Understanding of diagnosis and medications among Non-English-Speaking older patients.

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Abstract

Objectives:

To determine whether Non-English-Speaking Background (NESB) patients had a poorer understanding of diagnosis and medications compared to English-Speaking Background (ESB) patients.

Methods:

ESB and NESB patients admitted to inpatient Geriatric Evaluation and Management Unit (GEM) were asked standardised questions about their admission diagnosis, reason for GEM admission and medications. Accuracy of answers, as compared to medical notes, ranked as 'full credit', 'partial credit' or 'no credit'.

Results:

Of the 66 patients recruited (30 NESB), understanding of diagnosis and purpose of GEM admission was good. There was no difference between ESB and NESB patients. Understanding of medications taken prior to admission was poor, with 66.7% of overall patients scoring 'no-credit'. NESB patients were more likely to score 'no-credit' compared to ESB(80% vs 55.6%, $p=0.036$).

Conclusions:

Reassuringly, patients had a reasonable understanding of diagnosis and purpose of GEM admission. Lack of understanding of medications, especially among NESB patients, should be improved.

Keywords: Aged, Communication Barriers, Cultural Diversity, Language, Professional-Patient Relations.

Practice Impact Statement

The majority of older inpatients had a poor understanding of the medications they were taking prior to admission and those started during an admission, with Non-English-Speaking patients faring worse compared to English-Speaking patients. Further research is needed to determine the contributing factors so that they can be addressed and health outcomes can be improved.

Introduction

There are a large number of Non-English-Speaking Background(NESB) people in Australia especially among the older population(1). This is particularly evident in the study hospital's demographics where there are more than 118 languages spoken, with a high proportion of patients with low English proficiency(2).

NESB, poor health literacy and lower education levels have been shown to be barriers to understanding diagnosis and medications(3,4). NESB patients rely on verbal communication from their healthcare providers as translated written information about diseases and medications are less readily available. However interpreters are often under-used, leading to an increased risk of misunderstanding information they receive from the healthcare system(5, 6).

There is an association between lack of understanding of diagnosis and medications with poorer health outcomes(7).

Lack of understanding of medications is a contributor for medication non-adherence, which leads to suboptimal disease control(8, 9).

Research has shown that improving patients' understanding of diagnosis promotes adherence to self-care practices, improves clinical outcomes and reduces hospital re-admissions(10). This is particularly relevant in older patients who often have multiple comorbidities involving complicated treatment plans with multiple medications.

This study aims to determine if NESB older patients represent a particularly at risk cohort with regards to understanding of their diagnosis and medications. To date, there has been no study that investigated this specifically in this age group, nor in Australia.

The Geriatric Evaluation and Management(GEM) unit focuses on slow stream rehabilitation for the older patient. Patient participation with a multidisciplinary team of therapists is critical. An important step is for the patient to understand the reason for admission to GEM so that appropriate goals can be set. This study also aims to determine whether NESB patients are more likely to have a poorer understanding of reason for admission to GEM, as there is no prior research investigating this.

Methods

A survey was conducted in a convenience sample of inpatients at two GEM units in Bundoora Extended Care Centre(BECC),Northern Health, from August 2016 to December 2016.

Ethics approval was granted through Northern Hospital Research and Ethics committee.

Eligibility criteria was age 65 years or older and no significant cognitive impairment - defined as Mini Mental State Examination(MMSE)(11) score 24 or higher for ESB patients and Rowland Universal Dementia Assessment Scale(RUDAS)(12) score more than 22 for NESB patients.

Eligible patients were identified and invited to participate. The principal investigator obtained written informed consent.

A previously validated two-step process determined NESB status. Participants were asked i) “How well do you speak English?” Participants who answered, “not well” or “not at all” were classified as NESB. Participants who answered “well” were asked a second question ii) “In what language do you prefer to receive medical care?” Those who preferred their medical care in a language other than English were also classified as NESB.(13)

Participation was timed to coincide with the availability of interpreters for NESB patients. The principal investigator interviewed each participant and completed the survey. Professional interpreters were used for all NESB patients to conduct the interview and complete the survey. Medication charts and medical records were accessed for medical diagnosis, length of stay, previous GEM admissions, pre-admission medications and current medications data.

