Health Literacy & Depression in the Context of Home Visitation. Smith, Sandra[1]; Moore, Elizabeth[2]. [1]University of Washington, Seattle, WA; [2]Applied Inference, Seattle, WA.

Background

Parental health literacy (HL) is a determinant of child health and a source of health disparities. Most research has framed HL as reading/listening ability in a medical setting and focused on low HL as a cognitive deficit in patients. Associations are established between low HL and adverse healthcare outcomes. However, the pathway linking reading/listening skills and outcomes is unclear, especially the link between parents' reading ability and child health outcomes. HL intervention studies remain rare, especially community-based interventions customized to diverse low-literacy populations and interventions focused on improving skills.

Depression impairs approximately 7.5 million parents in the U.S. each year and may put 15 million children at risk for adverse health outcomes. Pregnancy and postpartum stresses can trigger or exacerbate parental depression up to one year after childbirth. If untreated, depression can persist for years. Parental depression is associated with negative child health impacts extending into adulthood.

A few studies link low literacy with depression; however, the association is not well understood. Depression and low HL are thought to be significant barriers to child and adult health services and to home visitation (HV) services.

Using a socio-cultural model of literacy and the World Health Organization definition of HL, we explored HL in parents as an underlying construct that develops through social interaction and reflection and involves an array of skills that enable a parent to manage personal and child health, and healthcare. We hypothesized that depression impairs HL and impedes efforts to promote HL through HV.

Methods

In this study funded by the National Library of Medicine, we analyzed an AHRQ/NIH database of 2,572 parent/child dyads compiled in a 2006-08 quasi-experimental six-site nationwide study using multiple waves of measurement and a matched comparison group. Cohort families participated in HV programs augmented to develop parents' reflective skills. Visitors monitored depression, health- and healthcare-related practices, and surrounding family conditions at baseline and six-month intervals for up to 36 months using the Life Skills Progression instrument, which includes scales for depression and HL. We examined differences in initial depression ratings for demographic subgroups and explored patterns of change in HL among depressed vs. not-depressed parents.

Results

Correlation analysis showed that at each of four assessments better depression scores were consistently and positively correlated with use of information and services (r=21-22, p<.001) and with self-management of personal and child health (r=42-49, p<.001). A mixed model ANOVA with repeated measures was used to examine whether the change in parents' HL over 12-18 months in enhanced HV is influenced by depression status. Overall, parents made significant improvements in HL (p<.001). As expected, depressed parents demonstrated lower baseline HL scores than not-depressed parents; however, depressed parents achieved greater gains (p<.001).

Conclusions

While depression is linked with lower parental HL, after one year of enhanced HV, vulnerable parents were better able to manage personal and family health and healthcare, especially if depressed. Enhanced HV could be an effective channel to develop HL as a life skill among new healthcare decision makers for growing at-risk families, and to improve depression.

Adapting the Newest Vital Sign Health Literacy Measure for Deaf American Sign Language Users. McKee, Michael[1]; Noel, Rachel[1]; Panko, Tiffany[1]; Weiss, Barry[2]; Fiscella, Kevin[1]; Paasche-Orlow, Michael[3]; Zazove, Phillip[4]; Pearson, Thomas[1]. [1]University of Rochester, Rochester, NY; [2]University of Arizona, Tucson, AZ; [3]Boston University School of Medicine, Boston, MA; [4]University of Michigan, Ann Arbor, MI.

Background

Research Objective: To create a health literacy measure in American Sign Language (ASL). Background: Higher rates of inadequate health literacy are seen among non-English-proficient minority groups and are believed to be higher with individuals with disabilities. There are no reliable ways to evaluate health literacy among Deaf ASL users. Most current health literacy assessment instruments are not well suited for Deaf ASL users due to their reliance on phonetics, pronunciation, and extensive reading comprehension (difficult for visual language users). One instrument, however, the Newest Vital Sign (NVS), is potentially adaptable into ASL. The NVS assesses health literacy based on ability to answer 6 questions about a nutrition label. It incorporates both numeracy and reading literacy assessments, and is short enough to use in clinical settings.

Methods

To adapt the NVS into ASL (ASL-NVS), we created a computer interface for administering the ASL-NVS to both hearing and Deaf individuals using the following process: (a) translated (and back-translated) the English text in the original NVS questions (not nutrition label) into ASL through the use of a translation work group (consisting of two native Deaf signers, one ASL interpreter, one ASL translation work expert, and principal investigator), (b) created a computer-based survey interface for administration of the questions, (c) conducted in-depth individual cognitive interviews to evaluate the computer interface and the translated survey questions, and (d) made modifications based on feedback received from the interviews. Our version of the ASL-NVS is available in audio with English text support (for hearing individuals) and signing video with English text support (for Deaf ASL individuals).

Results

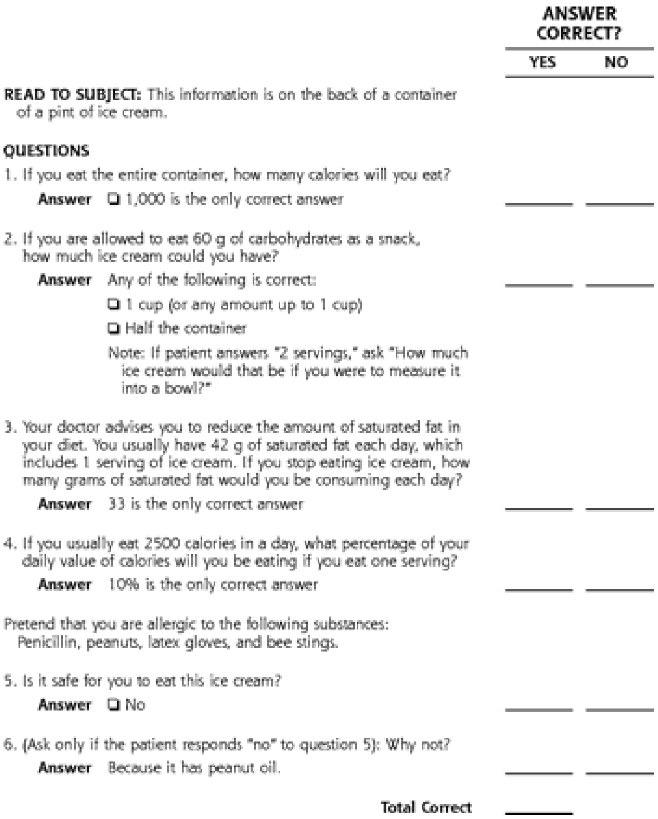
We have thus far completed nine cognitive interviews (out of 20 total projected). Participants were four hearing and five Deaf ASL users. They were mostly white (78%), female (60%), and middle-aged (mean: 50.2 years, range 41-66). The interviews revealed that the ASL-NVS questions (Figure 1) were well understood by both hearing and Deaf participants, and both groups reported good satisfaction with the computerized administration, though cognitive interviews revealed the need to tailor response options considered correct by the computer interface. Hearing participants on average scored higher than Deaf ASL users.

Conclusions

There is need for a health literacy tool that can be used with Deaf ASL users. We have completed initial work on the first such instrument by adapting the NVS for Deaf ASL users. Validation with a larger number of subjects is planned for the next phase of the study.

* Refer to next page for Figure 1.

Figure 1 * (Weiss, 2005)



	ANSWER CORRECT?	
	YES	NO
READ TO SUBJECT: This information is on the back of a container of a pint of ice cream.		
QUESTIONS		
1. If you eat the entire container, how many calories will you eat?		
Answer ☐ 1,000 is the only correct answer	______	______
2. If you are allowed to eat 60 g of carbohydrates as a snack, how much ice cream could you have?		
Answer Any of the following is correct:	______	______
☐ 1 cup (or any amount up to 1 cup)		
☐ Half the container		
Note: If patient answers "2 servings," ask "How much ice cream would that be if you were to measure it into a bowl?"		
3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes 1 serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?		
Answer 33 is the only correct answer	______	______
4. If you usually eat 2500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?		
Answer 10% is the only correct answer	______	______
Pretend that you are allergic to the following substances: Penicillin, peanuts, latex gloves, and bee stings.		
5. Is it safe for you to eat this ice cream?		
Answer ☐ No	______	______
6. (Ask only if the patient responds "no" to question 5): Why not?		
Answer Because it has peanut oil.	______	______
Total Correct	______	

The Impact of Dental Health Literacy and Acculturation on Oral Health Status of Recently Arrived Somali Refugees in Massachusetts. Hunter Adams, Jo[1]; Young, Samorga[1]; Cochran, Jennifer[1]; Rybin, Denis[2]; Doros, Gheorghe[2]; Paasche-Orlow, Michael[3]; Geltman, Paul[1].
[1]Massachusetts Department of Public Health, Boston, MA; [2]Boston University School of Public Health, Boston, MA; [3]Boston University School of Medicine, Boston, MA

Background
Refugees arrive in the United States with unmet health needs. In Massachusetts, oral health problems are the second most prevalent health problem of newly arrived adult refugees. Somalis are a large refugee population in Massachusetts, and in North America. This study asked how dental health literacy and adoption of Western practices (integration and acculturation) affect the oral health outcomes of Somali adults in Massachusetts.

Methods
The study was a cross-sectional survey of 439 Somali adults in Massachusetts who had arrived in the U.S. within the past 10 years. Instruments included assessment of oral health practices and experiences, oral English language skills (BEST-Plus), dental word recognition (REALD-30), and acculturation. All subjects had an oral examination with periodontal index and Decayed, Missing, and Filled Teeth (DMFT) scoring as outcomes. Stepwise multivariable regression models were used to assess factors associated with oral health outcomes.

