



Assessment

All Aspects of Health Literacy Scale (AAHLS): Developing a tool to measure functional, communicative and critical health literacy in primary healthcare settings

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ABSTRACT

Objective: Our aim was to develop and pilot a tool to measure health literacy in primary health care settings, encompassing functional, communicative and critical health literacy.

Methods: Following consultation with providers and users of primary health care we developed a fourteen-item self-report scale, which was piloted on 146 participants. The reliability, content and construct validity of the scale was investigated as well as relationships between scores on the scales and participant characteristics.

Results: The overall scale had adequate reliability (Cronbach's alpha = 0.74), though reliability of the subscales was less consistent. Principal component analysis indicated that scale items loaded on four factors, corresponding to skills in using written health information; communicating with health care providers; health information management and appraisal assertion of individual autonomy with regards to health. Overall scores and different subscale scores were associated with ethnic minority status, educational level, and self-rated health status, though the picture was complex.

Conclusion: Health literacy is a complex and evolving construct. Nevertheless, we succeeded in developing a brief measure relating to different health literacy competencies, beyond functional literacy skills.

Practice implications: Assessment using the AAHLS can provide important information for health care practitioners about the health literacy needs and capabilities of service users.

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1. Introduction

The concept of health literacy originated within the US public health arena and is broadly defined as 'the capacity of an individual to obtain, interpret and understand basic health information and services in ways that are health-enhancing' [1]. Health literacy is now understood as a social determinant of health impacting on health outcomes for patients with a range of conditions [2–4]. There is a growing recognition that inadequate health literacy contributes to health inequalities as it is more prevalent among lower socioeconomic groups, ethnic minorities, the elderly and those with long-term conditions or disabilities [1]. Health workers are urged to assess the health literacy of service users [5] in order to identify service users who might need additional support. However, they are confronted with contrasting conceptualisations

of this term and little guidance about the sort of assessment that would be most appropriate, especially in socially deprived and ethnically diverse areas.

Recent reviews of existing measures of health literacy suggest a degree of dissatisfaction among communities of researchers and healthcare providers regarding the theoretical underpinnings of current measures, their reliability and validity, and suitability to real life healthcare settings [6–8]. Measuring health literacy is likely to be a particular challenge as it is an emerging and evolving construct [9]. Initially researchers defined health literacy quite narrowly and closely related to reading, writing and numeracy skills as 'being able to apply literacy skills to health related materials such as prescriptions, appointment cards, medicine labels, and directions for home health care' [10]. The Test of Functional Health Literacy in Adults (TOFHLA), the Rapid Estimate of Adult Literacy in Medicine (REALM) and the Set of Brief Screening Questions (SBSQ) were developed to assess these skills, either through direct testing of reading abilities [10–12] or self-report [13,14].

Subsequent reconceptualisations of the health literacy construct have argued that individuals need a wider range of

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cognitive and social skills for dealing with and acting on health information in all its presentations, beyond basic reading and writing skills [15–17]. There has been increasing interest in developing definitions of health literacy based on service users' own understandings of the term [18–20] and in understanding health literacy in its social and institutional context. Papanicolaou suggests that competencies in health literacy should be seen as distributed within the individual health service user's immediate social circle [21]. Others argue that focusing only on the health literacy skills demonstrated by the service user misses the contribution of health care providers in supporting or undermining the achievement of health literacy [22–24].

Other dimensions of health literacy measures that have come under scrutiny are their applicability, feasibility and acceptability. Some measures take up to half an hour to administer (approximately 22 min in the case of the TOFHLA), and require that administrators have special training and skills which need frequent refreshing and updating [25]. Putting service users in the position where they are struggling to read out loud can evoke feelings of shame and embarrassment [26]. There is also the issue of the cultural and gender specificity of health literacy skills which are being assessed [27,28]. Stimulus materials developed in the US, for example the nutritional label for a tub of icecream [12], may be unfamiliar to service users in other countries. More generally, different health systems may demand different key health literacy skills, whether it is being able to fill in health insurance forms in the US [14] or understanding the public health context of schistosomiasis in China [29]. Health literacy measures need to reflect local health priorities and belief systems, and in the UK, the experiences of patients who do not speak English as a first language [30,31].

