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Health Information Literacy among Healthy Older Irish Adults

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Abstract

Background: Health Literacy (HL) is important because substantial numbers of the Irish population (38.8%) are ignorant of their HL. Research has shown that poor HL is associated with poorer health. Older people may be further disadvantaged by deteriorating vision, hearing or other physical problems which may impact HL. With the aging demographic, it is important that HL issues are examined in this population to help identify potential avenues for improvement.

Methods: This study utilized a validated health literacy assessment tool to profile a sample of older adults in terms of health information access and utilization. Assessing the effect of providing a short educational presentation in terms of their HL scores was completed using a test re-test experimental design with the NVS (Newest Vital Sign) HL assessment tool.

Results: Of the participants recruited 40% had limited HL. The General Practitioner (GP) was considered by 80% of participants to be the first preference for sourcing health information. While 80% of the sample had Internet access at home, only half of them used it to source health information, but that 50% had substantially higher HL scores than the other 50%. The sample was too small to show any significance in terms of the educational intervention but did indicate a need for further study.

Conclusion: The study confirmed that a cohort of older Irish people has difficulties with HL. The finding pertaining to better HL skills in those who used the Internet to source health information is interesting and requires further research.

Keywords: Health; Literacy; Older; Adult

Introduction

The World Health Organization defines health literacy (HL) as representing "the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health" [1-3]. Poor HL is associated with less healthy choices, riskier behavior, poorer health, less self-management and more hospitalization [2]. A 2011 European Union (EU) survey of HL found that a substantial component (38.8%) of Irish adults had "limited" HL which was similar to findings in other EU countries [1]. This survey also found that there was much greater variation in HL scores as people aged and a tendency in general for HL scores to diminish somewhat with age.

Currently, 11.6% of Ireland's population is over 65 years [4] and this is set to rise to 21% by 2046 [5]. As this population change occurs and more people with chronic conditions live longer, greater numbers of older people will be attempting to navigate healthcare information and services on a regular basis. In this context, it is important to begin to examine the issues older people in particular face with HL. This will help identify steps which may facilitate older people improving HL and ways in which healthcare information can be made more accessible for this population. Improvements in HL have been shown to improve overall health management including treatment/medication compliance, more confidence and self-reliance in patients, more effective and reduced use of healthcare services as well as corresponding improvements in patient safety [6]. To date, relatively little is known about current health information access, ease of understanding health information and objective health literacy levels in older Irish adults. Even less is known about the likely impact of brief educational interventions in terms of improving health literacy.

Aims and Objectives

The main aim of this pilot study was to profile a sample of older adults in terms of health information access and to assess the effect of providing a short educational presentation in terms of their health literacy scores. The more specific objectives were as follows:

- To profile where, for what purpose and how often a sample of older adults seek out health information.
- To determine how easy (or difficult) the sample finds it to understand health information obtained from various sources.
- To assess health literacy levels, as measured by accuracy of reading and interpreting a nutrition label (Newest Vital Sign (NVS) Test: A Health Literacy Assessment Tool for Patient Care and Research [7]).
- To assess the impact of a short educational intervention
- To examine the relationship between demographic variables and health literacy scores.

The hypothesis was that older people are willing and able to learn new skills and that an educational intervention that clearly and succinctly explains, in this instance, how to read / interpret a nutritional label, would significantly improve health literacy scores.

Methods

This study utilized a validated health literacy assessment tool. The questionnaire (the Health Information Survey) elicited both demographic data and data on the participants' use of health-related information. This allowed for examination of association between variables and patterns of use of health-related information in this sample population. A test re-test experimental design was used to assess the impact of a brief educational intervention on health literacy scores. The Newest Vital Sign (NVS) was used to assess the health literacy scores. The NVS is a validated measure of functional health literacy developed for use in primary care settings [8]. It is freely available for use (accessible online) and was used in the recent European Union HL Survey [1].

This test-re-test approach allows for measurement of baseline health literacy scores and measurement following the educational intervention, thereby providing objective hard data on the effect of the educational intervention. The HIS elicited both demographic data and data on the participants' use of and ease of understanding of health-related information. This allowed for examination of associations between variables and patterns of use of health-related information in this sample.