Results
Among Somali males the mean number of decayed teeth was 1.02; among Somali females, 1.67. In contrast, in NHANES 2004, for U.S. adults, the respective means were 0.87 and 0.65. Participants had lower rates of lifetime history of disease (as measured by DMFT score). Among Somali males the mean DMFT score was 4.41, among Somali females, 6.28. In contrast, in NHANES 2004, for U.S. adults, the respective means were 9.95 and 10.7. After controlling for most known risk factors, individuals with low REALD-30 scores (0-22) were 1.30 times more likely to have lifetime dental disease (as higher mean DMFT score) as compared to those with high REALD-30 scores (95% CI=1.09-1.55.) Those with low (OR=0.76, 95% CI=0.63-0.93) and medium (OR=0.66, 95% CI=0.56-0.77) levels of acculturation were less likely to have dental disease, compared to those with high levels of acculturation. Not using a traditional stick brush was associated with higher DMFT score (OR=1.22, 95% CI=1.01-1.25). With respect to DMFT score, those who arrived 0-4 years ago were no different than those who arrived 7-10 years ago; however, participants who arrived 5-6 years ago were less likely to have high DMFT scores than those who arrived 7-10 years ago (OR= 0.74, 95% CI = 0.63-0.87). Somalis were more likely to have high DMFT scores than Somali Bantus (OR=1.5, 95% CI = 1.23-1.84).

Conclusions
A low level of dental health literacy and a high level of acculturation were both independently associated with worse lifetime history of dental disease. Using traditional dental sticks was protective, as was brushing teeth with a toothbrush. Additional factors significantly related to oral health status in the Somali population include: having health insurance, higher education, male gender, and ethnicity.

Who Gets a "Teach-Back"? Likelihood of Patients Being Asked to Repeat Doctors' Instructions by Language Preference, Education, and Race and Ethnicity. Jager, Andrew[1]; Wynia, Matthew[1]. [1]American Medical Association, Chicago, IL.

Background

To ensure patient comprehension, clinicians have been urged to use "teach-backs," in which the clinician explicitly asks the patient what he/she has recalled and understood from the discussion. While research suggests that clinicians are unreliable at detecting patients with low literacy, it is not known whether certain patient groups are more or less likely to be asked to teach-back clinicians' instructions.

Methods

We used results from the patient survey component of the Communication Climate Assessment Toolkit (C-CAT) to examine the likelihood of patients reporting a teach-back according to patient demographics. We examined patient-reported incidence of "always" being asked to repeat doctors' instructions, by patient education level, language preference, and race/ethnicity.

Results

Across 13 sites nationwide, 3,548 patients completed the survey; 32% were white, 14% were African-American and 48% were Latino/Hispanic; 31% did not speak English as a primary language and 20% had fewer than 9 years of formal education. Overall, 35% of patients reported receiving teach-backs, but there were significant variations across demographic groups. Lower educational attainment, non-English language speaking, and minority status were all correlated with greater likelihood of reporting always receiving teach-backs. Among those with less than 9 years of education, 43% reported receiving teach-backs, compared to 37% of those with 9-12 years and 28% of those with 13-16 years ($p<0.001$). Concerning race/ethnicity and language preference, Spanish-speaking patients (45%) and those reporting "Hispanic or Latino/a" ethnicity (39%) or "Black or African American" race (37%) were each significantly more likely ($p<0.0001$) to report teach-backs compared to whites (31%) and English speakers (31%) (all p-values <0.001). Education was independently important among Hispanic/Latino patients, with Hispanic/Latino patients with 12 or fewer years of education reporting teach-back more often than those with at least 13 years of education (38% vs 22%; $p<0.0001$). Similarly, white patients with 12 or fewer years of education were more likely to report teach-back compared to those with at least 13 years of education (30% vs 23%; $p<0.0001$). But among African American patients, education did not appear to have an independent effect on reporting use of teach-back (35% vs 33%; $p=0.2$).

Conclusions

Certain demographic groups are significantly more likely to report receiving teach backs from their physicians. While this study cannot pinpoint the underlying mechanisms or cues that could be influencing individual clinician decisions on when to employ teach-back, it appears that physicians use "teach-back" more often with less-educated and racial/ethnic and language minority patients.

Number of "Teach-Back" Attempts for Successfully Retaining Medication Information.

Bazaldua, Oralia[1]; Alford, Cynthia[1]. [1]University of Texas Health Science Center at San Antonio, San Antonio, Texas.

Background

Misunderstanding of medication instructions and information may have important clinical implications. Unfortunately, a number of studies reveal that most patients likely understand as little as 50% of health information they are told. The "Teach-Back" method is consistently recommended to enhance recall and comprehension of new concepts by patients. Despite the wide-spread recommendation to use this technique, there is little evidence in the primary literature to support its implementation. In one study, application of this interactive communication strategy by physicians, has been associated with good glycemic control in diabetic patients. However, the number of "teach-back" attempts necessary to reach a successful understanding of the specific concept is not known. In this study, a sub-analysis was performed to determine the number of attempts necessary for patients to explain 3 important aspects of their personal medications (name, dose, indication).

Methods

The objective of the primary study was to determine if pictograms enhance long-term recall of medication knowledge. This study was done with real patients that were not able to report the name, dose and indication for each of the medications they were already taking. Since the primary study was evaluating the effect of the pictograms, it was important for all patients to have complete knowledge of their medication regimen (name, dose, indication) at baseline. Thus, investigators filled-in the knowledge gaps that each patient had at baseline and implemented the "teach-back" technique until all patients were able to report 100% of the information correctly. The number of counseling attempts necessary to close the loop was documented.

Results

In 144 patients studied, the average number of medications per patient was 6.5. Only 21.5% of patients were able to successfully repeat information regarding their current medication regimen after only 1 education session. An additional 29% were successful after 2 "teach-back" loops and nearly 23% required 4 and 5 tries. In 144 patients, the average number of teach-back loops required to achieve 100% of the information correct was 2.6 times.

Conclusions

It will likely require at least two attempts to close the loop when using the teach-back method for medication instructions. This method may prove time consuming and thus limit its use in the practice setting. Innovative methods to improve the efficiency of using this strategy should be explored.

Conceptualising and measuring health literacy in the context of informed decision-making: insights and challenges. Smith, Sian[1]; Nutbeam, Don[2]; McCaffery, Kristen[1]. [1]University of Sydney, School of Public Health, Sydney, Australia; [2]University of Southampton, Southampton, United Kingdom.

Background

Over the last two decades, research investigating the impact of low health literacy on health outcomes has grown and generated ongoing discussion about the concept of health literacy, and how to measure it. Health literacy has traditionally been conceived as a set of basic functional skills (in reading and numeracy) applied to different health care contexts. Thus, health literacy measures have generally focused on functional aspects of literacy. Broader definitions of health literacy encompass a wider range of cognitive and social skills which enable people to use information to enhance their health and feel empowered to participate in health care decisions. To date, the role of health literacy in the context of informed or shared decision-making has been relatively under-explored despite increasing concern that a large proportion of the population may have difficulties participating in this process. In this paper we explore the concept and measurement of health literacy in the context of informed decision-making for bowel cancer screening.

Methods

This paper draws upon a series of qualitative and quantitative studies undertaken to inform the development and evaluation of a decision aid (DA) designed to support adults with low education and literacy make informed decisions about bowel cancer screening. Through this work, we explored the concept of health literacy, and the consequential challenges to determine appropriate measurement tools. We drew on findings from each stage of the project: (1) DA development and pilot testing using semi-structured interviews and survey work; (2) exploratory work with different education and literacy groups to explore their experiences and understandings of involvement in health care decision-making, and (3) DA evaluation in a randomised controlled trial (RCT) and interviews (post-RCT) with a selection of participants to explore how the DA influenced their decision-making and screening behaviour.

Results

The findings derived from the qualitative studies (pre-and post-RCT) and the randomized trial lends support to the broader concept of health literacy, extending beyond the functional approach. Through the former work, we observed that people used a range of skills to interpret and use the DA information to make informed decisions about screening. These included cognitive skills in analytical thinking, problem solving, risk comprehension and social/communicative skills in negotiating, questioning and advocating. This work also demonstrated that the socio-cultural context influences people's expectations and understandings of health information. For example, we found that people were surprised that the DA was not encouraging screening, possibly because screening information has traditionally been encouraged participation, focusing on the benefits with minimal information about the harms. In the randomized trial we used various measurement tools to assess informed decision-making. These focused on assessing people's ability to make an informed choice (conceptual and numeric screening knowledge, combined with consistent attitudes and behaviour), their preferences for involvement in screening decisions, decisional conflict (uncertainty in decision-making), self efficacy (confidence in decision-making), and DA acceptability/comprehension. These measures enabled us to capture the range of health literacy skills important for making informed decisions in this specific context.

Conclusions

Through our DA work with lower literacy adults, we were able to gain insight into how health literacy can be conceptualized and measured in the context of people making screening decisions. We conclude that making (informed) healthcare decisions potentially involves three types of health literacy as described by Nutbeam's (2000) model: functional, interactive and critical. Health care providers who are developing interventions to support health literacy abilities for informed decision-making need to consider how interactive and critical skills (as well as functional skills) influence people's ability to understand and act on information.

"Health Literacy Assessment Using Talking Touchscreen Technology" (Health LiTT) is a valid measure of health literacy. Yost, Kathleen[1]; Choi, Seung[2]; Waite, Katherine[2]; Lakhan, Manpreet[2]; Wolf, Michael[2]; Hahn, Elizabeth[2]. [1]Mayo Clinic, Rochester, MN; [2]Northwestern University Feinberg School of Medicine, Chicago, IL.

