AUDIT ARTICLES

Audit of Literacy of Medical Patients in North Glasgow

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ABSTRACT

Aims

We aimed to assess the scale of the problem of illiteracy among our hospital's general medical in-patients and investigate any influence on literacy from gender, age, socioeconomic status, disease process and number of prescribed medications.

Methods

We employed a shortened version of the previously validated Rapid Estimate of Adult Literacy in Medicine (REALM) tool with medical in-patients at Glasgow Royal Infirmary. We also recorded gender, date of birth and clinical problem. Socioeconomic status was estimated from the patient's postcode using the Scottish Index of Multiple Deprivation (SIMD).

Results

60 patients were invited to participate, however six (10%) declined. We therefore gathered data for 54 patients (54% male) with a mean age of 67 years. The female group had a significantly higher mean age of 73 years versus 62 years in men. The mean SIMD quintile was 3.5 (1 least deprived, 5 most deprived) and the mean number of medications was 7. 55% of our patients had a mean score of < 60 which represents low health literacy. There were no significant differences in literacy between men (median score 59) and women (median score 60). Reading ability was not found to be associated with socioeconomic group, diseased body system or number of medications on the drug chart (data not shown).

Conclusions

Low level health literacy is prevalent. Affected individuals may have difficulty understanding patient-orientated health literature, medication instructions, clinic appointment cards and hospital signage.

Introduction

Illiteracy among patients is acknowledged to be a significant problem in the United Kingdom. For example, a recent audit of rheumatology patients suggested that one in six patients would struggle to benefit from basic information leaflets.[1] Similarly, a recent study in public hospitals in the United States showed that nearly sixty percent of patients could not understand a standard informed consent document.[2] The problem has been shown to be more widespread in areas of deprivation.[2] This hospital's locale includes some of the poorest constituencies in the United Kingdom.

The problem should be a concern for health care professionals as it is clear that illiteracy negatively impacts on health. Patients with poorer literacy skills have been shown to require hospital services more frequently than their more literate counterparts.[2] Such patients also self-report poor health more commonly.[3] Specific examples of the detriment to health exacerbated by illiteracy include higher viral loads in poorly literate HIV patients,[4] poorer glycaemic control in diabetics[5] and poorer inhaler technique in asthmatics.[6] The poorer outcomes are likely to be due, at least in part, to a lesser ability to interact with the health service and subsequently comply with treatment regimens.

Unfortunately, it has been shown that a person's self reported education level does not correlate with their reading ability.[7] However a variety of tools has been used to assess literacy in the medical setting, including TOFHLA (Test of Functional Health Literacy in Adults) and REALM (Rapid Estimate of Adult Literacy in Medicine). A shortened version of the latter has been validated against pre-existing measures of literacy.[7] It involves patients reading aloud sixty-six common medical words such as 'fat', 'fatigue' and 'allergic'. The test lasts less than five minutes. The marker silently keeps score of the number of words pronounced correctly according to the dictionary standard.

Given the prevalence of illiteracy demonstrated in other settings, it was felt pertinent to quantify the problem in general medical patients, a cohort which can manifest problems of non-compliance of treatment regimens quite markedly.

Aim

To assess literacy in general medical in-patients and investigate any influences from gender, age, socioeconomic status, disease process and number of prescribed medications.

Methods

Setting

The authors visited two general medical wards on random dates over a six-month period. One had twenty beds for male patients (assessed by KD) and the other had fourteen beds for female patients (assessed by DBS). These wards provided the inpatient facilities of the Glasgow Royal Infirmary's University Medical Unit. In addition to general medical patients, the Unit also serves as a tertiary centre for rheumatology, haemophilia, thrombosis and nutrition.

Data Gathering

All patients in the ward at the time of the authors' visits were considered for inclusion. Patients under the care of tertiary services were excluded to eliminate a potential source of geographical bias. Patients fulfilling criteria outlined below were also excluded.

Patients were given information about the purpose and process of the audit and, with their verbal consent, had their reading level assessed by the Rapid Estimate of Adult Literacy in Medicine (REALM) tool.[7] The resultant score grades reading ability on a scale of zero to sixty-six from least to most literate. The background information shown below was gathered either verbally from the patient or by referring to the case sheets.

The Scottish Index of Multiple Deprivation (SIMD)[8] was used to estimate the patients' socioeconomic status from their postcodes. Each patient was assigned to a SIMD quintile. The first quintile represents the least deprived group and the fifth the most deprived.

Statistics

Where the distributions approximated normality, means of continuous variables were compared using the two-sample t-test for pairs and ANOVA for multiple means.

Ethics

A proposal to carry out this audit was discussed and approved at the University Medical Unit's business meeting. Approval from the Hospital Ethics Committee was not necessary.

Table I

Exclusion criteria
Critical illness
Reduced conscious level
Marked cognitive impairment
Insufficient knowledge of English language
Neurological dysfunction impeding communication
Severe psychiatric or behavioural problems

Table II

Data gathered	Data derived
Gender	-
Date of birth	Age
Postcode	SIMD quintile (see below)
Clinical problem	Body system
Number of prescribed medications	-

Table III Females were significantly older than males (p = 0.016)

Gender composition				
	n	%		
Males	29	54		
Females	25	46		
Demographic data				
	Mean	*Std Dev*	*Range*	*Missing*
Age (years)	67	17	33–94	1
Males*	62	16	33–89	1
Females*	73	17	33–94	0
SIMD quintile	3.5	1.0	1–5	2
Prescribed medications	7.4	4.1	0 20	1