1.1. Study aims

With all this in mind, as primary healthcare based clinicians and researchers our goal was to create a measure of health literacy which would be appropriate to use in primary care settings in Tower Hamlets. This is an inner London borough characterised by a mixture of vibrant social and cultural activity, social deprivation and ethnic diversity [32]. We wanted to develop a tool which was quick and easy to use in primary care contexts, took account of local knowledge and expertise and addressed a range of health literacy skills, using Nutbeam's health promotion orientated model [15]. Nutbeam describes three levels of health literacy: basic/functional literacy, which corresponds to basic reading and writing skills and basic knowledge of health conditions and health systems; communicative/interactive literacy, communicative and social skills which can be used to extract information and derive meaning from different forms of communication and to apply new information to changing circumstances; and critical literacy, the advanced cognitive and social skills, which can be applied to critically analyse information, and to use this information to exert greater control over life events and situations relating to individual and community level wellbeing goals.

We also intended the measure would be able to achieve different goals: to act as a screening tool to provide population-level information for commissioners and managers of local primary health and public health services; to alert health practitioners to individual health literacy needs and competencies and to evaluate the impact of local patient education initiatives which were at least partly designed to improve aspects of health literacy, such as expert patient self-management programmes [33], and ESOL (English as a Second or Other Language) classes focusing on health [34].

2. Methods

2.1. Project design

Our first step in designing the new measure was to undertake a review of published research on health literacy definitions and concepts, and on its measurement. Next, we drew up a list of potential items and then presented them in the course of a local consultation exercise consisting of 10 interviews with health service managers and commissioners, and seven focus groups with health workers and local service users. We received some very useful feedback in these sessions. We were repeatedly advised to simplify the language and administration of the measure (we subsequently reduced response options from a 5-point to a 3-point scale featuring the prompts "rarely", "sometimes" and "often") and were offered ideas for new original items. We ran a small pre-pilot involving healthcare assistants undertaking health checks with new patients in GP surgeries, to test the ease of use of the scale and its face validity with health care staff and patients. Finally we undertook the pilot study in three community and five primary healthcare settings in Tower Hamlets.

2.2. Creation of the measure

The measure items were constructed to reflect the dimensions of health literacy in Nutbeam's [15] definition encompassing functional, communicative and critical health literacy. For functional health literacy items, we reviewed standardised self-report measures devised by Chew et al. [13,14] as well as questionnaires previously used with healthcare users in Tower Hamlets in a social marketing campaign [32]. Items were selected to assess patients' ability to read health information; writing ability, and access to support networks (see questions FQ1–FQ4 in Table 2). We did not retain all the items or the original wording of the US research, as participants in our consultation exercise found the sentence construction too complex, or felt that the questions related to the US health system. Bearing in mind recent reconceptualisations of health literacy as a set of "distributed competencies", an aggregate score for items 1 and 2 was calculated to look at relationship between limited functional health literacy and access to support.

A review of existing measures and a wider exploration of the literature on patient communication skills suggested that Nutbeam's category of communicative health literacy could be separated into two components: information gathering and processing skills, and interactive skills needed for successful consultations with health providers. We adapted items from Ishikawa et al.'s self-report items relating to information gathering aspects of communicative health literacy [35] into a single item to assess patients' willingness to access and use multiple sources of information about their health ('Are you someone who likes to find out lots of different information about your health?'). Three further items (questions Com Q1–Com Q3 in Table 2) were developed from research identifying key patient communication skills, such as asking questions or requesting clarification, which have been found to improve satisfaction and outcomes from health consultations [36–39].

The definition of critical health literacy is also diffuse and requires clearer conceptualisation [40]. Existing research has focused on information appraisal [35,41,42], but Nutbeam's definition suggests that this aspect of health literacy also involves taking a critical and reflexive stance vis-a-vis health information, considering issues of the relevance and reliability, and integrating knowledge of the social determinants of health and skills in community-level action [43]. To construct our seven critical health literacy items, we drew from existing research not only within the

health literacy field, but also relating to media literacy [44], social capital [45] and psychological empowerment [46]. Critical health literacy items Cr2–Cr4 (see Table 2) reflect skills in the information appraisal aspect of health literacy, and ability to evaluate the relevance and validity of different kinds of health information (questions Cr2 and Cr3 were adapted from Ishikawa et al. [35] and question Cr4 was suggested by one of the participants in a consultation focus group). The remaining questions in this section (Emp1–Emp3) address capabilities for empowerment at the level of community and social engagement. We faced a challenge in devising items to assess understandings of and ability to act on social determinants of health, identified by the WHO as a key aspect of health literacy [47]. We reviewed studies, which have used structured measures and questionnaires to assess the priority that individuals place on social determinants rather than individual lifestyle choices and behaviours [5] and included one question relating to respondents' judgement of the relative importance of these factors [48,49]