Background

The "Health Literacy Assessment Using Talking Touchscreen Technology" (Health LiTT) is a multimedia tool that administers three types of items commonly used to measure literacy (prose, document and quantitative) on a touchscreen computer. Our objective was to assess the validity of the Health LiTT by correlating scores for a 10-item Health LiTT short form (SF) with standard measures of health literacy (convergent validity) and by comparing mean SF scores across groups with different health literacy levels (known-groups validity).

Methods

The Health LiTT was developed using item response theory, resulting in a calibrated item bank of 82 items (R01-HL081485). With this calibrated item bank, health literacy can be assessed using a static SF or computer adaptive testing (CAT), both of which optimize the amount of information obtained while minimizing the assessment length. The item bank was calibrated in a diverse sample of 608 primary care patients in the Health LiTT field test. Ten items (four prose, three document and three quantitative) were selected from the item bank to create a SF that spanned the range of item difficulty and covered diverse content. IRT-based scores were determined by mapping item responses to the item calibrations determined in the field test. The 10-item SF was scored on a T-score scale, which has a mean of 50 and standard deviation of 10 in the field test sample. Higher scores indicate better health literacy.

A subset of 137 participants in the LitCog study of community-dwelling adults ages 55-74 (R01AG030611) completed the 10-item Health LiTT SF along with both the prose and numeracy sections of the Test of Functional Health Literacy in Adults (TOFHLA), the Rapid Estimate of Adult Literacy in Medicine (REALM) and the Newest Vital Sign (NVS). Spearman correlations between Health LiTT SF scores and scores for standard measures were calculated; correlations >0.45 were considered indicative of convergent validity. Known-groups validity was assessed using ANOVA to compare mean SF scores by category of total TOFHLA score.

Results

Of the 137 participants, 135 had evaluable Health LiTT SF data. The mean age was 62.5 years (SD 5.1), 23% had high school or less education and 54% were African-American. The mean T-score for the 10-item Health LiTT SF was 53.3 (SD 8.4) indicating that health literacy was slightly higher and less variable in this sample compared to the field test sample. Correlations between the Health LiTT SF and the total TOFHLA ($\rho=0.65$), REALM ($\rho=0.69$) and NVS ($\rho=0.56$) indicate excellent convergent validity for this SF. Correlations with the SF were slightly higher for the TOFHLA prose score ($\rho=0.67$) than the TOFHLA numeracy score ($\rho=0.51$). Correlations among the total TOFHLA, REALM and NVS covered a similar range ($\rho=0.68-0.73$). All p-values were <0.001. Mean SF scores were significantly different across inadequate (40.4), marginal (50.1) and adequate (57.1) TOFHLA categories ($F=60.6$; $p<0.001$), demonstrating excellent known-groups validity.

Conclusions

We demonstrated that the 10-item Health LiTT SF is a valid measure of health literacy. Additional research to demonstrate the validity of other Health LiTT SFs and CAT-generated Health LiTT scores is ongoing.

How usable are patient accessible Electronic Medical Records by underserved populations?. Vaughon, Wendy[1]; Zarcadoolas, Christina[1]; Czaja, Sara[2]; Levy, Joslyn[3]; Rockoff, Maxine[4]. [1]CUNY School of Public Health at Hunter College, New York, NY; [2]University of Miami Miller School of Medicine, Miami, FL; [3]Joslyn Levy & Associates, LLC, New York, NY; [4]Columbia University, New York, NY.

Background

Despite the growing popularity of Personal Health Records (PHRs) and patient Electronic Medical Records (EMRs), there is limited research on the ability of underserved patients to read and use this information. This study explored the readability, health literacy load and usability of patient-oriented EMRs with participants in underserved communities in New York City. The focus is cancer prevention, and the target patient population is low income, low-literacy and or/low health literacy and minority adults.

Methods

English speaking participants with no higher than a high school education (N=54) were recruited from programs in New York City. Health literacy was assessed using the Newest Vital Signs screening test. Participants took part in two hour usability testing sessions, where they performed tasks with three different online patient electronic medical records systems using hypothetical patient scenarios. We focused on three core components of portals; medication management, lab/test results, and health maintenance/disease prevention.

Results

Among our participants, we found almost unanimous enthusiasm about having access a record. Many saw it as a “civil right”. However, we identified many readability, health literacy, and navigation barriers. For example, key search words and phrases that consumers used did not match the language in the portals which made finding information difficult, thus a majority of users could not locate cancer screening information in one of the patient portals. Similarly, while most consumers could identify a patient’s cholesterol value on a cholesterol chart, when presented with a standard range, only half could correctly identify whether that number was normal or abnormal.

Conclusions

Today many EMR systems for patients are high barrier – hard to read and use. Both provider and patient EMRs hold great promise for improving health and reducing health care costs. They also can play an important role in reducing health disparities. Further research is needed to develop and evaluate cognitive and linguistic aiding tools and interface design guidelines that will optimize the usability of patient electronic medical records (EMRs), and to empirically demonstrate that EMR design informed by a rich model of health literacy and user centered design will result in increased patient use of these systems, more patient engagement with their health, and better health outcomes.

Social Support Improves Attendance to Outpatient HIV Medical Appointments for Low Health Literate Patients. Waldrop-Valverde, Drenna[1]; Ownby, Raymond[2]; Rodriguez, Allan[3]; Jones, Deborah[3]. [1]Emory University, School of Nursing, Atlanta, GA; [2]Nova Southeastern University, Fort Lauderdale, FL; [3]University of Miami, Miami, FL;

Background

Retention in HIV care is an essential component of long-term treatment success. Moreover, HIV positive persons are at risk for low literacy and cognitive impairment that may impede retention efforts. The challenges related to literacy and cognitive impairment common in persons infected with HIV may also affect interactions with care providers and others in the social network. Both satisfaction with HIV care providers and social support are linked to better appointment-keeping behavior in HIV and may confer protection against the potential effects of poor literacy and cognition on missed appointments. We postulate that a comprehensive framework for understanding the effects of health literacy on utilization of routine HIV care requires a broader understanding of the individual patient within his or her contextual environment. Therefore we prospectively tested factors associated with non-adherence to outpatient HIV clinic appointments over 28-weeks.

Methods

HIV positive patients receiving care in South Florida were enrolled in the study. HIV positive individuals who had never accessed HIV care were ineligible. Baseline and 28-week follow-up interviews plus medical record abstraction (MRA) were conducted. Assessments included demographics, the S-TOFHLA to measure health literacy, standardized neurocognitive tests, a social support questionnaire, and engagement with provider scale. MRA data was used to calculate percent appointment adherence (# attended appointments/ #scheduled appointments). Neurocognitive functioning was divided into executive, memory, psychomotor, and attention domains. Bivariate analyses, multiple regression and univariate analysis of variance were employed.

Results

Of 210 HIV positive patients enrolled, 197 completed the 28-week follow-up. Medical record abstraction for the 28-week observation period was completed on 206. Most participants were African American (83%) and nearly half were men (47%). Average S-TOFHLA scores were 79.46 (20.5% were categorized as inadequate). In bivariate analyses age, use of alcohol or drugs in the previous 28-weeks, undetectable HIV viral load at 28-weeks, CD4 cell count at 28-weeks, use of social support since becoming HIV positive, scores in the neurocognitive domain of attention, and total score on the S-TOFHLA were significantly associated with percent appointment adherence ($p < .10$) with lower health literacy related to better appointment adherence. Engagement with provider was unassociated with appointment adherence. Multiple regression analysis showed that age, social support, and attention were significantly related to appointment adherence ($p < .05$) (overall model: R2=.177, $p < .001$). Tests of the moderating effects of social support and health literacy on appointment adherence were non-significant; however, mediation analysis indicated that social support mediated the effect of health literacy on appointment adherence such that individuals with lower health literacy had better appointment adherence because they used available social supports more often.

Conclusions

Among a mostly racial/ethnic minority sample of HIV positive patients in care, social support may be a viable means to maintain adherence to outpatient medical appointments, particularly for those with lower health literacy. Further study to identify specific aspects of social support most effective to maintain appointment attendance can inform interventions designed to retain HIV positive patients in care. Supported by R21 MH084814

Using quantitative and qualitative data to inform the design of a tailored health literacy intervention: Trabajando Juntos/Working Together program. Valerio, Melissa[1]; Ghaddar, Saud[2]; Talavera-Garza, Liza[2]; [1]University of Michigan, School of Public Health, Ann Arbor, MI; [2]University of Texas-Pan American, Edinburg, TX.

Background

Limited health literacy is a major public health problem with substantial costs to individuals, society, and the healthcare system. Over 90 million US adults have limited health literacy with estimated costs of $106-236 billion annually. The contribution of limited health literacy to poor health outcomes and, consequently, health disparities, is well documented. The 2011 IOM Health Literacy Roundtable Workshop Report notes the paucity of a systematic approach to the evaluation of the influence of health literacy focused interventions on elimination of health disparities. In this study we report the process for the design of a tailored health literacy program "Trabajando Juntos/Working Together" (TJWT) to address health literacy disparities in Hispanic manufacturing workers.

Methods

Three phases of quantitative and qualitative data were collected to inform the design of the intervention. Phase I: 228 one-on-one interviews were conducted at eight manufacturing sites in South Texas to examine health literacy and health status of Hispanic workers. Self-reported health, health literacy (S-TOFHLA), and clinical measures (Hemoglobin A1c, cholesterol, and blood pressure) were collected. Phase II: Focus groups (N=26) were conducted to explore the health information needs and identify the perceived individual- and structural- level determinants of health in the manufacturing worker population. Phase III: Key informant interviews with 20 managerial-level representatives were conducted to assess the feasibility of introducing the TJWT at manufacturing worksites. Descriptive and logistic regression analyses were completed to assess survey findings and a grounded theory approach was used to analyze qualitative data.