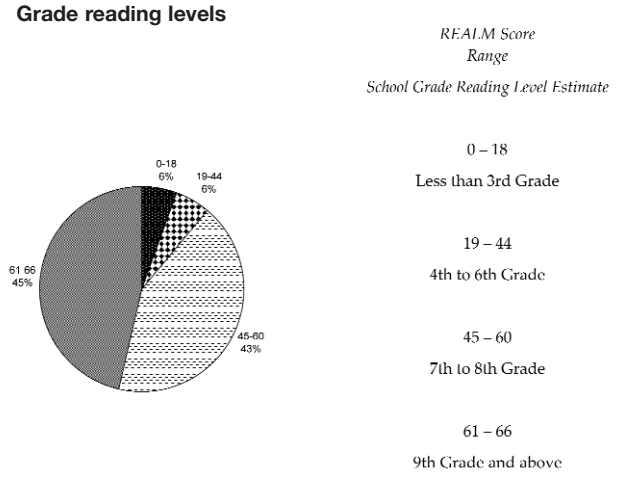
Results

Of the sixty patients found suitable for inclusion, six (10%) declined participation. Fifty-four patients agreed to be assessed. Their baseline characteristics are shown in Table 3.

Overall Literacy

The range in REALM scores was 0 to 66 with a median literacy score of 60. An approximate USA school grade reading level can be derived from the REALM score band into which each result falls. The frequencies of each REALM score band in this patient group are shown in Figure 1.

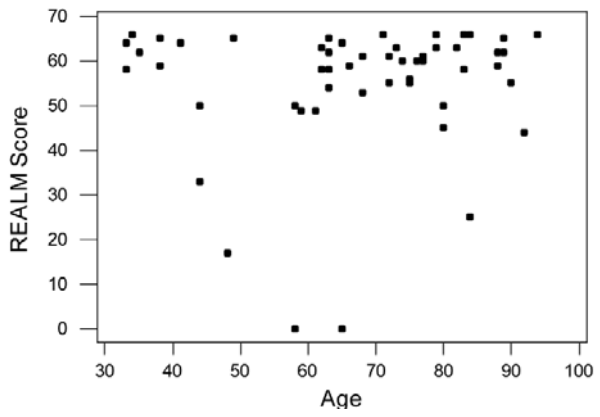
Figure 1 REALM categories correlating to USA School Grade reading levels



Factors Influencing Literacy

There were no significant differences in REALM score between men (median 59) and women (median 60), however a greater negative skew on the male cohort's distribution was noted.

Figure 2 Plot of REALM score against age



No correlation was observed between REALM score and age as shown by Figure 2. There was no detectable difference in REALM scores between socioeconomic groups. REALM scores were not found to be related to any particular diseased body system nor to the number of medications on the drug chart.

Discussion

The demographic data are anecdotally in keeping with the unit's expected patient profile. The female cohort is significantly older than the male cohort and the mean SIMD quintile was 3.5 implying moderate social deprivation. Previous studies have identified the latter as a risk factor for poor literacy.

Our results demonstrate a significant burden of illiteracy. 55% of our patients were functionally illiterate with a reading level less than that achieved by the US ninth grade (fourteen year-olds). The median literacy score in this study correlates with the reading level expected of the seventh or eighth grade (twelve to fourteen-year-olds). 12% had a reading level equivalent to or poorer than the sixth grade (eleven-year-olds).

Interestingly, the same REALM questionnaire applied to rheumatoid arthritis patients in this hospital demonstrated a much lower prevalence of functional illiteracy at 18%.[1] This may reflect socio-economic differences in the wider catchment area from which rheumatology patients are referred for tertiary review.

The majority of participants might be expected to have difficulty understanding patient-orientated literature. Furthermore, they may be unable to comprehend directions for taking medications thus adversely affecting compliance. Return appointments are organised by sending written notes to the patients' homes. Failure to attend outpatient clinics may therefore in part be attributable to poor literacy.

Gender, age, number of medications taken and clinical problem were not associated with the patient's level of literacy. Thus these data do not allow us to identify groups that may be at high risk of poor literacy.

Limitations

The number of patients in each socioeconomic category was probably insufficient to demonstrate an association between poverty and poor literacy that the authors suspect might be proven in a larger study. A larger sample size would increase the likelihood of correctly identifying such factors that predispose to problems with reading.

Inter-observer bias was not assessed. Due to the methodology, this could have potentially influenced the comparison of literacy between men and women.

Whilst the REALM score has been validated as a tool for assessing literacy, it does so indirectly. The authors agreed that its application was rapid and uncomplicated thus increasing the number of patients that could be tested and their willingness to be recruited. Nevertheless, a more detailed questionnaire might give a superior assessment of literacy. The REALM score has been validated against a US population sample, however there is no reason to suspect it is a poor indicator of reading ability in the UK.

Further Work

Further work should concentrate on identifying patients with functional illiteracy. The REALM assessment is sufficiently rapid that it could be applied at the initial visit to a general practitioner or as part of the routine nursing admission assessment in hospital. Measures such as increasing verbal and pictorial information available, dosette boxes for medications or reminder telephone calls in advance of clinical appointments might be considered for those found to have poor literacy. Many of these measures may be most easily delivered by the primary health care team. An awareness of illiteracy must be ensured among medical, paramedical and nursing staff.

Conclusions

Functional illiteracy is a significant problem in general medical in-patients in this unit. It might affect understanding of clinical information, drug compliance and attendance for outpatient follow-up. All patients

should therefore have their literacy status considered. The REALM tool provides a quick and simple means of assessing literacy and could be made routinely available in various healthcare settings.

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