2.3. Data collection

A total of 146 participants were recruited for the pilot study. The majority were approached by a member of the research team in the waiting room of their local GP practice. Additionally, a number of participants (27%) were recruited via local health education programmes held in community facilities. We suggested that participants had the material read to them by one of the research team as we did not wish to exclude those with reading difficulties, or others tending to babies or young children who literally had their hands full. We also gave participants the option to read the material by themselves, as we did not have access to a private room in our study settings and were aware that some individuals would not be comfortable with verbally answering questions about health issues in a public setting. Sixty one (42%) of the participants chose to read the measure by themselves. Administration of the scale took approximately 7 min on average. Given the ethnic mix of Tower Hamlets, we anticipated that a number of participants would not be fluent in English. The largest ethnic minority in Tower Hamlets, comprising about 33% of the population is Bangladeshi, overwhelmingly from the Sylhet region of Bangladesh [32] and speakers of Sylheti, a dialect of Bengali. We therefore had the items translated into Sylheti by a bilingual health worker, and then checked by two others for accuracy. As Sylheti is a purely oral language and does not have a written form this version was recorded on a CD and used as a reference by a bilingual research assistant attached to the project who used this method to administer the items to 35 individuals (46% of the Asian sample).

Socio-demographic data were collected via a self-report questionnaire included age, gender, ethnicity, years in education, highest level of qualification, ESOL level (for those in participating health education programmes) as well as some general health markers, including health status, presence/absence of a long term health condition and use of local primary care services.

3. Results

3.1. Socio-demographic and health factors

Socio-demographic and health information are displayed in Table 1. As a non-randomised sampling method was used, the study does not claim to be representative of the general population of Tower Hamlets. Tower Hamlets has a young, ethnically diverse population. Over 50% of the population belongs to an ethnic group other than white British; as pointed out above, about a third of the total population are of Bangladeshi origin. In the study sample, 65% of the population identified as belonging to an ethnic group other

Table 1
Socio-demographic and health information.

N = 146	
Age (years)	Mean age: 38 years (SD = 15.37) Range: 15–82 years
Gender	Females: 114 (78%) Males: 32 (22%)
Ethnicity	Asian: 81 (56%) Black: 5 (3%) Mixed race: 2 (1%) White: 51 (35%) Other: 7 (5%)
Highest level of qualification	No qualifications: 55 (39%) GCSE/O levels/secondary school certificate: 22 (16%) A levels: 7 (5%) Undergraduate degree: 31 (22%) Postgraduate degree: 25 (18%)
General health rating	Poor: 16 (11%) Fair/ok: 40 (28%) Good: 68 (47%) Very good/excellent: 21 (15%)
Long term health condition	Yes: 40 (28%) No: 100 (69%) Don't know: 5 (3%)
Time since last visit to GP	Within last week: 34 (23%) Within last month: 43 (30%) Within last 6 months: 48 (33%) Within last year: 12 (8%) More than one year: 8 (6%)

than White British, of whom 56% identified as Asian. In the current study, Asian participants were purposively recruited to reflect the high level of unmet healthcare needs in this population [50]. Tower Hamlets has a slightly higher male to female ratio but the sample did not reflect this, with significantly higher numbers of women probably because most recruitment took place in GP surgeries which are more frequently attended by women, either on their own behalf or with their children [51]. Moreover, the health education programmes involved in the research included female only ESOL classes. Tower Hamlets has a particularly young population, with the third largest percentage of 20–34 year olds (37%) of all local authorities in the country. Fifty nine percent of the population are 15–44 year olds compared with 42% of this age group in the country as a whole. The average age of participants in the current study was 38 years old.

Forty percent of the sample said they had no formal educational qualifications. This can be compared with local borough-wide statistics, which describe 40% of the population are at or below NVQ Level 1 [52] which corresponds to 5 good passes at GCSE or high school certificate.

Twenty eight percent of the sample reported that they had a health problem, which affected their everyday life. The sample appeared to be relatively frequent attenders of primary health care settings, with nearly half reporting that their previous visit had been within the last month.

3.2. Scores on AAHLS items

Scores on the different items are displayed in Table 2. We did not establish a cut-off for “adequate” health literacy skills in the different areas. However, we noted that relating to functional health literacy 22% reported that they “often” needed help to read health information and a further 24% “sometimes” needed help. Of these a third said they could “often” access help, and 27% reported they could “sometimes” get help. We noted higher scores on the

Table 2
Item scores, cross-tabulations and factor loadings.