Additionally, Marshall et al. [9] discuss the likelihood that this measure may be more acceptable to people than tests which appear to be simply assessing reading ability. The *NVS* is based on a nutrition label from an ice cream container. Participants are given the label and then asked six questions about it and are scored accordingly. The NVS was chosen because it was a validated measurement tool and it was considered that it would be most acceptable to participants. For the purpose of this group-based study, participants were provided the nutrition label and asked a series of visually presented questions for which they provided written answers. This varies from the typical administration method for the NVS whereby individuals are presented a copy of the nutrition label and asked a series of questions by the examiner with oral responses recorded.

Sample

A local Active Retirement Association (ARA) was used to recruit a convenience sample of volunteers for this study. Inclusion criteria will be those aged 55 years or older (which is the age range within the ARA) who are living in the community and available and willing to attend on the appointed day and time. Exclusion criteria will be anyone with known adult dyslexia or anyone with known cognitive impairments (Table 1).

Inclusion Criteria	Exclusion Criteria
55 years or older	Known adult dyslexia
Living independently	Known cognitive impairments / memory problems
Available to attend on date and time specified	Unavailable to attend on date and time specified

Table 1: Selection criteria.

To access an appropriate potential pool of participants, a local ARA was approached for permission to recruit volunteers at one of their regular meetings. The ARA is representative of the target population of "older persons". It was estimated that approximately 10 participants would be sufficient to address the objectives of the study. While acknowledging the risk of bias and lack of generaliseability, it would still allow for identification of key factors for consideration in future study / work in this area.

Following recommendation from the Ethics Committee, it was agreed that a control group would be included. This was to allow for a more robust evaluation of the effectiveness of the educational intervention, controlling for the possibility that familiarity with the assessment tool (NVS) might influence the repeat test. Consequently fifty percent of the participants were randomised to receive the educational intervention before the re-test (group 1) whereas the other fifty percent received the educational intervention after the re-test, at the end of the session (group 2).

Data collection

All participants were asked to complete the NVS to establish baseline HL scores. Group 1 then had the educational intervention consisting of a PowerPoint presentation of approximately 10 minutes duration on how to read a nutritional label. Meanwhile, Group 2 completed the HIS. Both groups then repeated the NVS test. Finally, Group 1 completed the HIS while Group 2 had the opportunity to receive the educational intervention.

Data analysis

Data was entered into IBM's statistical software package, SPSS (Statistical Package for Social Sciences) version 21, which was used to analyze the data. SPSS was selected because it would enable conduct of all planned analysis, is a widely recognized and validated statistics tool for quantitative research and has a relatively user-friendly interface [10].

Data cleaning was performed in SPSS by running frequencies on each variable and the output screened for any discrepancies – e.g. values which fell outside the possible range and / or any missing data.

Frequencies and descriptive statistics were performed for all questions.

Study limitations

While only a pilot study the sample size is a major limitation of this study. The study encountered two significant operational difficulties in relation to participant recruitment. Firstly, the original ARA which had agreed to host the study had to suspend meetings following identification of pyrite in their meeting hall. Another ARA was then

approached who agreed to facilitate the study at short notice. However on the appointed day, many of the ARA were attending a funeral of an ex-member of the ARA who had died in the previous days. Unfortunately this limited the numbers of participants recruited and the study time could not be extended. Consequently only ten individuals were recruited for the study which is a limitation of the study. The gender imbalance (only one man recruited) was also a limitation.

Results

Demographics characteristics

There was only one man in the recruited sample. The other two key demographic factors, age ranges (above 55 years) and education level demonstrated broader ranges (Table 2, Figure 1).