To quantify a patient’s understanding of their diagnosis, medications and purpose of GEM admission, a system of credit allocation was used. This credit allocation was fashioned based on previous research(14).

To ascertain patient understanding of diagnosis, the question was asked, “What is your diagnosis for this admission?” The verbatim response was recorded with no further prompting questions. If there were a few diagnoses, credit was given to description of any of them.

Full, partial or no credit was allocated as follows:

Full credit if the response was the correct diagnosis in medical or plain language;

Partial credit if the response described non-specific symptoms consistent with the diagnosis(e.g. for heart failure, “short of breath,” “fluid on the lungs”);

No credit was assigned if the response described unrelated symptoms, incorrect diagnosis or they did not know.

Regarding understanding of GEM, the question was asked, “What is the purpose of your admission to this Geriatric Evaluation and Management (GEM) unit you are in?” Full, partial or no credit was allocated as follows:

Full credit was assigned if the correct reason of GEM admission was described.

Partial credit was given for responses that were vague such as “To help me”, “treat people” or “for sick people”.

No credit was given to irrelevant, incorrect or ‘did not know’ responses.

For understanding of medications taken prior to admission, the question “Please tell me all the medications you were taking prior to admission and the reason you were taking them” was asked. For understanding of medications started during admission, the question “Please tell me all the medications that have been started during your admission which you are currently on and the reason you are taking them” was asked. Full, partial or no credit was allocated as follows:

Full credit was given if they correctly stated the name (trade name or generic name) and purpose of all medications.

Partial credit was given if they stated the name and purpose of at least 50% of medications.

No credit was given if they stated the name and purpose of less than 50% of medications.

The standardised questions asked for the various understanding parameters are listed in Table 1.

The principal investigator and one supervising investigator categorised the responses independently.

The supervising investigator was blinded to participant language status. If there were discordance in the categorisation of responses, the supervising investigator made the final decision.

Examples of the verbatim responses for understanding of diagnosis and GEM are presented in Appendix A.

Statistical Analysis. Stata version 14.0(StataCorp,College Station,Texas) was used for statistical analysis. Descriptive analysis was undertaken to provide a profile of the patients, as well as patient demographics by response to the understanding statements. Results were presented as means +/- standard deviations or as Medians(inter-quartile ranges), and/or frequencies / percentages meeting a certain criteria. To test for statistically significant differences between groups, the Mann-Whitney(rank-sum) test was utilised since all continuous variables were non-normally distributed. When assessing the categorical variables, chi-squared tests were performed, with Fishers Exact tests used on occasions when frequencies were less than 5 for any combination. The categorical variables were analysed in the dichotomous groups of “full and partial credits” versus “no credit” to improve the robustness of results given the small sample size. Multivariate logistic regression analysis was conducted to determine whether the association between NESB and understanding was maintained after adjustment for selected patient characteristics of age, gender and surgical status. Surgical status was included as a variable as surgical admission diagnoses may be more straightforward and easily understood by patients(e.g. fracture) compared to complex medical admission diagnoses.

To avoid over-constraining the multivariate model by including too many variables due to the limited sample size, education level and previous GEM admissions were excluded as these did not appear to be associated with credit scores on univariate analysis.

All tests were two-sided, with a p-value of <0.05 considered to indicate statistical significance.

Results

Demographics. 66 patients(36 ESB;30 NESB) met eligibility criteria and all consented to participate. The median age was 81 years(IQR:78-86). The median age for ESB and NESB patients were 81(79-86) years and 80 years(77-85) respectively, 27% of patients were male, 37 patients were admitted to GEM following an acute surgical admission and 29 were following an acute medical admission.

Among NESB patients, the preferred languages were Greek, Italian, Macedonian, Maltese, Polish and Slovenian. The highest proportions were Italian(50%) and Macedonian(33%). Secondary school level of education was achieved by 69% of ESB patients compared to 30% of NESB patients.

Clinical Details. The median MMSE score for ESB patients was 27(IQR:25-28) and the median RUDAS score for NESB was 25(24-26). Among NESB patients, 8 patients(27%) used a formal interpreter during their acute admission – 4 surgical patients(22%) and 4 non-surgical patients(33%).