AAHLS item	Item score (mean and SD)	Chi-square tests: value and significance					Principal component analysis			
		Ethnicity (white/other)	Highest qualification	Age	Health rating	Gender	Factor loadings			
							Factor 1	Factor 2	Factor 3	Factor 4
<i>Functional health literacy</i>										
FQ1 How often do you need someone to help you when you are given information to read by your doctor, nurse or pharmacist?	2.33 ± 0.81	34.91 <0.00**	45.43 <0.00**	8.47 0.206	13.42 0.04*	4.17 0.12	0.87	0.308	0.04	0.14
FQ2 When you need help, can you easily get hold of someone to assist you?	1.74 ± 1.21	22.31 <0.00**	13.59 0.33	11.92 0.22	9.53 0.39	6.36 0.10	−0.71	0.08	−0.06	0.31
FQ3 Aggregate of Q1 and Q2							0.75	0.27	0.09	0.18
FQ4 Do you need help to fill in official documents?	2.23 ± 0.873	33.81 <0.00**	62.15 <0.00**	13.790.0.03*	32.45 <0.00**	1.69 0.43	0.76	0.19	0.00	0.27
<i>Communicative health literacy</i>										
Com Q1 When you talk to a doctor or nurse, do you give them all the information they need to help you?	2.71 ± 0.592	18.11 <0.00**	6.86 0.55	11.48 0.08	6.33 0.39	0.84 0.66	0.28	0.69	0.6	0.09
Com Q2 When you talk to a doctor or nurse, do you ask the questions you need to ask?	2.57 ± 0.636	16.80 <0.00**	26.70 0.00**	4.10 0.66	2.49 8.56	0.71 0.70	0.22	0.68	0.06	0.20
Com Q3 When you talk to a doctor or nurse, do you make sure they explain anything that you do not understand?	2.71 ± 0.542	4.03 1.34	7.12 0.524	2.87 0.83	6.64 0.36	5.19 0.07	−0.10	0.53	0.14	0.36
<i>Critical health literacy</i>										
Cr 1 Are you someone who likes to find out lots of different information about your health?	2.26 ± 0.767	2.74 0.26	12.37 0.14	11.66 0.07	15.43 0.02*	2.40 0.30	0.04	0.30	0.67	−0.01
Cr 2 How often do you think carefully about whether health information makes sense in your particular situation?	2.21 ± 0.659	5.30 0.07	5.70 0.68	19.86 <0.00**	7.52 0.28	1.92 0.38	0.31	0.03	0.67	0.05
Cr 3 How often do you try to work out whether information about your health can be trusted?	2.17 ± 0.736	8.75 0.01*	4.37 0.82	23.38 <0.00**	4.78 0.57	0.36 0.84	−0.21	−0.07	0.81	0.04
Cr 4 Are you the sort of person who might question your doctor or nurse's advice based on your own research?	2.06 ± 0.784	0.86 0.65	24.41 <0.00**	17.10 <0.00**	13.02 0.04*	0.03 0.98	0.14	0.07	0.33	0.66
Emp 1 Do you think that there plenty of ways to have a say in what the government does about health?	1.56 ± 0.719	1.01 0.64	11.97 0.15	5.41 0.49	8.70 0.19	4.22 0.21	0.03	0.20	−0.19	0.67
Emp 2^a Within the last 12 months have you taken action to do something about a health issue?	1.43 ± 0.828	0.08 0.78	3.43 0.49	2.05 0.56	5.08 0.17	0.55 0.46	0.01	0.19	0.53	0.17
Emp 3^a What do you think matters most for everyone's health? (tick one answer only)	2.38 ± 0.927	0.05 0.95	3.32 0.50	4.37 0.22	1.55 0.67	0.86 0.34	−0.12	0.37	−0.08	−0.67
(a) information and encouragement to lead healthy lifestyles (b) good housing, education, decent jobs and good local facilities										

^a Emp 2 and Emp 3 are two-response items; "yes/no" (Emp 2) and "(a)/(b)" (Emp 3).

* Significant at 0.05 level.

** Significant at 0.01 level.

Table 3
Bivariate analysis.

	Total HL score	Functional health literacy	Communicative health literacy	Critical health literacy
Sex	0.06	0.05	0.48	0.35
Ethnicity	<0.001**	<0.001**	<0.001**	0.86
Age	0.24	0.23	0.98	<0.001**
Education level	<0.001**	<0.001**	0.001**	0.03*
Health rating	0.01*	<0.001**	0.55	0.04*
Health condition	0.82	0.08	0.02*	0.66
Time since last GP appointment	0.64	0.02*	0.27	0.64

The relationship between total scale score and subscale scores with sex, ethnicity and reported presence of a long-term health condition was investigated using *t*-tests; the Welch statistic was used when the assumption of equal variance did not hold. For age, education level, health rating and time since last GP appointment the Kruskal–Wallis test for trends across groups was used.

* Significant at 0.05 level.

** Significant at 0.01 level.

communicative literacy items, suggesting confidence in this area. The critical health literacy items had the lowest average scores. In response to the final question relating to understanding of social determinants of health, 64% said that wider social and economic factors were more important than individual behaviours for influencing overall health.