Results

Phase I findings indicated that 1) when compared to state and county data, workers in our sample reported significantly higher rates of obesity and lower rates of healthy behaviors, health care coverage, and utilization of health screening services, 2) higher levels of health literacy were significantly associated with decreased odds of obesity (table), and 3) health care coverage significantly predicted health care access, utilization, and uptake of preventive services. Phase II findings identified 1) structural-level factors such as shift schedules and sick leave policies as challenges to maintaining a healthy lifestyle, 2) difficulty understanding lab results due to inadequate interpretation by health care providers, and 3) importance of taking into account worksite structure and personal family constraints in program content and delivery. Findings also identified the need for use of community health workers. Phase III findings identified that 25% of companies were currently or have in the past offered on-site health initiatives. Motivation for company participation included access to expertise and materials in health promotion and the potential for healthier employees and improved productivity.

Conclusions

The 3-phase study allowed for assessment of the need for a health literacy intervention in the population and for identification of key individual and structural-level factors for consideration in the design of the 6-session intervention. Findings were used to inform the approach and content of each of the theory-driven program sessions. The input of key stakeholders in informing the design of intervention content will allow us to more effectively target health literacy disparities in the Hispanic manufacturing worker population.

Table: Logistic Regression Models- Odds Ratios (95% Confidence Intervals)

	Obese[a]
Female	.84 (.43-1.64)
Age	
18-39	Ref
40-49	.68 (.33-1.39)
50+	.41 (.18-.95)*
High school degree	1.18 (.63-2.21)
Income < $20,000	.87 (.46-1.65)
Foreign-born	.93 (.51-1.72)
Physically active	.50 (.28-.90)*
Chronic condition	2.50 (1.32-4.71)**
S-TOFHLA score	**.94 (.898-.986)****
N	216

[a] An individual is classified as obese if his/her body mass index ≥30.

***p<.001, **p<.01, *p<.05

A theory-based health literacy intervention for HIV-related medication adherence. Ownby, Raymond[1]; Waldrop-Valverde, Drenna[2]. [1]Nova Southeastern University, Fort Lauderdale, FL; [2]Emory University, School of Nursing, Atlanta, GA.

Background

High levels of adherence to medication regimens for the treatment of HIV infection have been related to individuals' levels of health literacy. Since high levels of adherence are essential for optimal treatment outcomes and the prevention of viral resistance, interventions to promote medication adherence are needed. Given the relation between health literacy and adherence, enhancing individuals' health literacy may be a strategy to improve their medication adherence. Precisely how to improve HIV-infected patients' health literacy, however, is unclear.

The Information-Motivation-Behavioral Skills (IMB) model of health-related behaviors has been shown to be a useful base for HIV-related prevention and adherence interventions. The model states that a patient's health-related behaviors result from having adequate information and motivation to perform a health behavior, and the specific skills needed to implement the behavior (see figure 1 below). These factors are thus the basis for health behaviors such as medication adherence.

In this study, we used the IMB model as framework for the development of an automated and individually-tailored intervention to promote health literacy in persons with HIV infection.

Methods

The automated intervention consists of a series of screens presented interactively on a large touch screen computer that provides both information in text, picture, diagram, and animation formats. Text material is recorded and presented through speakers. The application addresses common misconceptions about HIV infection and its treatment, provides users suggestions on ways to coping with problems such as depression and substance dependence, and teaches specific techniques for medication adherence. Participants complete an initial assessment battery that includes measures of cognitive status, health literacy, mood, healthcare self efficacy, and HIV-related knowledge, motivation, and behavioral skills. Individuals' self report of the elements of the IMB model are assessed before and after they participate in the computer-based intervention.

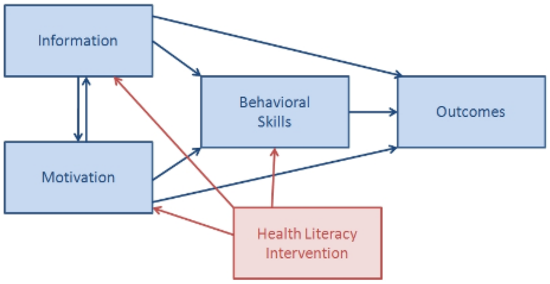
Results

Preliminary results show that participants (N = 70, of whom 40 were African American and 30 were white) showed a significant effect of the intervention on their information and behavioral skills though not for motivation ($p < 0.001$ for information; $p = 0.57$ for motivation; $p < 0.001$ for behavioral skills). Participants' baseline levels of health literacy as assessed by the Test of Functional Health Literacy in Adults were significantly related to changes in participants' information ($p < 0.001$) and behavioral skills ($p = 0.007$). Analyses showed a modest but nonsignificant increase in healthcare-related self-efficacy but no change in level of depression. Preliminary models suggest that the intervention is associated with a small and statistically significant improvement in medication adherence in patients whose baseline adherence is less than 90% as measured with electronic monitors.

Conclusions

These results suggest that an automated tailored information intervention can improve condition-related knowledge and self-reported behavioral skills in persons with HIV infection. Preliminary analyses show that the intervention may have an impact on adherence behavior and healthcare-related self-efficacy. The IMB model may be a useful framework for developing other interventions for disease-related health literacy.

Figure 1



Obesogenic Parent Behaviors in the Care of 2 Month Olds in the GreenLight Study: Role of Parent Health Literacy. Yin, H. Shonna[1]; Perrin, Eliana[2]; Sanders, Lee[3]; Bachus, Andrea[4]; Cerra, Maria[1]; Quesada, Daniela[3]; Throop, Beth[2]; Rothman, Russell[4]. [1]NYU School of Medicine, New York, NY; [2]UNC Chapel Hill School of Medicine, Chapel Hill, NC; [3]University of Miami Miller School of Medicine, Miami, FL; [4]Vanderbilt University School of Medicine, Nashville, TN.

Background

Studies have found that low health literacy (HL) may be associated with the development of obesity in children and adults. There has been limited study of "obesogenic" behaviors of parents in caring for their 2 month olds and their association with parental health literacy. We therefore sought to examine the relationship between obesogenic behaviors of parents of 2 month olds and parent HL.

Methods

Cross-sectional analysis of 2 month old children and their parents participating in a cluster randomized trial of a primary care-based early childhood obesity prevention program (GreenLight) involving 4 university pediatric resident clinics. English or Spanish speaking parents of healthy infants presenting for their 2 month check-up were enrolled. Health literacy was assessed using the STOFHLA, and obesity-related behaviors were assessed by parent report. Obesogenic behaviors were consolidated into the following categories: 1) Dietary practices (more formula than breastmilk, provision of sugary drinks, solid food introduced, puts cereal in the bottle, puts baby to sleep while drinking from the bottle daily, props the bottle when feeding >50% of the time, always tries to have child finish the breastmilk or formula, always immediately feeds when child cries), 2) Activity-related practices (no tummy time, >2 hours of TV watching). Multiple logistic regression analyses were performed to examine the relationship between HL and obesogenic behaviors. Covariates included caregiver age, race, ethnicity, country of birth outside of US, socioeconomic status; child age, insurance; and recruitment site.

Results

To date, 580 parent-child dyads have been enrolled (parent: 95.5% mothers, 50.0% Hispanic, 29.4% AA, 26.5% White, 51.2% non-US born, 25.4% non-HS graduates; child: 48.9% female, 87.8% insured by Medicaid). 12.5% of parents were categorized as having low health literacy (8.2% inadequate, 4.3% marginal). 84.1% reported obesogenic dietary practices (more formula than breastmilk (61.3%), sugary drinks (3.0%), solid foods (7.1%), cereal in bottle (11.0%), put child to sleep while drinking from bottle daily (26.3%), propped bottle half or more of the time (10.5%), always tries to get child to finish (35.0%), always immediately feeds when child cries (20.1%)). 20.8% reported obesogenic activity-related practices (no tummy time (14.9%), >2 hours TV watching (6.6%)). In adjusted analyses, caregivers with inadequate HL were over 4 times more likely to report obesogenic dietary practices compared to those with adequate HL (AOR=4.7, p=0.04). Those with inadequate HL were also more likely to report obesogenic activity-related practices (AOR=2.4, p=0.02).

Conclusions

Many parents of 2 month olds already report behaviors known to be associated with obesity at later ages. Low parent health literacy is associated with obesogenic behaviors related to both diet and activity. Through culturally relevant, low-literacy and low-numeracy counseling and materials that target these issues, the GreenLight intervention may be able to attenuate these behaviors and reduce the prevalence of obesity at age 2 years.

Liquid Medication Dosing Errors in Children: Role of Provider Counseling Strategies and Parent Health Literacy. Yin, H. Shonna[1]; Dreyer, Benard[1]; Moreira, Hannah[1]; Boettger, Susanne[1]; Mendelsohn, Alan[1]. [1]NYU School of Medicine, New York, NY.

Background/Research Question
Low parent health literacy (HL) has been linked to errors in dosing liquid medications for children. While it has been recommended that pediatric health providers use advanced communication strategies (ACS) such as teachback, demonstration, and pictographic instructions as part of medication counseling, there is limited study of current use of these strategies in the pediatric ED, and whether provision of a standardized measuring device results in additional benefit. We therefore sought to examine the relationship between liquid medication dosing errors and provider use of recommended medication counseling strategies, and the role of parent HL.