Demographic Factors	n = 10	Number	%
Gender	Males	1	10%
	Females	9	90%
Age	55-64 years	5	50%
	65-74 years	2	20%
	75 years or older	3	30%
Highest Education Level	Lower secondary	2	20%
	Upper secondary	5	50%
	Technical/vocational qualification	1	10%
	Third level degree or higher	2	20%

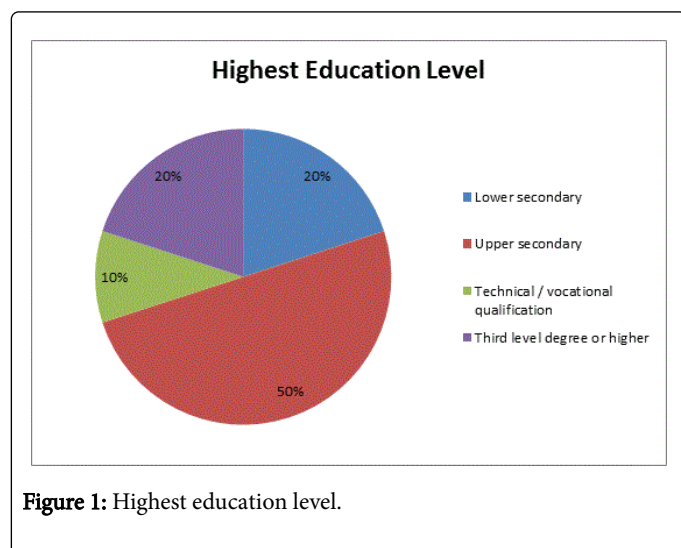**Table 2:** Demographics characteristics.

Figure 1: Highest education level.

NVS scores

The mean baseline NVS score for the study participants was 3.3 (SD = 2.710). 40% had scores of 3 or less (out of a maximum score of 6).

The mean repeated (second) NVS score for the study participants was 3.2 (SD = 2.898).

The Active Group mean went from 4.4 (SD = 2.074) at baseline, to 4.0 (SD = 2.550) post intervention. The Control Group mean went from 2.20 (SD = 3.033) to 2.4 (SD = 3.286) upon repeat (Table 3).

	Mean NVS Score Baseline	Mean NVS Score Repeat
Overall	3.3 (SD=2.710)	3.2 (SD = 2.898)
Active	4.4 (SD = 2.074)	4.0 (SD = 2.550)
Control	2.2 (SD = 3.033)	2.4 (SD = 3.286)

Table 3: NVS scores.

Health information survey data:

Regarding potential sources of health information, consulting the GP was ranked highest, with 80% indicating that this would be their first preference. This was followed by the pharmacist with 60% ranking this as either second or third preference.

There were various reasons older people sought health information. All of the participants (100%) sought health information for themselves for an on-going medical condition, with 90% also seeking it about a new medical condition for themselves. Other reasons included for family, sensitive topics and general interest.

The frequency of seeking health information was most frequently given as 1-2 times per year (90%), followed by once a month (10%).

80% of the sample had Internet access at home. However of those with Internet access, only 50% utilized the Internet as a health information source. Of those 50%, (n = 4) all had higher level NVS baseline scores with a mean of 5.0 (SD = 0.816). The corresponding 50% who did not use the Internet as a source of health information had a mean baseline NVS score of 3.25 (SD = 3.302).

In terms of difficulty understanding health information, Internet health information fared worst with 40% ranking it as difficult or very difficult. This was followed by medication instructions on packaging and printed health leaflets which were both ranked difficult or very difficult by 30% of participants.

Information from a General Practitioner (GP) was considered easiest to follow with 100% ranking it as easy or very easy. Information from a medical specialist was also well understood with 80% ranking it as easy or very easy. Similarly information from pharmacists was considered in this category by 70% of the sample.

There were no correlations found between any demographic factors and any of the findings.

Discussion

The overall mean baseline NVS scores for this sample at 3.3 (SD = 2.710) is in line with the EU HL Survey results for Ireland which had means of 3.635 (all ages) and 2.733 (over 55 years) [1]. The slightly better mean baseline score in this study sample for the older population, may be explained by the study's NVS format which was written (rather than the standard oral questioning), and / or the characteristics of the study sample being from an ARA rather than a random sample of the older population.

A NVS score of 3 or less is considered indicative of limited health literacy [8]. This study sample had 40% which fell into this category (NVS scores of < 3). Again this is in line with the EU HL Survey results for Ireland which showed 42.4% with such NVS scores [1]. This confirms that a considerable cohort of older Irish people has substantial difficulties with health literacy and it is a topic which warrants further attention.

It is difficult to explain why the baseline NVS scores were twice as high in the active group than those in the control group. It may have been just a consequence of the small sample size.