3.3. Statistical analysis

Cronbach's alpha co-efficients were calculated to examine the internal consistency of the scale and its component subscales. We carried out a principal component analysis with varimax rotation to examine the factor structure of the scale. We investigated the relationship between service users' scores on the measure and individual characteristics as well as health ratings using *t*-tests, ANOVAs and appropriate non-parametric operations.

3.3.1. Reliability: internal consistency

Cronbach's alpha of the total scale was 0.75, which is satisfactory. For the three sub-scales, Cronbach's alpha for the functional items (without item 2 but including aggregate scores of items 1 and 2) was 0.82 (good); for the communicative items 0.69 (adequate); and, for the critical items 0.42 (poor/unacceptable).

3.3.2. Content validity: factor structure

Principal component analysis with varimax rotation was conducted to explore the structure of the underlying factors and whether each item loaded onto factors as expected, given that the scale was designed to measure three aspects of health literacy (functional; communicative; and critical health literacy). The factor analysis showed four factors with eigen values greater than 1 (3.78, 1.83, 1.38 and 1.31, respectively) accounting for 59% of the variance (26.64%, 13.09%, 9.82%, and 9.37%, respectively). The functional health literacy questions all loaded onto the first factor, and communicative health literacy questions loaded on the second factor. The critical health literacy items loaded on the third and fourth factors with items relating to information management and appraisal forming one cluster, and items relating to asserting individual autonomy with regards to health forming another cluster. The question on understanding of social determinants of health loaded negatively onto this last factor.

3.3.3. Construct validity

The relationship of subscales scores to each other was also investigated. Scores on the functional health literacy items were significantly associated with communicative health literacy items ($r = 0.393$, $p < 0.001$) and to a lesser, though still significant extent with critical health literacy items ($r = 0.59$, $p = 0.036$). There was also a significant association between communicative and critical health literacy items ($r = 0.186$, $p = 0.017$).

3.3.4. Bivariate analysis (see Table 3)

There was no difference in health literacy scores between men and women, though ethnicity was associated with total health literacy scores, and with functional and communicative health literacy, with black and minority ethnic (BME) respondents having lower scores. Greater age was associated with lower critical health literacy scores only. Higher education level was associated with higher scores on all aspects of the scale, though with a weaker relationship to critical health literacy. Higher overall scores as well as scores on the functional and critical health literacy subscales appeared to predict better individual health rating, though this association did not hold for communicative health literacy. There was evidence that those who reported the presence of a long-term health condition had higher communicative health literacy scores. Those who had previously attended their GP surgery more recently had lower functional health literacy scores. Conducting a series of Chi-square tests on each item and participant characteristics provided more detail about these associations (see Table 2). There did not appear to be any association between the questions relating to active involvement in the community level health initiatives (Questions Emp 1–Emp 3) and any participant characteristics or self-assessed health.

4. Discussion and conclusion

4.1. Discussion

This paper reports on efforts to design a tool to assess health literacy which is brief, easy to use in community health settings, is congruent with the concerns of users and providers of health services, and encompasses a range of health literacy competencies. It provides a useful addition to existing health literacy measures as it constitutes a new attempt to integrate recent theorising and debate around the health literacy concept into a practical tool appropriate for diverse populations. There are three key novel aspects of this scale. The first is the inclusion of a question on access to support for making sense of written health information which will prompt health care providers to consider functional health literacy as a “distributed” as well as “individual” competence. Secondly, our communicative health literacy questions draw on an evidence based patient communication skills as employed in actual health consultations. Third, our critical health literacy questions were more explicitly linked to recent theoretical understandings of this concept beyond previous researchers' emphasis on information appraisal.

Overall our measure had good internal consistency, though this fell below adequacy for the critical health literacy items, highlighting the challenges in identifying common overall competencies and appropriate measures in this area. Further factor analysis suggests that at least two underlying constructs

which might underlie critical health literacy, namely “information appraisal” skills and “individual autonomy” regarding health care. This factor encompassed willingness to assert personal control over healthcare decisions and a positive view about the possibilities of individual contributions to community health outcomes, in line with aspects of Zimmerman’s concept of “psychological empowerment” [46].

The associations between scores on the subscales and various individual characteristics described above suggest that health providers should take care in making assumptions about the health literacy competencies of different community members. We did find an association between age, BME status and education level and difficulties with different aspects of health literacy, though these relationships were complex and not always in line with the more blanket assertions prompted by other research looking at these relationships which have used functional literacy assessment only [53,54].