The median number of medications patients had prior to admission was 9(5-11). The median number of medications started during the admission for all patients was 4(2-5).(Table 2)

Understanding of Admission Diagnosis. The majority of patients(70%) scored 'full credit' for understanding of admission diagnosis. 8% of patients scored 'no credit'. There was no statistically significant difference between NESB and ESB patients scoring 'no credit' for admission diagnosis(10% vs 6%, $p=0.652$).

Purpose of GEM admission. Most patients(77%) scored 'full credit' for understanding of purpose of GEM admission, 11% of patients scored 'no credit'. There was no statistically significant difference between NESB and ESB patients scoring 'no credit' for purpose of GEM admission(17% vs 6%, $p=0.231$).

Understanding of Medications. Sixty seven percent of patients had a poor understanding of medications they were taking prior to admission (scoring 'no credit'), with NESB patients faring worse compared to ESB patients (80% vs. 56%, $p=0.036$). This statistically significant association was maintained after adjusting for the effects of surgical status, age and gender (OR 4.45, 95% CI: 1.30 - 15.20, $p=0.017$)

85% of patients scored 'no credit' for understanding of medications initiated during admission, again NESB patients had a poorer understanding compared to ESB patients (100% compared to 72% scored 'no credit', $p=0.001$). No multivariate analysis was possible due to the lack of variation in this outcome.

Patients who scored 'no credit' to the understanding of medications initiated during admission had a longer LOS at the acute hospital – median of 9 days (IQR: 7-4) compared to a median of 6.5 days (IQR: 5-8) for patients who had 'full' or 'partial credit' responses ($p=0.011$). Aside from this association, there were no statistically significant correlations between understanding of medications started during admission with education level, length of stay at GEM or number of previous GEM admissions.

Examples of verbatim responses regarding understanding of medications, which scored 'no credit', included:

- i) "Lipitor for sugar."
- ii) "You don't get told much do you?"
- iii) "Too many to remember."
- iv) "Doctors often explain it in medical jargon, hence I can't remember them."
- v) "No, what they give me, I take it."
- vi) "No, I was just given them."

The number of patients scoring 'full or partial credit' versus 'no credit' for the understanding parameters is detailed in Table 3.

The results of multivariate logistic regression analysis, associations with a 'no credit' understanding are presented in Table 4.

There were no statistically significant correlations between the understanding of diagnosis, medications taken prior to admission and purpose of GEM with education level, length of stay or number of previous GEM admissions.

Comparing the eight NESB patients who used a formal interpreting service during their acute admission (prior to the referral to GEM) to their counterparts who did not, there were no statistically significant conclusions that could be drawn regarding understanding of diagnosis, medications or purpose of GEM admission.

Discussion

In this linguistically diverse group of older patients admitted to a GEM unit, we found that most patients regardless of language status had a good understanding of their admission diagnosis. This was also described in a previous study examining younger patients by Karliner et al.(15) This is reassuring, and could be attributed to the consenting process conducted with patients and their family at the acute hospital before they can be transferred to GEM. During the consenting process, communication of diagnosis and reason for GEM is incorporated and presumably reinforces patient's understanding. Furthermore, although the use of formal interpreting services was low, perhaps use of informal interpreters through family and friends(which was not captured in this study) was high.

Almost all patients had a good understanding of the reason for their stay in GEM. In addition to the consenting process described above, it may also be that the therapy, for example physiotherapy that has been initiated in GEM reinforces to the patients the purpose of their admission.

The majority of patients had poor understanding of the medications they were taking prior to admission. Significantly, NESB patients fared worse compared to their ESB counterparts as previously observed.(4, 5, 15-17) Possible reasons include the language barrier between doctors and NESB patients precluding the adequate explanation of medications and their purpose. Furthermore, all medications have English language brand names and NESB patients might not be able to register and recall these as well as ESB patients. Other reasons emerged in verbatim patient responses - highlighting the mix up of medications some patients encounter, for example, thinking "Lipitor" is used for diabetes. Several responses reflected that they were not informed of medication changes, or that medical jargon was used to explain. Some patients indicated they had no interest in knowing, instead preferring to trust the health professional to manage their medications – reflecting the more paternalistic model of doctor-patient relationships in certain cultures(18).