Methods
Parents enrolled by phone after child brought in for care in one of 2 urban public hospital pediatric EDs. Inclusion criteria: child <8y, primary caregiver, English/Spanish spoken, daily dose short course (<14 days) liquid medication prescribed. Dependent variable: Ability to correctly report and measure amount within 20% deviation of prescribed dose (parent interview, in-person dosing assessment, chart review to verify dose). Primary predictor variables: parent HL (STOFHLA), provider use of ACS (demonstration of dose with device by provider, verbal teachback, demonstration of dose by parent, drawing/picture), ED provision of standardized measuring device (parent interview). Potential confounders: sociodemographics (caregiver age, language, ethnicity, country of birth, socioeconomic status; child age). Multiple logistic regression analyses performed to determine individual associations between ACS, device provision and ability to correctly report and measure the prescribed dose. In addition, contrast coding was used to determine: 1)whether ACS, provision of device, or both combined are superior to no strategy, 2)whether both combined are superior to either alone, 3)whether ACS only is superior to provision of device only.

Results
278 caregivers were assessed (73.6% Hispanic, 61.9% non-US born, 84.5% low SES (Hollingshead 4 or 5), 48.9% non-HS graduates, 37.4% low HL (24.1% inadequate, 13.3% marginal). Medications prescribed: 71.1% antibiotic, 18.0% steroid. 32.7% reported receipt of >1 ACS (mean(SD)=0.5(0.8);range 0-3) including: provider demonstration(27.8%), verbal teachback(9.0%), parent demonstration(11.5%), picture/drawing (1.1%). 20.1% reported receiving a device (syringe(74.6%); dropper(9.1%)); those who received a device were less likely to use a nonstandard device at home (i.e. kitchen spoon) (18.1% vs. 5.5%, p=0.02). 52.9% were not able to correctly report and measure the prescribed dose; those with inadequate HL were more likely to have difficulty with this (70.1% vs. 47.4%, p=0.001; AOR=2.3, p=0.02). ACS and provision of device were each associated with higher rates of correctly reporting and measuring the prescribed dose (ACS: 71.4% vs. 42.8%, p=0.001; AOR=1.8, p=0.04) (device: 67.9% vs. 41.9%, p=0.001; AOR=3.3, p=0.01). In adjusted analyses using contrast coding: 1)use of either ACS only, provision of device only, or both together, were superior to no strategy (p=0.04), 2)use of both strategies together was superior to either alone (p=0.01), and 3)ACS only and device only were comparable (p=0.4).

Conclusions/Implications

Health provider use of ACS and provision of a standardized measuring device may reduce parent medication administration errors, and are especially effective when used in combination. Use of these strategies may be particularly important for parents with low health literacy, who are at greater risk for making errors.

Focused Health Information Literacy Outreach: Meeting the Needs of Latinos in Providence and Seniors in Rural Maine. Crespo, Javier[1]; Eberle, Michelle[1]; Kurtz-Rossi, Sabrina[2]. [1]University of Massachusetts Medical School, Shrewsbury, MA; [2]Kurtz-Rossi & Associates, Medford, MA.

Background

The purpose of the project was to increase health information literacy and access to accurate and reliable health information in two distinct communities experiencing health disparities: Providence, Rhode Island – a predominantly Latino community and Western Maine – a predominantly rural community; and to collect formative and summative evaluation data to improve the model for future use. The project was conducted by the National Network of Libraries of Medicine – New England Region (NN/LM NER) in three phases: 1) Community Assessment; 2) Health Information Outreach with Community Input; and 3) Evaluation of Tailored Strategies.

Methods

A community assessment was conducted to identify community health information needs and supports and to gather feedback on how best to tailor efforts. Ten key informants were interviewed in Providence, nine in Western Maine. Data were coded and organized into themes. Findings led to the following changes to health information outreach efforts consisting of service provider trainings, community trainings, and distribution of materials:

In Western Maine, we tailored efforts to focus on seniors and worked with public health coalitions to raise awareness and use of NIHSeniorHealth.gov among seniors and service providers. We worked with public schools, adult education programs, and public libraries to support access to computers, and opportunities for training and support.

In Providence, we worked with an adult education program to develop a train-the-trainer model for foreign trained health professionals to teach others in the community about MedlinePlus.gov in Spanish. We worked with Latino Public Radio, public libraries, and a network of minority health centers to raise awareness, and offer computer access, training and support.

Results

The evaluation included outcome and process assessments. Pre-/post-evaluations were collected immediately before and after trainings to assess knowledge gain and use of resources. A follow up survey was sent out via email two months later to assess whether participants used what they learned or shared with others. NN/LM NER maintained an Implementation Table and Process Map to keep detailed notes on what worked and what didn't. Upon completion of the project community partners participated in a Community Partner Evaluation Interview to provide feedback from their perspective.

From November 2010 through April 2011, we collaborated with four community organizations, three in Western Maine and one in Providence, Rhode Island. Working in partnership with these organizations, we conducted 28 service provider trainings, reaching 92 professionals; and 50 community trainings, reaching 953 consumers. Data are presently being prepared for analysis and results will be available and reported at the 2011 HARC.

Conclusions

In terms of the process, we learned that an initial community assessment effort is critical to tailoring health information outreach to meet the needs of underserved communities. Working with community organizations enabled NN/LM NER to achieve its health information outreach goals and provided much needed community support. While the results of this study are not generalizable, the approach provides a much needed understanding of how best to meet the health information literacy needs of two distinct communities experiencing health disparities.

Health Literacy Instrument Variation: One Size Does Not Fit All. Haun, Jolie[1]; Luther, Stephen[1]; Dodd, Virginia[2]; Donaldson, Patricia[3]. [1]Veterans Health Administration, Tampa, FL; [2]University of Florida, Gainesville, FL; [3]Veterans Health Administration, Malcolm Randall VA Medical Center, Gainesville, FL.

Background

Health literacy is an important predictor of health outcomes. Multiple measures are currently used to measure health literacy and identify associated factors to improve quality of healthcare and reduce health disparities. These findings present a comparative analysis of three health literacy measures to assess consistency across these tools in categorizing health literacy levels and identifying associated predictive factors.
RQ1: Are the STOFHLA, REALM, and BRIEF tools consistent measures of health literacy?
RQ2: Are associated socio-demographic and health status factors predicted consistently across the STOFHLA, REALM, and BRIEF health literacy assessments?

Methods

An in-person paper-based survey study design with a sample of 378 Veterans receiving ambulatory care at eight Veterans Administration (VA) medical facilities provided data to compare three health literacy instruments. Data were collected using a demographic survey and three health literacy screening tools: Test of Functional Health Literacy in Adults – short form (STOFHLA); Rapid Estimate of Adult Literacy in Medicine (REALM); and a four-item health literacy screening tool (known as the BRIEF). Descriptive statistics and prevalence estimates for each assessment were computed. Logistic regression analyses were conducted to determine risk factors associated with poor health literacy.

Results

The average scores for the three screening tools were: and STOFHLA = 29.92 (SD = 7.95), REALM = 59.46 (SD = 9.00), and BRIEF = 15.41 (SD = 3.63). Depending on the instrument, being older, less educated, being a minority, and reporting a poor reading level were associated with poor health literacy. When classifying individuals' health literacy, agreement among the three assessment tools was present for 37% of the sample. The STOFHLA classified 83% of the respondents as having adequate health literacy levels, and less than 20% with marginal or inadequate levels. The REALM classified fewer respondent health literacy levels as adequate (64%), and less than 10% were placed at the inadequate level. The BRIEF was least likely to classify patients as having adequate health literacy levels (43%) and most likely to classify patients as marginal (37%) and inadequate (20%).

Conclusions

Findings from this study suggest the average respondent had marginal health literacy as measured by the REALM and BRIEF; and adequate as measured by the STOFHLA – though there is overlap among these tools, there is evidence to suggest they are conceptually different. As such, estimated risk factors of poor health literacy vary by screening tool. Choosing a health literacy measure closely aligned with the topic or task under consideration is critical for selecting the most effective instrument. This oral presentation will provide a review of health literacy assessments and recommendations for combined use in practice and research. As utilization of health literacy screening tools continue to gain momentum in research and clinical practice, the need for understanding the distinct characteristics of general health literacy measures looms large. Health literacy assessments enhance the healthcare experience for both the patient and practitioner. However, correlation of the instrument and predictive purpose is necessary. We leave the audience with a cautionary note: when using health literacy instruments one size does not fit all.

The Health Literacy Pathway Model: a qualitative study of the development of health literacy and shared decision-making abilities in patients with a long-term condition.

Edwards, Michelle[1]; Davies, Myfanwy[1]; Wood, Fiona[1]; Edwards, Adrian[1]. [1]Cardiff University, Cardiff, United Kingdom.

Background

Health literacy is "the ability to find, understand, appraise and communicate information to engage with the demands of different health contexts to promote health across the life-course". Making informed self-care decisions and participating in treatment decision-making are two health contexts where sufficient health literacy is important to empower patients living with a long-term condition in managing their health. Poor health literacy is suggested to be a barrier to the exchange of relevant information and participation in shared decision-making (SDM). The research question was: how do patients with a long-term condition develop health literacy and become more active in healthcare decision-making and what are the facilitators and barriers. The main objectives were to describe how patients with a long-term condition become more health literate, and to facilitators or barriers to the development of health literacy for informed self-care decision making and active participation in health care consultations (including SDM).

Methods

A longitudinal qualitative study using serial interviews (total 44) with 18 participants recruited from patient education programmes (diabetes programme, a generic self-management programme, and a cardiac rehabilitation programme) and one community-based group to explore their learning experiences and understand how they draw on their health literacy abilities to manage their condition and participate in healthcare processes. Observations of patient education programmes explored how health literacy may develop during group-based classes. Interview and observation data were analyzed using a framework approach to consider existing descriptions of health literacy and emerging themes.