Although the World Health Organisation has asserted the importance of being able to make sense of and act on information on the social determinants of health as a key aspect of health literacy [55], it is still unclear how such competencies might contribute to individual or community health outcomes. We included a question relating directly to the understanding of social determinants of health in the AAHLS and found widespread support for an understanding of health as influenced most by wider social and economic factors, though this understanding did not predict individual health ratings. The factor analysis further suggests that such an understanding may be associated with a lower level of self-rated individual autonomy with regards to health.

We recognise that this study does have a number of limitations. The unique social and cultural nature of our study site is likely to affect the generalisability of our findings, not only the prevalence of social deprivation within Tower Hamlets, but also the numerical dominance of one BME group, namely Bangladeshis of Sylheti origin. A number of these are first generation immigrants into the UK from a country with a very different healthcare system perhaps requiring different health literacy skills to those needed in inner city London. Tower Hamlets also has a history of community-level social action regarding public health and grass-roots special interest organising [56] which might contribute to understandings of the social determinants of health.

Using a self-report questionnaire also has its drawbacks, compared to real-time assessment of health literacy capabilities, given that an admission of literacy problems may well be perceived as potentially stigmatising by participants. We did not check the association between our measure and other standardised measures of health literacy such as TOFHLA and REALM as a way of exploring the validity of the AAHLS. However, evidence already exists on the association between the sorts of questions relating to functional health literacy common to our measure and the work of Chew et al. [13,57] and direct tests of reading. We also acknowledge that using mixed methods in the administration of the AAHLS, with some participants reading the questionnaire, and others having it read to them may have disadvantaged those with poor reading skills who nevertheless chose to read the measure themselves. It may be worth noting that other studies using self-report health literacy measures have also used multiple administration methods [14,35] in order to include participants who would struggle to fill in a questionnaire by themselves. Additional variance may have been introduced by also including a group who were read a Sylheti translation of the questionnaire. Further studies are needed to compare groups receiving different forms of administration of the AAHLS.

Health literacy is an evolving construct and there is no agreed definition of the concept or its components. We adopted a different approach to defining communicative and critical health literacy to other researchers [35,41]. Any approach using questionnaires and checklists will necessarily entail an oversimplification of a very complex set of competencies and should be complemented by qualitative and ethnographic research methods [8,58] to derive a more nuanced and contextualised understanding of health literacy as a social practice, rather than a set of predefined skills responsive to quantitative measurement and analysis.

4.2. Conclusions

This paper reports on the development and piloting of a new measure of health literacy based on Nutbeam’s expanded model of this construct [15]. We hope this will stimulate further debate about how Nutbeam’s framework should be translated into practical approaches to measurement and thus contribute to further refinement of the health literacy concept. We investigated the face validity, feasibility, internal consistency and construct validity of the measure and its components. Further research needs to be undertaken with this measure with larger and more nationally representative service user populations. Moreover, the predictive validity of the scale needs further investigation with regards to objectively demonstrated health outcomes in populations with specific health conditions such as diabetes, heart disease or cancer.

4.3. Practice implications

Assessment of health literacy has yet to become a clearly established aspect of clinical practice or population-level health needs assessment. Warnings about the potential disbenefits of the routine use of health literacy screening instruments should be heeded, in terms of the potential embarrassment to service users and negative labelling [59]. However, use of a more comprehensive health literacy assessment tool such as the AAHLS can highlight not only service user’s needs for additional support in accessing health care, but also the strengths and capabilities that they can bring to healthcare encounters and initiatives to promote community health. There is a growing appreciation that health promotion programmes need to aim further than a directive transmission of information between health care providers and users which require functional health literacy skills only. A further possible use of the AAHLS is as an evaluation measure to identify how well health promotion efforts support the development of all aspects of health literacy.

