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Patients and healthcare professionals' voice on preventable readmissions

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INTRODUCTION

Currently, about 10% of patients required unplanned readmissions within 30 days after discharge.[1 2] This proportion has not changed substantially over the past several years despite intense efforts to improve the discharge process.

Although several studies[3 4] have been performed, including patients' and physicians' opinion on the preventability of readmissions and factors that would predict preventability, only a few studies have included nurses' opinions and the consensus with all stakeholders.[5] We aimed to determine the patient's opinion on preventable readmission, associated factors and the extent to which patients, nurses and physicians agree on readmission preventability.

METHODS

To achieve the proposed objectives, a descriptive transversal correlational multicentre study was developed. This study was approved by the Clinical Research Ethics Committee (reference number: PR114/17). From 2 April 2017 to 18 January 2019, all patients readmitted within 30 days to 2 medical and 2 surgical departments (internal medicine, pneumology, trauma and digestive surgery) at 4 university hospitals were identified. Patients who provided written informed consent were interviewed within 72 hours of readmission. Four research nurses were trained to deliver the interviews. The patient's interview involved 23 questions[6] about functional status at discharge, discharge process and follow-up care, including readmission preventability (online supplemental material). Two independent physicians and nurses of the research team concurrently reviewed electronic health records to identify factors contributing to potentially preventable readmissions.[7] Clinical and demographic patients' characteristics were also collected.

We estimated that a total sample size of 276 patients was needed for a proportion of 11% of preventable readmission,[7] 95% confidence level and 0.04 precision and assuming 15% potentially missed cases. A logistic regression model has been used to assess the association between the patient profile and his answer to the main question of his readmission preventability. The conditions of application of the models have been validated and CIs at 95% of the estimator have been calculated whenever possible. Cohen's kappa statistic has been calculated to assess the concordance between physicians', nurses' and patients' answer to this preventability readmission question. All the analysis has been done with the statistic package R V.3.5.3 (11 March 2019) for Windows.

Patients were not involved in the design, conduct, reporting or dissemination plans of this study.

RESULTS

We assessed 805 consecutive patients for eligibility, of whom 529 were excluded refused or unavailable (314 presented haemodynamic instability, 107 were discharged early, 104 refused to participate and four had language barrier). Among 276 patients included, 44.2% were admitted to internal medicine, 13.8% pneumology, 8% trauma and 34.1% digestive surgery department, respectively. The mean age was 68 years and 65.9% were men. The median (IQR) time between discharge and readmission was 11 days (5–17 days) and the median (IQR) Charlson comorbidity index was 5 (3–6).

Ninety-six (34.8%) patients reported that their readmission was preventable, 69 (25.0%) were undecided and 111 (40.2%) reported that their readmission was not