Results

A model is presented describing the development of health literacy along a trajectory including the development of knowledge, health literacy skills and practices, health literacy actions, abilities in seeking options and participating in informed and shared decision- making opportunities. Motivations and barriers to developing and practicing health literacy skills were personal to participants' characteristics and also created by health professionals. Participants developed their health literacy to a point where they were able and motivated to make informed and shared decisions through patient education programmes, self-directed learning and social interactions with health professionals and lay informants.

Conclusions

The model describes how people can develop health literacy over time to become more involved in healthcare decision-making. The findings have implications for developing health literacy measurements that can be used at different time points and for the development of group-based health literacy interventions aimed at patient involvement in healthcare processes.

Development and Validation of the General Health Numeracy Test (GHNT): Implications for Medication Understanding and Adherence

Osborn, Chandra[1]; Wallston, Kenneth[1]; Shpigal, Adam[1]; Cavanaugh, Kerri[1]; Kripalani, Sunil[1]; Rothman, Russell[1]. Vanderbilt University, Nashville, TN

Background

Limited health literacy and numeracy are common and associated with difficulty understanding health information, such as medication instruction, as well as poor medication adherence and clinical outcomes. Existing health literacy and numeracy scales may not be optimal to assess “health numeracy” defined as the ability to understand and apply basic numerical information to make appropriate health decisions. Available numeracy measures are lengthy, disease-specific, assess a narrow range of skills (e.g., focus on probability or risk), and/or are non-health-related mathematical tests. Thus, we developed the General Health Numeracy Test (GHNT) to objectively measure health numeracy skills. We evaluated its psychometric properties and predictive validity with medication understanding and medication adherence.

Methods

Experts in health literacy/numeracy, health psychology, scale development, and clinical medicine reviewed previously developed assessment tools, and developed a novel set of 63 numeracy items. Items covering a wide range of numeracy skills (e.g. number hierarchy, calculation skills, probability, fractions/decimals, and graphs) and health issues (e.g. prevention, nutrition, medications, chronic disease, risk assessment). During an iterative pilot testing process with 30-40 patients, the GHNT was reduced to 21 items. The GHNT was then administered to 205 primary care patients along with previously validated measures of health literacy (REALM), math skills (WRAT-3R), subjective numeracy (SNS), medication understanding (MUQ) and self-reported medication adherence (SDSCA). Internal reliability was determined by the Kuder-Richardson coefficient (KR-20). An a priori hypothetical model was developed to determine construct validity. Spearman’s rho tested predictive validity with measures of medication understanding and medication adherence. A shortened 6-item version was created through iterative psychometric testing. Results are presented for the 6-item GHNT.

Results

Participants were on average 55 years old (SD=13.8), 64.9% female, 29.8% non-White, and 51.7% had annual household incomes <$40,000. Mean educational attainment was 14.4 years (SD=2.9), but 17.5% had < 9th grade literacy skills, and 61.8% had <9th grade math skills. Mean score on the 6-item GHNT was 42% (SD=30%). The 6-item GHNT was significantly associated with the 21-item version (r=0.88, p<0.01), and internal reliability was good (KR-20=0.79). Higher GHNT scores were significantly associated (p<0.01 for all comparisons) with higher income (r=0.40), education (r=0.41), health literacy (r=0.48), math skills (r=0.65), and subjective numeracy (r=0.58). Higher GHNT scores were also significantly associated with participants’ understanding of their medications (r=0.24) and self-reported medication adherence (r=0.16, p=0.02).

Conclusions

The 6-item GHNT is a brief, reliable and valid tool for assessing general health numeracy, and demonstrates predictive validity with medication understanding and self-reported medication adherence. Future research should examine the relationship between the GHNT and additional health behaviors and clinical outcomes, and explore the GHNT's utility in clinical care settings.

Health Knowledge and Literacy of Deaf Adolescents who use Sign Language: Formative Research Findings. Smith, Scott[1]. [1]University of Rochester Medical Center, Rochester, NY.

Background

Even when well-educated, deaf people who use sign language face significant health literacy barriers that are likely leading to poorer health outcomes including a higher rate of cardiovascular risks than people who are not deaf. Because adolescence appears to be a critical period to develop lifelong health literacy skills, formative data was sought from deaf high school students who use sign language about their health knowledge and literacy skills with a focus on common cardiovascular health issues and risks.

Methods

Three focus groups with 17 deaf high school students between 15 and 18 years old from a local school for the deaf in Rochester, NY were conducted in sign language, video-recorded, translated, and transcribed into written English to collect information about their cardiovascular health knowledge and literacy. A brief background survey was also administered to all participants prior to each focus group session to collect essential socio-demographic and deafness-related information including a question asking participating deaf adolescents to self-rate their functional literacy skills in terms of their English reading skills. Survey data were used to assess the relationships between deaf adolescents' demographic and deafness-related characteristics with their self-reported functional literacy skills. Focus group data were analyzed for specific gaps in deaf adolescents' knowledge about common cardiovascular health facts and risks (content analysis) and emerging domains that influence deaf adolescence's critical and interactive health literacy skills were also identified (thematic analysis).

Results

Many of the same socio-demographic factors (gender, grade, etc.) that influence non-deaf people's functional and overall health literacy also appear to influence these deaf adolescents' self-reported functional literacy. However, deaf adolescents' functional literacy also appears to be significantly influenced by the perceived quality of communication with their parents, a factor that might or might not be specific to these adolescents' deafness.

Furthermore, many deaf adolescents, regardless of their functional literacy, struggle with superficial knowledge about basic cardiovascular facts and risks fraught with some significant knowledge gaps and information such as not being able to describe a heart attack. As a result, these adolescents experience significant difficulties with linking their fragmented knowledge to synthesize a higher level of understanding that would allow them to confidently make well-informed health decisions such as choosing to eat chicken rather than red meat.

Moreover, most deaf adolescents also experience significant barriers with collecting, evaluating, and applying health information that primarily relate to their difficulties socializing with and collecting information from people who do not use sign language such as having fewer health-literate peers and not being able to overhear conversations all over the place. As a result, many young deaf people are not being exposed to social triggers that might lead them to realize their health literacy limitations and take actions to help themselves overcome their knowledge gaps.

Conclusions

Deaf high school students who use sign language confirm that their health literacy challenges begin before adulthood and they highlight the importance of using sign language and other visual information to effectively communicate with and teach them essential health information and health literacy skills.

Health Literacy, Experience with Health Providers, and Health Information Seeking among African American Adolescents. Manganello, Jennifer[1]; Sojka, Carissa[1]. [1]SUNY Albany, Rensselaer, NY.

Background

Adolescent health literacy is important to consider as this age group is increasingly involved with their health care, but it is unclear how well adolescents are able to understand, process, and evaluate health information. In addition, certain groups including African Americans have been found to have lower literacy and health literacy levels than other groups. Given the importance of gaining an understanding of health literacy and adolescents, combined with the need to better understand health literacy issues for minority populations, this exploratory study was designed to collect information about health literacy and its relationship with provider interaction and health information seeking from African American youth.

Methods

We conducted 48 semi-structured interviews with African American adolescents ages 14 to 17. The interview questionnaire consisted primarily of open-ended questions, and included questions about participant’s use of mass media, experience and preferences getting health information, and interactions with health care providers. We also administered the REALM-Teen, and grouped participants into 3 groups: low, middle, and high health literacy.

Results

Participants who had low health literacy (n=8) had REALM-Teen scores from 14-44, representing a 5th grade reading level or lower; participants with middle health literacy (n=21) had scores from 47-58 (6th to 7th grade reading level); and participants with high health literacy (n=19) had scores ranging from 59-66 (8th grade reading level and above). We found that respondents with lower health literacy reported more trouble understanding information from health providers and had a greater reliance on a caregiver for information exchange during health care visits, as illustrated with this quote: “They [provider] probably ask a question that I don’t know or the word I don’t know and I’ll [ask] ‘mom, what is that?’ and she just tell me, she just answer for me.” As health literacy increased, so did comfort level in speaking with and asking questions of health providers. An example of a quote illustrating a respondent’s point of view follows: “Sometimes I am [comfortable asking my health provider questions], but sometimes doctors think I'm like a robot and, like, they just say something just to say it and think I can catch on real quick and it's not like that.” Our findings also suggest that while health literacy did not seem to impact health information seeking from family and friends, youth with low health literacy reported less internet use.

Conclusions

More research is needed to better understand health literacy issues for minority youth to help reduce health disparities. It is important that future work strives to enhance the identification of adolescents with low health literacy and to design interventions to enhance health literacy skills and to make the health system more manageable in order to increase the ability of adolescents to be active and informed participants in their health care, especially those from health disparity populations.

Mechanisms Underlying the Relationship Between Health Literacy and Glycemic Control in American Indians and Alaska Natives. Brega, Angela[1]; Ang, Alfonso[2]; Vega, William[2]; Jiang, Luohua[1]; Beals, Janette[1]; Mitchell, Christina[1]; Moore, Kelly[1]; Manson, Spero[1]; Roubideaux, Yvette. [1]Colorado School of Public Health, Aurora, CO; [2]University of California Los Angeles, Los Angeles, CA.

Background

Although the literature suggests a link between health literacy (HL) and outcomes, little is known about the mechanisms underlying this relationship. Using data from the Special Diabetes Program for Indians Healthy Heart (SDPI-HH) Project, we tested a theoretical framework proposing that diabetes-related knowledge and behavior mediate the relationship between HL and glycemic control.