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References

- [1] Sihota S, Lennard L. Health literacy: being able to make the most of health. London: National Consumer Council; 2004.
- [2] DeWalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: a systematic review of the literature. *J Gen Intern Med* 2004;19:1228–39.
- [3] Schillinger D, Grumbach K, Piette J, Wang F, Osmond D, Palacios J, et al. Association of health literacy with diabetes outcomes. *J Amer Med Assoc* 2002.
- [4] Wolf MS, Gazmararian JA, Baker DW. Health literacy and functional health status among older adults. *Arch Intern Med* 2005;165:1946.
- [5] Department of Health. Choosing health: making healthy choices easier, http://webarchive.nationalarchives.gov.uk/+www.dh.gov.uk/en/Publicationsand-statistics/Publications/PublicationsPolicyAndGuidance/DH_4094550 (accessed 22.06.11).
- [6] Jordan JE, Osborne RH, Buchbinder R. Critical appraisal of health literacy indices revealed variable underlying constructs, narrow content and psychometric weaknesses. *J Clin Epidemiol* 2011;64:366–79.
- [7] Pleasant A, McKinney J. Coming to consensus on health literacy measurement: an online discussion and consensus-gauging process. *Nurs Outlook* 2011;59:95–106.e1.
- [8] Friedman DB, Corwin SJ, Dominick GM, Rose ID. African American men's understanding and perceptions about prostate cancer: why multiple dimensions of health literacy are important in cancer communication. *J Community Health* 2009;34:449–60.
- [9] Nutbeam D. The evolving concept of health literacy. *Soc Sci Med* 2008;67:2072–8.
- [10] Parker RM, Baker DW, Williams MV, Nurss JR. The test of functional health literacy in adults: a new instrument for measuring patients' literacy skills. *J Gen Intern Med* 1995;10:537–41.
- [11] Davis TC, Michielutte R, Askov EN, Askov EN, Williams MV, Wiess BD. Practical assessment of adult literacy in health care. *Health Educ Behav* 1998;25:613–24.
- [12] Weiss BD, Mays MZ, Martz W, Castro KM, DeWalt DA, Pignone. Quick assessment of literacy in primary care: the newest vital sign. *Ann Fam Med* 2005;3:514–22.
- [13] Chew LD, Bradley KA, Boyko EJ. Brief questions to identify patients with inadequate health literacy. *Fam Med* 2004;36:588–94.
- [14] Morris NS, MacLean CD, Chew LD, Littenberg B. The Single Item Literacy Screener: evaluation of a brief instrument to identify limited reading ability. *BMC Fam Pract* 2006;7:21.
- [15] Nutbeam D. Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century. *Health Promot Int* 2000;15:259–67.
- [16] Pleasant A, Kuruvilla S. A tale of two health literacies: public health and clinical approaches to health literacy. *Health Promot Int* 2008;23:152–9.
- [17] Peerson A, Saunders M. Health literacy revisited: what do we mean and why does it matter? *Health Promot Int* 2009;24:285–96.
- [18] Brugge D, Edgar T, George K, Heung J, Laws BM. Beyond literacy and numeracy in patient provider communication: Focus groups suggest roles for empowerment, provider attitude and language. *BMC Public Health* 2009;9:1–11.
- [19] Jordan JE, Buchbinder R, Osborne RH. Conceptualising health literacy from the patient perspective. *Patient Educ Couns* 2009;79:36–42.
- [20] Begoray DL, Kwan B. A Canadian exploratory study to define a measure of health literacy. *Health Promot Int* 2011.
- [21] Papen U. Adult literacy as social practice: more than skills. Abingdon, Oxon: Psychology Press; 2005.
- [22] Schillinger D, Piette J, Grumbach K, Wang F, Wilson C, Daher C, et al. Closing the loop: physician communication with diabetic patients who have low health literacy. *Arch Intern Med* 2003;163:83–90.
- [23] Paasche-Orlow M, Schillinger D, Greene S, Wagner E. How health care systems can begin to address the challenge of limited literacy. *J Gen Intern Med* 2006;21:884–7.
- [24] Gordon EJ, Wolf MS. Beyond the basics: designing a comprehensive response to low health literacy. *Am J Bioeth* 2007;7:11.
- [25] Welch VL, Van Geest JB, Caskey R. Time, costs, and clinical utilization of screening for health literacy: a case study using the newest vital sign (NVS) instrument. *J Am Board Fam Med* 2011;24:281–9.
- [26] Wolf MS, Williams MV, Parker RM, Parikh NS, Nowlan AW, Baker DW. Patients' shame and attitudes toward discussing the results of literacy screening. *J Health Commun* 2007;12:721–32.
- [27] Peerson A, Saunders M. Men's health literacy: advancing evidence and priorities. *Critical Public Health* 2009;19:441–56.
- [28] Institute of Medicine. Health literacy: a prescription to end confusion. Washington, DC: Committee on Health Literacy, National Academy Press; 2004.
- [29] Wang R. Critical health literacy: a case study from China in schistosomiasis control. *Health Promot Int* 2000;15:269–74.