Table 1 Factors associated with preventable readmissions

	Total sample N=276		Preventable readmission or undecided N=165 (59.8%)		Non-preventable readmission N=111 (40.2%)			
Factors	**No.**	**(%)**	**No.**	**(%)**	**No**	**(%)**	**OR (95% CI)**	**P value**
Patient characteristic								
Male sex	182	(65.9)	107	(64.8)	75	(67.6)	1.13 (0.68–1.89)	0.64
Age, median (IQR), years	70	(60–78)	71	(61–78)	69	(59–77)	1.00 (0.98–1.02)	0.91
Education level								
None	77	(27.9)	52	(31.5)	25	(22.5)	1.37 (0.67–2.78)	0.39
Elementary education*	141	(51.1)	78	(47.3)	63	(56.8)	0.81 (0.44–1.52)	0.52
Higher education†	58	(21.0)	35	(21.2)	23	(20.7)	1.03 (0.57–1.86)	0.92
Charlson comorbidity index, median (IQR)	5.0	(3.0–6.0)	4.5	(3.0–6.8)	5.0	(3.0–6.0)	1.00 (0.93–1.11)	0.71
Length of initial hospital stay (days), median (IQR)	7.0	(4.0–11.0)	6.0	(4.0–10.0)	8.0	(5.0–12.0)	0.99 (0.97–1.02)	0.50
Admission to a medical ward	160	(58.0)	90	(54.5)	70	(63.1)	0.70 (0.43–1.15)	0.16
Admission to a surgical ward	116	(42.0)	41	(36.9)	75	(45.5)	1.42 (0.87–2.33)	0.16
Number of days between discharge and readmission, median (IQR)	11.0	(5.0–17.0)	9.0	(4.0–15.0)	14.0	(7.0–19.5)	0.95 (0.92–0.98)	0.002
Caregiver support home	23	(9.2)	12	(8.1)	12	(11.0)	0.71 (0.30–1.67)	0.71
Polypharmacy‡	178	(64.7)	104	(58.4)	74	(41.6)	0.83 (0.50–1.38)	0.47
Functional status at discharge								
Poor self-related health§	88	(31.9)	52	(31.5)	36	(32.4)	0.78 (0.41–1.46)	0.43
Fully dependent¶	60	(21.7)	37	(22.4)	23	(20.7)	1.56 (0.76–3.19)	0.23
Somewhat dependent¶	153	(55.4)	96	(58.2)	57	(51.4)	1.63 (0.90–2.95)	0.11
Independent¶	63	(22.8)	32	(19.4)	31	(27.9)	0.62 (0.35–1.09)	0.62
Discharge process								
Patient remember diagnosis	(n=272)		(n=162)		(n=110)		1.96 (1.10–3.50)	0.02
No	62	(22.8)	29	(17.9)	33	(30.0)		
Yes	210	(77.2)	133	(63.3)	77	(36.7)		
Attended ≥1 follow-up appointment	(n=276)		(n=165)		(n=111)		0.69 (0.42–1.14)	0.14
No	171	(62.0)	108	(65.5)	63	(56.8)		
Yes	105	(38.0)	57	(34.5)	48	(43.2)		
Follow-up appointment with PCP, specialist or nurse arranged or already scheduled on discharge	(n=272)		(n=164)		(n=108)		0.51 (0.30–0.84)	0.009
No	112	(41.2)	78	(47.6)	34	(31.5)		
Yes	160	(58.8)	86	(52.4)	74	(68.5)		
Had medications reviewed before discharge	(n=263)		(n=157)		(n=106)		0.32 (0.11–0.98)	0.048
No	21	(7.6)	17	(10.8)	4	(3.8)		
Yes	242	(87.7)	140	(89.2)	102	(96.2)		
Felt all concerns were addressed before discharge	(n=275)		(n=165)		(n=110)		0.30 (0.17–0.54)	<0.001

Continued

Table 1 Continued

Factors	Total sample N=276		Preventable readmission or undecided N=165 (59.8%)		Non-preventable readmission N=111 (40.2%)		OR (95% CI)	P value
	No.	(%)	No.	(%)	No	(%)		
No	93	(33.8)	72	(43.6)	21	(19.1)		
Yes	182	(66.2)	93	(56.4)	89	(80.9)		
Remember talking with physician or nurse about recommendations at discharge	(n=249)		(n=149)		(n=100)		1.41 (0.80–2.48)	0.23
No	36	(24.2)	36	(24.2)	31	(31.0)		
Yes	113	(75.8)	113	(75.8)	69	(69.0)		
Patient satisfied, mean (SD)**	8.1	(2.0)	7.8	(2.3)	8.6	(1.4)	0.77 (0.67–0.90)	0.001
Discharged to skilled nursing facility	(n=276)		(n=165)		(n=111)		3.89 (0.85–17.9)	0.08
No	263	(95.3)	154	(93.3)	109	(98.2)		
Yes	13	(4.7)	11	(6.7)	2	(1.8)		
Same-day discharge reported	(n=252)		(n=70)		(n=182)		2.74 (1.18–6.46)	0.019
No	182	(72.2)	104	(68.0)	78	(78.8)		
Yes	70	(27.8)	49	(32.0)	21	(21.2)		
Felt they were discharged before ready	(n=254)		(n=147)		(n=107)		0.36 (0.21–0.64)	<0.001
No	168	(60.9)	84	(57.1)	84	(78.5)		
Yes	86	(31.2)	63	(42.9)	23	(21.5)		
Reported improved overall health condition from index admission to index discharge	(n=263)		(n=155)		(n=108)		0.84 (0.45–1.56)	0.84
No	53	(20.2)	33	(21.3)	20	(18.5)		
Yes	210	(76.1)	122	(78.7)	88	(81.5)		
Follow-up care								
Contacted healthcare professional before readmission	(n=276)		(n=165)		(n=111)		0.74 (0.45–1.21)	0.23
No	119	(43.1)	76	(46.1)	43	(38.7)		
Yes	157	(56.9)	89	(53.9)	68	(61.3)		
Feeling concern	(n=276)		(n=165)		(n=111)		2.20 (1.34–3.67)	0.002
No	155	(56.2)	80	(48.5)	75	(67.6)		
Yes	121	(43.8)	85	(51.5)	36	(32.4)		
Depression††	(n=264)		(n=160)		(n=104)		0.73 (0.44–1.20)	0.21
No	132	(50.0)	85	(53.1)	47	(45.2)		
Yes	132	(50.0)	75	(46.9)	57	(54.8)		