Methods

To test the proposed framework, we conducted structural equation modeling (SEM) using baseline data from SDPI-HH, an intervention to reduce cardiovascular risk among American Indian/Alaska Native adults with diabetes. The 30 healthcare programs participating in SDPI-HH implement a case-management intervention that includes guideline-based diabetes care, regular case-management visits, and cardiovascular disease (CVD) risk education. At baseline and annually, participants (N=2,594) complete a questionnaire including items related to HL, diabetes knowledge, and health behavior, and undergo a medical exam, during which CVD risk is evaluated (e.g., glycemic control, cholesterol, health behavior).

We conducted three nested SEM models. Model 1 examined the unmediated relationship between HL and glycemic control (measured using glycosylated hemoglobin A1c). In Model 2, we added separate pathways to four behavioral measures (frequency of consuming healthy foods and unhealthy foods, minutes/week of physical activity, and whether or not participant does self-monitoring of blood glucose) to assess the degree to which behavior might account for the HL-A1c relationship. Pathways to diabetes knowledge were added in Model 3 to determine whether knowledge explained any part of the relationship between HL and behavior. All models controlled for the effects of age, gender, education, and income on HL, as well as the potential confounding variables.

Results

Consistent with previous studies, Model 1 demonstrated that participants with stronger HL skills had better A1c values (standardized parameter estimate = -0.070, $p < 0.05$). In Model 2, self-monitoring of blood glucose was found to mediate the HL-A1c relationship (standardized parameter estimate = -0.028, $p < 0.05$), which became nonsignificant when pathways to behavior were added. In Model 3, diabetes knowledge was shown to mediate the relationship between HL and both dietary measures ($ps < 0.05$). Importantly, when knowledge was included in this final model, behavior no longer mediated the HL-A1c relationship (which remained nonsignificant), suggesting that knowledge was the main driver of the association of HL with A1c.

Goodness of fit indicators suggested that Model 3 fit relatively well with the data. Although the Comparative Fit Index (CFI) value of 0.854 was slightly below the typical level considered to indicate acceptable fit (i.e., ≥ 0.90), the Root Mean Square Error of Approximation value of

0.033 was well under the generally accepted threshold for good fit (i.e., ≤ 0.05). Evaluation of change in Chi-Square and CFI values from one model to the next showed that model fit improved significantly from Model 1 to 2 and Model 2 to 3.

Conclusions

Diabetes knowledge was found to be a key mediator of the relationship between HL and A1c. These results suggest that interventions to improve knowledge may be particularly important in enhancing self-management and outcomes among diabetes patients with limited HL skills.

Multi-session self-care training improves knowledge, self-efficacy and self-care behaviors for low and high-literacy patients with heart failure. Holmes, George[1]; DeWalt, Darren[1]; Baker, David[2]; Ruo, Bernice[2]; Hawk, Victoria[1]; Broucksou, Kimberly[1]; Schillinger, Dean[3]; Bibbins-Domingo, Kristen[3]; Macabasco-O'Connell, Aurelia[4]; Weinberger, Morris[1]; Erman, Brian[1]; Pignone, Michael[1]. [1]UNC Chapel Hill, Chapel Hill, NC; [2]Northwestern University Feinberg School of Medicine, Chicago, IL; [3]University of California San Francisco, San Francisco, CA; [4]University of California Los Angeles, Los Angeles, CA.

Background

Heart failure (HF) self-care training reduces heart failure-related hospitalizations but the optimal amount of support is not clear. We conducted a multi-site randomized trial comparing a single session only (SS-only) vs. a "teach to goal" (TTG) multisession educational and self-care support program for improving key knowledge and skills for effective heart failure self-management.

Methods

We randomized ambulatory patients with symptomatic HF from 4 academic medical centers to: 1) a single face-to-face one hour educational session with a focused self-care curriculum (SS-only) or 2) TTG: the same single session plus 5-8 telephone education sessions over the next month and continued calls every 2 to 4 weeks for 12 months that taught to knowledge and behavioral goals. Educational sessions were designed to overcome literacy-related barriers to effective self-care. We stratified randomization by literacy status (adequate or inadequate/marginal). Outcomes were assessed at baseline (pre-randomization) and 1, 6, and 12 months, for measures of three key domains: disease-specific knowledge, self-efficacy, and self-care. Generalized estimating equations (accounting for within-individual correlation across the different collection periods) were used to estimate the difference in changes due to the intervention.

Results

605 participants were randomized: 302 to the SS-only group and 303 to the TTG group. The mean age was 61 years; 48% were female; 38% African-American and 16% Latino; 26% had less than a high school education; 69% had ejection fraction < 0.45; 31% NYHA class III or IV; 37% had low literacy. Response rates were approximately 88%, 90% and 83% in the 1, 6, and 12-month follow-up surveys respectively and did not differ between 2 study arms. Members of the SS-only group experienced improvements in all three measures between baseline and the 1-month follow up. The TTG group improved all three measures 60% to 136% more than the SS-only group at 1 month (all $p<0.05$), and these differences were preserved at 6 and 12 months. Although those with low literacy had lower scores for all four measures at baseline, the improvements were similar for both low and high literacy groups.

Conclusions

A literacy-sensitive, multi-session "teach to goal" self-care training intervention appeared to improve the knowledge and skills considered necessary for effective self-management of heart failure more than a single educational session, and did so similarly for low and high literacy groups.

Health Literacy and Therapeutic Alliance with Relational Computer Agents. Bickmore, Tim[1]; Paasche-Orlow, Michael[2]. [1]Northeastern University, Boston, MA; [2]Boston University School of Medicine, Boston, MA.

Background

Relational Agents are computer animated characters that simulate human social behavior, such as empathy, social chat, and humor, to establish trust and therapeutic alliance with patients. Therapeutic alliance, in turn, is established to increase retention in and adherence to automated health interventions. Prior studies have demonstrated that agents can use these social behaviors to increase working alliance with individuals with adequate health literacy. We sought to determine if these effects hold for individuals with inadequate health literacy.

Methods

As part of a larger longitudinal intervention study to promote walking in older adults, we conducted a sub-study, randomizing intervention arm participants to interact daily with a 'relational' virtual exercise coach agent for two months vs. a 'non-relational' agent that was equivalent in terms of exercise promotion dialogue, but lacked the social, relationship-building behavior. Participants were recruited from outpatient clinics in a urban safety net hospital in Boston.

Health literacy was assessed using TOFHLA, with participants categorized as high vs. low literacy at the 9th grade level. Working alliance was assessed using the 12-Likert-item bond subscale of the Working Alliance Inventory. Overall satisfaction with the agent, desire to continue working with the agent, and characterization of the relationship with the agent (from complete stranger to close friend) were all assessed using single 7-point Likert scale questions.

Results

116 participants, aged 65-92, 69% female, 41% low literacy, completed the two month intervention. Overall working alliance scores were high (average 5.5, sd 0.9, on a 1-7 scale). There was a significant interaction effect of relational vs. non-relational agent and health literacy on working alliance, $F(1,111) = 4.7$, $p<.05$. Participants with inadequate health literacy had high working alliance scores regardless of relational behavior. However, participants with adequate literacy had significantly lower working alliance scores in the non-relational condition.

In addition, participants with low health literacy were significantly more satisfied with the agent, expressed a significantly greater desire to continue working with it, and described their relationship with the agent as being significantly closer, compared to participants with adequate health literacy, with no significant effect of relational behavior on these measures.

Conclusions

After two months of daily conversations with a virtual coach agent, older adults with inadequate health literacy reported a significantly better working alliance, satisfaction, and desire to continue working with the agent compared to participants with adequate health literacy. High literacy participants required relationship- building behavior by the agent to reach the same level of working alliance as the low literacy participants. This result is consistent with prior findings that low literacy individuals may personify agents more readily compared to individuals with high literacy, indicating that they may be more accepting of health interventions delivered via this medium.

Effect of a Low-Literacy Intervention on Self-Efficacy and Medication Adherence. Bruce, Corinne[1]; Jacobson, Terry[2]; Vaccarino, Viola[2]; Kripalani, Sunil[1]. [1] Vanderbilt University, Nashville, TN; [2] Emory University, Atlanta, GA.

Background

Limited health literacy is associated with poor self-efficacy, medication management, and disease control. The Improving Medication Adherence through Graphically Enhanced Interventions in Acute Coronary Syndromes (IMAGE-ACS) study was a pilot randomized trial conducted to test the effect of a low-literacy intervention on medication management after hospital discharge.

Methods

Patients were randomized to receive usual care or usual care plus tailored counseling by a pharmacist, low-literacy adherence aids (illustrated daily medication schedule and pill box), and telephone follow-up after discharge. At baseline, patients completed the Self-Efficacy for Appropriate Medication Use Scale (SEAMS), Adherence to Refills and Medications Scale (ARMS), and Rapid Estimate of Adult Literacy in Medicine (REALM). REALM scores 0-44 indicated inadequate health literacy. Patients completed the SEAMS and ARMS by telephone 1-2 weeks after discharge. We used a paired t-test to compare the change in self-efficacy and adherence, from baseline to follow-up, in intervention patients compared to control patients.

Results

Of the 130 patients enrolled, 82 (63%) completed a follow-up interview and are included in this analysis. Most of the 82 respondents were under the age of 55 (56%), male (55%), African American (96%), unemployed (84%), and had inadequate health literacy (51%). There was a significant improvement in self-efficacy from baseline to follow-up for intervention patients compared to control patients (change of 4.3 vs. 1.3 points, respectively, on a 26-point scale, p=0.007). Self-reported medication adherence in both intervention and control patients improved after hospitalization (change of 3.5 and 3.1, respectively, on a 24-point scale, p=0.648).