- [30] Greenberg D. A critical look at health literacy. *Adult Basic Educ* 2001;11:67–79.
- [31] Speros C. Health literacy: concept analysis. *J Adv Nurs* 2005;50:633–40.
- [32] London Borough of Tower Hamlets. Joint Strategic Needs Assessment 2009/2010; 2010, http://www.towerhamlets.gov.uk/lgs/701-750/732_jsna.aspx (accessed 31.05.11).
- [33] Lynall A, Jordan H. Co-creating health: engaging communities with self management. Report and recommendations. London: The Health Foundation; 2009.
- [34] Bromley by Bow Centre. Helping people who are learning English speak to their doctor; 2008, <http://www.bbcb.org.uk/news.php/166/helping-people-who-are-learning-english-speak-to-their-doctor> (accessed 04.06.11).
- [35] Ishikawa H, Takeuchi T, Yano E. Measuring functional, communicative, and critical health literacy among diabetic patients. *Diabetes Care* 2008;31:874–9.
- [36] Cegala DJ. Patient communication skills training: a review with implications for cancer patients. *Patient Educ Couns* 2003;50:91–4.
- [37] Harrington J, Noble LM, Newman SP. Improving patients' communication with doctors: a systematic review of intervention studies. *Patient Educ Couns* 2004;52:7–16.
- [38] Cegala DJ, McClure L, Marinelli TM, Post DM. The effects of communication skills training on patients' participation during medical interviews. *Patient Educ Couns* 2000;41:209–22.
- [39] Griffin SJ. Effect on health-related outcomes of interventions to alter the interaction between patients and practitioners: a systematic review of trials. *Ann Fam Med* 2004;2:595–608.
- [40] Chinn D. Critical health literacy: a review and critical analysis. *Soc Sci Med* 2011;73:60–7.
- [41] Steckelberg A, Hülfenhaus C, Kasper J, Rost J, Mühlhauser I. How to measure critical health competences: development and validation of the Critical Health Competence Test (CHC Test). *Adv Health Sci Educ* 2009;14:11–22.
- [42] Levin-Zamir D, Peterburg Y. Health literacy in health systems: perspectives on patient self-management in Israel. *Health Promot Int* 2001;16:87–94.
- [43] Mogford E, Gould L, DeVoght A. Teaching critical health literacy in the US as a means to action on the social determinants of health. *Health Promot Int* 2011;26:4–13.
- [44] Bergsma LJ, Carney ME. Effectiveness of health-promoting media literacy education: a systematic review. *Health Educ Res* 2008;23:522.
- [45] Hawe P, Shiell A. Social capital and health promotion: a review. *Soc Sci Med* 2000;51:871–85.
- [46] Zimmerman M. Psychological empowerment: Issues and illustrations. *Am J Community Psychol* 1995;23:581–99.
- [47] WHO. Closing the gap in a generation: health equity through action on the social determinants of health; 2008, http://www.who.int/social_determinants/thecommission/finalreport/en/index.html (accessed 26.03.10).
- [48] Collins P, Abelson J, Eyles J. Knowledge into action? Understanding ideological barriers to addressing health inequalities at the local level. *Health Policy* 2007;80:158–71.
- [49] Eyles J, Brimacombe M, Chaulk P, Stoddart G, Pranger T, Moas O. What determines health? To where should we shift resources? Attitudes towards the determinants of health among multiple stakeholder groups in Prince Edward Island, Canada. *Soc Sci Med* 2001;53:1611–9.
- [50] Stevens A. Health care needs assessment: the epidemiologically based needs assessment reviews. Radcliffe Publishing; 2004.
- [51] Banks I. No man's land: men, illness, and the NHS. *Brit Med J* 2001;323:1058.
- [52] Nomis – official labour market statistics, <https://www.nomisweb.co.uk/reports/lmp/la/2038431871/report.aspx#tabqals>; n.d. (accessed 08.06.11).
- [53] Paasche-Orlow MK, Parker RM, Gazmararian JA, Nielsen-Bohman LT, Rudd RR. The prevalence of limited health literacy. *J Gen Intern Med* 2005;20:175–84.
- [54] Wagner Cv, Knight K, Steptoe A, Wardle J. Functional health literacy and health-promoting behaviour in a national sample of British adults. *J Epidemiol Community Health* 2007;61:1086–90.
- [55] WHO. Commission on social determinants of health – final report. http://www.who.int/social_determinants/thecommission/finalreport/en/index.html (accessed 27.08.09).
- [56] Dench G, Gavron K, Young MD. The New East End: kinship, race and conflict. London: Profile Books Ltd.; 2006.
- [57] Wallace LS, Rogers ES, Roskos SE, Holiday DB, Weiss BD. Brief report: screening items to identify patients with limited health literacy skills. *J Gen Intern Med* 2006;21:874–7.
- [58] Papen U, Walters S. Literacy, learning and health. London: National Research and Development Centre for Adult Literacy and Numeracy, Department for Innovation, Universities and Skills; 2008, Available at: <http://www.nrdc.org.uk>.
- [59] Paasche-Orlow MK, Wolf MS. Evidence does not support clinical screening of literacy. *J Gen Intern Med* 2008;23:100–2.