetes has risen steadily over recent decades in tandem with the increasing incidence of diabetes in the general population (CDC, 1988-2009), these rates may continue to climb (*MMWR*, 2012).

Despite the large costs, the reasons for early readmission of patients with diabetes remain poorly understood. Most studies of readmission risk factors in this population are limited by retrospective design, lack of clinical data and/or restriction to a primary discharge diagnosis of diabetes (Robbins & Webb, 2006; Bennett et al., 2012; Cook, Naylor, Hentz, et al., 2006; Cramer, Chapa, Kotsos, & Jenich, 2010; Kim, Ross, Melkus, Zhao, & Boockvar, 2010; Menzin, Korn, Cohen, et al., 2010). Few studies have successfully used qualitative research methods to better understand readmission risk factors (Strunin, Stone, & Jack, 2007; Long, Genao, & Horwitz, 2013; Kangovi et al., 2013). None of these studies focused on patients with diabetes. A better understanding of the causes of early readmission among such patients may identify aspects of the inpatient to outpatient transition of care that could be improved to reduce readmission rates. We performed thematic analysis of semi-structured interviews to explore causes of early readmission among hospitalized patients with diabetes.

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2. Methods

2.1. Sample

We conducted the study at Temple University Hospital, an urban academic medical center in Philadelphia, PA with approval of the Temple University Institutional Review Board. Eligible patients were those readmitted to the hospital within 30 days of discharge, who had diabetes (defined by an ICD-9-CM code of 250.xx, self-report, or outpatient use of a diabetes-specific medication), were at least 18 years old and spoke English. We excluded those admitted to an obstetric service. A list of potential participants who met the eligibility criteria was generated daily using the electronic medical record. Based on the availability of the patients and the interviewers, a convenience sample of 27 patients was approached for consent, of which 6 patients declined to participate and 1 recording was lost. The final sample therefore consisted of 20 participants interviewed between September, 2012 and February, 2013. The primary diagnosis associated with each admission and readmission was obtained by reviewing hospital records.

2.2. Interviews

Every patient provided written informed consent and was interviewed in the hospital room. The interviews were conducted on 1 or 2 days per week during the study period, with no more than 2 interviews completed in a single day. Interviews averaged about 20 minutes in duration. Three investigators (DR, KJ, and RJ) individually conducted the interviews, which were recorded and transcribed by the interviewer into Microsoft Word 2010 documents. We reviewed discharge records to assess the accuracy of patient recall about discharge instructions.

Because, to our knowledge, no prior qualitative study has focused on readmission among patients with diabetes, we developed a new interview guide based on our experience and literature review (Table 1). At the time the protocol was being planned, there was only 1 published qualitative study examining readmissions (Strunin et al., 2007). The description of the interview used in that study informed our own interview guide, as the exact questions were not reported. In our interviews, participants were asked to describe their experiences and perceptions related to their recent and current hospitalizations. Particular attention was paid to transitions of care between the inpatient and outpatient settings. In addition, participants were queried about discharge instructions, home environment, social support, needs after discharge, and the ability to attend follow-up appointments. Participants were also asked to provide feedback on the discharge process. The 28-question interview was open-ended such that participants responded in their own words. Interviewers encouraged participants to explain yes or no answers. We piloted the guide with 3 participants to ensure clarity and comprehensiveness of the questions. Because the content of the guide was not changed after the pilot, these 3 participants were included in the analysis.

2.3. Analysis

Based on the transcriptions (not a priori assumptions), the interviewers coded the 3 pilot interviews together to ensure inter-rater reliability of codes. After the pilot, each interviewer individually coded the interviews. The interviewers collectively reviewed each interview to assure accuracy and consistency of coding. Discrepancies were resolved by consensus. The codes represented themes observed in the data. Initial codes, which were tracked as comments within the transcription documents, were standardized, compiled then organized into themes. Each interview was coded within 1 week of being conducted. As planned before data were collected, we conducted interviews until thematic saturation occurred (i.e., an additional interview would not contribute new information) (Long et al., 2013).

Table 1
Interview guide.

1. Why did you have to come to the hospital?
   a. Did you call a healthcare provider before arriving at the hospital? Did you decide to come to the hospital, or did your healthcare provider send you? How did you get to the hospital?
2. Did you need any help or support after your last discharge? Did you get the help you needed?
3. Do you think you had what you needed to get better after your last discharge?
4. Were the events leading up to this admission similar or different from the last admission?
5. Was there anything you did or did not do that led to this admission?
6. Do you think you did anything that may have made your condition worse?
7. What do you feel might have helped you most to avoid coming back to the hospital?
8. What discharge instructions did you receive during your last hospital admission?
9. Did you have any questions about the discharge instructions? If so, did you feel like all of your questions were completely answered?
10. Did you follow all of the discharge instructions? If not, then why?
11. Were your medications changed during your last discharge? If so, then what were the changes?
12. What medications were you taking just before this admission? What was the reason for taking each one?
13. Did the doctor suggest changes to your behavior or lifestyle upon your last discharge? If so, then explain the changes. Did you follow them?
14. Did you feel you understood the follow-up plan in terms of doctors' visits or home visits after your last discharge?
15. Do you have any suggestions to improve the discharge process?
16. Do you think there were challenges or obstacles you faced with following the discharge plan?
17. Were you given any medical appointments before you left the hospital?
    a. Did you attend any appointments between the last admission and the current admission? If not, then explain. If you did, then with which provider or providers?
18. Does anything make it difficult for you to keep your medical appointments?
19. What do you think causes your diabetes?
20. What do you think makes diabetes worse? What makes your blood sugar high?
21. How well do you think your diabetes is controlled? How are your blood sugars at home?
22. Do you know what the A1c blood test means? What is your A1c?
23. Having diabetes can sometimes be stressful or frustrating. How do you cope with your diabetes?
24. Do you think you will need any kind of help after this hospitalization?
25. Is anyone else, such as friends, neighbors, or family members, involved in your care?
26. Is there anything you think you can do to avoid another hospital admission?
27. Do you feel that you have social support at home?
28. Is there anything else you think I should know to understand why you were readmitted?

3. Results

3.1. Participant characteristics

Table 2 summarizes characteristics of the sample. The median self-reported number of admissions in the prior 12 months was 6 (range, 1 to 30). Eighty percent of the participants reported having at least a high school level of education. The median A1c value was 10.5% (range, 5.4 to 14.4%) among the 19 patients for whom a result was available. Table 3 shows the primary diagnosis associated with each admission and readmission.

3.2. Thematic analysis

Five themes emerged as contributors to readmission risk: 1) poor health literacy, 2) health system failure, 3) failure of expected