Polypharmacy was identified as a theme in verbatim responses- patients identifying that the large number of medications they had was a barrier to remembering what medications they took. This observation is consistent with prior studies that have demonstrated that the number of medications taken was inversely related with understanding of medications – each additional medication correlated with a 10-15% reduction in rate of medication understanding.(19) In this study, the median number of medications taken prior to admission was nine, highlighting one of the issues of polypharmacy in older patients.

These findings were further echoed when looking at understanding of medications initiated during the admission(100% of NESB patients scored 'no credit'). However, even the ESB patients demonstrated poor understanding of this(72.2% scored 'no credit'). It raises the question of whether health professionals actually explain and get consent to make medication changes in hospitalised patients. And if they do, whether formal interpreters are used for this reason. As seen in this study, only a minority of NESB patients(26.7%) had a formal interpreter service used during the acute admission. This study has not captured reasons behind the low usage nor has it captured use of informal interpreters through family or friends. However, it is important to note that previous studies have shown that using informal interpreters rather than professional interpreters resulted in poorer understanding of medications - highlighting the importance of having professional interpreters whenever possible.(19, 20)

It is relevant to note that usual practice in the hospital is for the ward pharmacist to educate about medication changes at time of hospital discharge - this does not occur when patients are transferred to GEM, instead occurs on discharge from GEM. This study did not look at understanding of medications at time of discharge, which has more important clinical implications around compliance. However, given medication changes can be considered a medical intervention, the expectation should be that patients are informed and consent to these

changes at the time they are made. The results of this study would suggest this is not occurring for the majority of patients.

A longer length of stay was associated with poorer understanding of medications started during the admission. This could be because longer admissions are usually more complicated and involve complex medication changes that might be difficult for a patient to comprehend.

Although seen in previous studies,(7, 15) it was interesting to find that there was no statistically significant correlation between education level and understanding of diagnosis, medication or purpose of GEM.

Limitations of this study include the small sample size hindering the power of the analysis. It was unable to draw statistically significant conclusions about whether NESB patients who used interpreters had better understanding of the various understanding parameters compared to their counterparts who did not. When formal interpreters were used during their acute admission, this study did not capture information about what the interpreter was used for; for example, interpretation could have been solely for obtaining consent to operation.

It is a single site study, which limits generalisability, particularly given the demographics - the high percentage of NESB patients that compose the usual demographics of this hospital may mean that there are informal processes for communication outside of formal interpreters(e.g. it is usual to ask family members to be in attendance to interpret for ward rounds) as a routine that are not in place in other hospitals.

The NESB participants in this study all spoke European languages, suggesting that they might not be recent migrants. Whilst they did not speak English well, they were likely more acculturated to Australia compared to more recent migrants. Their cultural understandings of health and illness might be culturally closer to the Australian medical system. These considerations limit the generalisability of the study to a more culturally diverse population.

The process of determining NESB has its limitations. Patients who preferred medical care in another language in presence of speaking English “well” would be a different group in terms of English proficiency compared to those whose spoke English “not at all”.

The RUDAS was used for NESB patients as linguistic artefacts have been seen when using the MMSE in NESB populations(21). The RUDAS was designed to address this and better assess patients from diverse backgrounds. It is acknowledged that the different tools used could have impacted on the findings.

The understanding of admission diagnosis could have been underestimated, as prompting questions were not offered. This was done to standardise the questions posed to all participants. It is acknowledged that the ‘full’, ‘partial’ or ‘no credit’ system used in scoring responses is subjective especially when scoring understanding of diagnosis in the setting of multiple medical issues. Patients who might have experienced delirium during the acute hospital admission were not excluded – delirium may have changed their understanding of admission diagnosis. Lastly, the principal investigator was the single surveyor, unblinded to participants’ NESB status and was the initial credit allocator for understanding. Only two clinicians were on the panel for allocation of credit. However, discrepancy between assessors’ score was low – only 4 patients had their credit status changed due to discrepancy.