Two participants in the active group achieved the maximum score of 6 at baseline. This only allowed potential for 3 individuals to improve after the intervention, further reducing the effective sample size. The fact that 2 of those 3 actually disimproved after receiving the educational intervention is puzzling. It may have been the presentation was too difficult to follow or it may have been that for some people the whole study was just too daunting and they disengaged. Other factors to consider are that the community centre had some audible noises from adjoining areas that may have been distracting. Also that the topic might be better explained on a one to one basis, rather than in a group of peers where a reluctance to ask questions may have prevailed (no questions were asked). In short, it was not an ideal educational environment. However, these possibilities are all speculative and due to the small sample size, no definitive conclusions can be reached.

While the sample was too small to provide any significant data, nonetheless these findings are evidence of the complexity of health literacy and how challenging it can be to implement effective ways to improve such skills for individuals. More intensive sustained education programmes such as the "Expert Patient Programme" (EPP) in the UK, in which groups of patients undergo a 30 hour training course over six weeks to improve self management of chronic conditions, have shown some encouraging results [6,11]. However, other studies have cautioned that findings pertaining to EPP are equivocal [12-14]. This again emphasises the complexity of the challenges in this area.

The Health Information Survey (HIS) provided three notable findings. Firstly it confirmed the GP to be the primary and most trusted source of health information, with 80% considering their GP as their first preference for such information. This is in line with other studies [15-17].

Secondly, of the 80% with Internet access, interestingly, only half of those used it as a health information source. The group that did use the Internet in this way had higher health literacy skills (NVS score mean of 5.0). However, due to the small sample size, this was not considered statistically significant. Nevertheless, this finding is in line with literature research which indicate that those with higher education or higher socioeconomic status are more likely to use the Internet to seek health information [15,18-21], and that "those with lowest levels of HL have the least access to health information" with public policy wrongly assuming that availability of information equates to the "understanding and confidence to use it" [22]. This is further confirmed by Van-Deursen [23], who found specifically that aging along with lower education levels contributed to "operational and skill-related problems" in relation to accessing online health information.

Thirdly, Internet health information was considered the most difficult to understand with 40% rating it difficult or very difficult, followed by medication packaging information and health leaflets (both at 30%). Readability of Internet health information is frequently considered poor [24,25], so such the finding in relation to Internet

health information is not surprising. In relation to other health information, interestingly, Sahm et al. [26] (2012) reported that only 9.4-15.9% of Irish adults reported difficulty with understanding medication packaging instructions, whereas 20.3-48.9% reported difficulty understanding medical leaflets. However, this research was not reporting from an older age population. Difficulties with older people understanding medication instructions are nonetheless well documented in the literature in the context of medication compliance [27-30].

Conclusion

While fully acknowledging the limitations of this study, the findings are nevertheless evidence of the complexity of health literacy and the challenges it presents for older people. The study confirms that a considerable cohort of older Irish people has substantial difficulties with health literacy and it is a topic which warrants further attention. The finding which showed the trust and confidence placed by older people in their GP illustrates potential for this relationship to be explored further in terms of patient education. The finding pertaining to better health literacy skills in those who used the Internet to source health information is interesting and requires further inquiry in this population.

There is discussion in the HL literature in recent years that rather than focusing on patients' deficiency in HL skills, more attention needs to be placed on healthcare systems and professionals and what can be done to make health information more accessible, i.e., removing the barriers. It is argued that HL problems should be seen as a "mismatch" between the complexity of health information provided, and the HL skills of patients [31-33]. Consequently, every healthcare encounter is an opportunity for good quality and accessible health information to be imparted and to ensure key elements are understood. This can be done if healthcare professionals are aware of the HL difficulties people face (and its consequences) and have the time, skills and constant vigilance to communicate effectively with each individual patient on every occasion. In this context, simple strategies such as the use of plain language (in both written and verbal communications) and using techniques such as "teach-back" as a means of assessing comprehension in patient encounters may facilitate some progress with this important challenge for twenty-first century healthcare.

Conflict of Interests

The authors declare that no conflict of interest exists in relation to this article and that this article has not been published previously in any other journal.

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