*Elementary education included primary or secondary education.
†Higher education included post-secondary or university education.
‡Polypharmacy: regular use of at least six medications daily.
§Self-related health: in general, would you say your health is: excellent, very good, good, fair or poor.
¶Functional status: (a) can you get out of bed or chair yourself; (b) can you dress and bathe yourself; (c) can you make your own meals and (d) can you do your own shopping (yes and no).
**Patient satisfaction with hospital discharge team. Responses were recorded on a scale of 0–10, from 'very unsatisfactory' to 'very satisfactory'.
††Depression. PHQ-2 score ≥3.
IQR, interquartile range; PCP, primary care physician; PHQ-2, the Patient Health Questionnaire; SD, standard deviation.

Table 2 Factors contributing to potentially preventable readmissions according to physician and nurse opinion

Factors	Physician N=276		Nurse N=276		All N=552		P value
	No.	(%)	No.	(%)	No.	(%)	
Preventable readmission or undecided	81	(29.3)	93	(33.7)	174	(31.5)	0.14
Care during index stay*	45	(16.3)	69	(25.0)	114	(20.6)	0.01
Discharge process†	17	(6.2)	12	(4.3)	29	(5.2)	0.45
Follow-up care‡	40	(14.5)	14	(5.1)	54	(9.8)	<0.001

*Care during index stay included: (a) inattention to advance care planning, (b) suboptimal management of chronic condition (c) unrecognised worsening condition, (d) suboptimal coordination of care, (e) patient unstable at discharge or discharged too soon, (e) medication error, (f) missed or inaccurate diagnosis and (g) surgical/procedural complication.
†Discharge process included: (a) transition care plan absent or inadequate, (b) unaddressed psychological and social needs, (c) inadequate assessment of patient or caregiver understanding or ability, (d) delayed/inaccurate information from hospital to outpatient providers and (e) inadequate arrangements for supplies.
‡Follow-up care included: (a) inadequate attention to psychological or social needs, (b) suboptimal management of index satay condition, (c) suboptimal management of chronic condition, (d) medication error, (e) inadequate patient instructions, (f) poor coordination between inpatient and outpatient providers, (g) surgical/procedural complication, (h) missed or inaccurate diagnosis and (i) lack of follow-up on referrals made after discharge.

preventable. Comparing patients who reported non-preventable readmissions to those who reported preventable readmissions or were undecided, the latter had less time between discharge and readmission, did not have a follow-up appointment scheduled with primary care or specialist at discharge, no medication reviewed and felt concerns were not addressed before discharge. Also, patients who were less satisfied with the hospital's discharge team, who felt were discharged before being ready and felt concern during follow-up care were more likely to report preventable readmission or undecidedness (table 1).

Among patients who reported a preventable readmission or were undecided, physicians' reviewers agreed 19.6% and nurses' reviewers agreed 22.8% of the time, identifying physicians or nurses agreed 31.2% of the cases reported. The overall agreement was 55.4% (Cohen's κ=0.12; 95% CI, 0.01–0.23). Care during index stay and follow-up care were the most common factors identified by physicians and nurses (table 2).

DISCUSSION

The results of this study are consistent with previous reports, which have found that almost one-third of patients believed that their readmission was preventable,[6] and the associated factors were linked to the discharge process and follow-up care. Furthermore, although the patient and healthcare professionals' preventability agreement were slight, this percentage increases when the opinion of nurses was considered. These findings must be interpreted in the context of our study design because the limitations of this study include the recall bias of patients' interviews.

Therefore, the results support the argument that actually the patient's understanding about their diagnosis and education prior discharge was suboptimal.[8] Future studies should evaluate the impact of strategies to improve the transition of care that incorporate the patients' and nurses' opinion about readiness to discharge.

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