Conclusion

Overall, both ESB and NESB patients had a good understanding of their admission diagnosis and the purpose of GEM admission, which is reassuring. However, patients had a poor understanding of medications they were taking prior to admission and those started during the admission, with NESB patients faring worse. Further research is warranted to determine more specifically the contributing factors, so that they may be addressed and health outcomes can be improved in this patient cohort.

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Table 1

Standardised questions

Variable	Question asked
Understanding of admission diagnosis	What is your diagnosis for this admission?
Understanding of medications prior to admission	Please tell me all the medications you were taking prior to admission and the reason you were taking them.
Understanding of medications started during admission and currently on	Please tell me all the medications that have been started during your admission which you are currently on and the reason you are taking them.

Understanding of purpose of GEM admission	What is the purpose of your admission to this Geriatric Evaluation and Management (GEM) unit you are in?
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Table 2

Participant demographics and clinical details by English speaking status (N=66)

Variable	ESB patients	NESB patients	p-value
Number of Patients	36	30	
Age, Median	81 (IQR 79 - 86)	80 (IQR 77 - 85)	0.494
Male	7 (19)	11 (37)	0.118
Preferred Language			
Greek		2 (7)	
Italian		15 (50)	
Macedonian		10 (33)	
Maltese		1 (3)	
Polish		1 (3)	
Slovenian		1 (3)	
Clinical Details			
MMSE Score, Median	27 (IQR 25 - 28)		
RUDAS Score, Median		25 (IQR 24 - 26)	
Formal interpreter used		8 (27)	
Surgical Admission	19 (53)	18 (60)	0.556
Education level			<0.001
No schooling	0	4 (13)	

Primary school	7 (19)	21 (70)	
Secondary school	25 (69)	4 (13)	
Vocational	3 (8)	0	
University	1 (3)	1 (3)	
LOS acute, Median	8.5 (IQR 7 - 13)	9 (IQR 7 - 13)	0.651
Number of medications prior to admission, Median	9 (IQR 5 - 11)	8.5 (IQR 6 - 11)	0.866
Number of medications started during admission and currently on, Median	4 (IQR 2 - 5)	3.5 (IQR 2 - 5)	0.730

† N (%) unless otherwise indicated

Table 3

Credit status grouped into Full/Partial credit versus No credit for understanding of admission diagnosis, medications and purpose of GEM admission by English speaking status

Variable	ESB	NESB	p-value
Understanding of admission diagnosis			0.652
Full or Partial Credit	34 (94)	27 (90)	
No Credit	2 (6)	3 (10)	
Understanding of medications prior to admission			0.036
Full or Partial Credit	16 (44)	6 (20)	
No Credit	20 (56)	24 (80)	
Understanding of medications started during admission and currently on			0.001
Full or Partial Credit	10 (28)	0	
No Credit	26 (72)	30 (100)	
Understanding of purpose of GEM admission			0.231
Full or Partial Credit	34 (94)	25 (83)	
No Credit	2 (6)	5 (17)	

† N (%)

Table 4

Multivariate logistic regression analysis, associations with a No Credit understanding

Understanding of admission diagnosis			
Variable	Odds Ratio	95% CI	p-value
NESB	3.25	0.44 - 23.85	0.246
Surgical	0.36	0.05 - 2.53	0.303
Age	1.07	0.92 - 1.25	0.381
Male	1	-	-
Understanding of medications prior to admission			
Variable	Odds Ratio	95% CI	p-value
NESB	4.45	1.30 - 15.20	0.017
Surgical	0.36	0.11 - 1.16	0.086
Age	1.02	0.94 - 1.11	0.634
Male	0.45	0.13 - 1.61	0.220
Understanding of medications started during admission and currently on			
Variable	Odds Ratio	95% CI	p-value
NESB	1	-	-
Surgical	0.81	0.17 - 3.93	0.790
Age	0.95	0.86 - 1.06	0.397
Male	1	-	-
Understanding of purpose of GEM admission			
Variable	Odds Ratio	95% CI	p-value
NESB	5.20	0.77 - 35.08	0.090
Surgical	0.09	0.01 - 0.90	0.040
Age	1.08	0.94 - 1.25	0.281

Male	0.60	0.07 - 4.79	0.626
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