Conclusions

A health-literacy sensitive pharmacist intervention significantly improved patients’ medication self-efficacy after hospital discharge. Both intervention and control patients’ self-reported medication adherence improved after hospital discharge, which may be attributable to the acute hospitalization.

Effect of a Pharmacist Intervention on Serious Medication Errors after Hospital Discharge.

Kripalani, Sunil[1]; Roumie, Christianne[1,2]; Dalal, Anuj[3]; Cawthon, Courtney[1]; Businger, Alexandra[3]; Eden, Svetlana[1]; Shintani, Ayumi[1]; Cunningham Sponsler, Kelly[1]; Harris, L. Jeff[1]; Theobald, Cecelia[1]; Huang, Robert[1]; Scheurer, Danielle[4]; Hunt, Susan [3]; Jacobson, Terry[5]; Rask, Kimberly[5]; Vaccarino, Viola[5]; Gandhi, Tejal[3]; Bates, David[3]; Williams, Mark[6]; and Schnipper, Jeffrey[3]. [1]Vanderbilt University, Nashville, TN; [2]VA Tennessee Valley Geriatric Research Education Clinical Center (GRECC), Nashville, TN; [3]Brigham and Women's Hospital, Boston, MA; [4]Medical University of South Carolina, Charleston, SC; [5]Emory University, Atlanta, GA; [6]Northwestern University, Chicago, IL.

Background

Serious medication errors (SMEs) are common after hospital discharge and include preventable or ameliorable adverse drug events (ADEs), as well as potential adverse drug events (pADEs) due to medication discrepancies or non-adherence. The Pharmacist Intervention for Low Literacy in Cardiovascular Disease (PILL-CVD) study was a randomized controlled trial to determine the effect of an educational and behavioral intervention on the incidence of SMEs after discharge.

Method

Patients hospitalized with acute coronary syndromes or acute decompensated heart failure were enrolled in the trial. The intervention consisted of pharmacist-assisted medication reconciliation, inpatient pharmacist counseling, low-literacy adherence aids, and tailored telephone follow-up beginning 1-4 days after discharge. The primary outcome was the incidence of SMEs during the first 30 days after hospital discharge. Secondary outcomes included the incidence of preventable or ameliorable ADEs, as well as pADEs. We computed the risk ratio (RR) and 95% confidence interval (CI) of events in the intervention group vs. the control group using negative binomial regression.

Results

Among 851 participants, 432 (50.8%) experienced $\geq$ 1 SME, 258 (30.3%) had $\geq$ 1 ADE, and 253 (29.7%) had $\geq$ 1 pADE. The intervention did not significantly alter the number of SMEs (RR=0.92, 95% CI 0.77 to 1.10) or ADEs (RR=1.09, 95% CI 0.86 to 1.39). Intervention patients tended to have fewer pADEs (RR=0.80, 95% CI 0.61 to 1.04), p=0.09. In post-hoc analyses, the intervention significantly reduced SMEs in patients younger than 55 years, reduced pADEs in patients with impaired cognition, and reduced pADEs at the site with fewer medication reconciliation procedures previously in place.

Conclusion

A health-literacy sensitive, pharmacist-delivered intervention did not significantly reduce SMEs after hospital discharge. This type of intervention may be beneficial in certain patient subgroups or at hospitals without robust medication reconciliation programs.

Comparative Effectiveness of Clinic-Based vs. Outsourced Diabetes Self-Management.

Davis, Kathryn[1]; Curtis, Laura[1]; Bailey, Stacy[1]; Davis, Terry[2]; Seligman, Hilary[3]; Schillinger, Dean[3]; Dewalt, Darren[4]. [1]Northwestern University, Chicago, IL; [2]Louisiana State University Health Sciences Center, Shreveport, LA; [3]University of California San Francisco, San Francisco, CA; [4]University of North Carolina, Chapel Hill, NC.

Background

The impact of a chronic disease self-management program on health outcomes depends largely on an effective method of delivery that includes consideration of both feasibility and cost effectiveness.

Methods

A randomized controlled trial was conducted to evaluate the efficacy of a diabetes self-management intervention with patients in nine safety-net clinics in Missouri. Clinics were randomized to one of two intervention arms including receipt of print diabetes education materials and action planning with either clinic staff (Carve-in (CI)) or an off-site health counselor (Carve-out (CO)). Intervention participants were to designate an action plan upon enrollment and be followed up five more times over the course of the study. Diabetes-related outcomes including HbA1C, blood pressure, and cholesterol were used to evaluate efficacy of interventions.

Results

A total of 482 patients were enrolled (213 CI; 269 CO). On average, CO participants received more action plan follow-up than CI participants (Mean (SD) = 4.6 action plans (2.1) vs. 1.8 action plans (2.0), respectively $p<0.001$). In addition, controlling for age, gender, literacy, baseline values, and number of action plans completed, CO participants were more likely to achieve glycemic control with an HbA1C < 7% (OR 2.14; 95% Confidence Interval (CI) 1.21 – 2.77), have lower systolic blood pressure (β -3.77; 95% CI -6.30 – -1.24), and lower LDL levels (β -8.56; 95% CI -9.55 – -7.56) than CI participants. Implementation of the CO method cost an additional $169 per patient over CI.

Conclusion

While an outsourced approach to diabetes self-management seems more feasible and shows modest improvement in clinical outcomes compared to a clinic-based model, the increase in patients achieving glycemic control came with a substantial increased cost that may prevent its dissemination. More robust self-care strategies should be evaluated to determine the most effective, while also cost-efficient method.

Unlocking Health Literacy: Associations with Cognition. Curtis, Laura[1]; Wilson, Elizabeth[1]; Waite, Katherine[1]; Bojarski, Elizabeth[1]; O'Conor, Rachel[1]; Wolf, Michael[1]. [1]Northwestern University, Chicago, IL.

Background

While most health literacy definitions recognize that a broader set of cognitive skills are involved in making health care decisions, current measures focus solely on reading and numeracy, limiting the focus of the problem and how best to respond. We sought to examine the association between health literacy assessments and measures of cognitive performance.

Methods

Structured interviews including the three most common health literacy assessments (TOFHLA, REALM, and NVS) as well as an extensive cognitive battery were completed by 757 primary care patients ages 55-74. Performance on three measures from each of five cognitive domains representing information processing (fluid abilities including speed of processing, working memory, long term memory, and inductive reasoning) and attained knowledge (crystallized ability as measured via verbal ability) was assessed. Factor scores were estimated for all cognitive measures as well as for fluid and crystallized abilities separately, and associations with literacy measures were assessed using Pearson correlations.

Results

Performance on all three health literacy measures were strongly correlated with overall cognitive performance (TOFHLA r=0.80, REALM r=0.68, NVS r=0.76). More reading-centric measures of literacy (specifically, the REALM and Cloze subsection of TOFHLA) were more strongly correlated with crystallized abilities than with fluid (REALM r=.075 vs. r=0.57, Cloze r=0.78 vs. 0.70, respectively). Conversely, the numeracy subscale of the TOFHLA was more closely related to fluid abilities (r=0.65) compared to crystallized (r=0.58). The NVS, a measure encompassing both reading and numeracy, was similarly associated with both cognitive domains (r=0.71 fluid; r=0.72 crystallized).

Conclusions

Our findings broaden the understanding of health literacy beyond reading and numeracy to include a more comprehensive set of abilities utilized in the successful completion of common self-care tasks. This expanded conceptualization of health literacy can inform strategies and interventions to minimize preventable cognitive demands placed on patients by routine healthcare tasks.

Low Rates of Advance Directives among Older Adults with Low Health Literacy.

Waite, Katherine[1]; Curtis, Laura[1]; Bojarski, Elizabeth[1]; O'Conor, Rachel[1]; Sudore, Rebecca[2]; Federman, Alex[3]; Wolf, Michael[1]. [1]Northwestern University, Chicago, IL; [2]University of California San Francisco, San Francisco, CA; [3]Mount Sinai School of Medicine, New York, NY.

Background

The need to advise patients on the importance of having an advance directive (AD) is becoming increasingly essential in the advent of the baby boomer generation. The current study examined the relationship between literacy and having an AD.

Methods

803 adults ages 55 to 74 from either an academic general internal medicine clinic or one of four federally qualified health centers in Chicago self-reported sociodemographic information and completion of an AD and performed health literacy assessments in a face-to-face interview. Two multivariable regression models were used to evaluate the associations between having an AD and age, gender, race, education, income, and number of chronic conditions, with and without the contribution of health literacy.

Results

Only 12.4% of subjects with low and 26.6% of those with marginal health literacy reported having an AD, compared to 49.5% of those with adequate literacy ($p<0.001$). In multivariate analyses, African American adults were less likely to have an AD than non-African-American adults (RR, 0.58; 95% CI: 0.43-0.79). Younger age and less education also contributed to lower rates. In the second model, individuals with limited literacy were less likely than those with adequate literacy to possess an AD (RR, 0.45; 95% CI, 0.22-0.95) and racial effects were substantially reduced but remained significant (RR, 0.64; 95% CI, 0.47-0.87). Relationships between AD completion and both education and age became non-significant.

Conclusions

While literacy had a modest explanatory effect on the relationships between education, age, and race with AD completion, the association between race and having an AD remained significant even after accounting for literacy, indicating that factors other than literacy level may impact a patient's pursuit of an AD. Further research should be conducted to determine these factors in order to create effective interventions.

Adolescents' Health Literacy and Health Communication in Primary Care. Shone, Laura[1]; Doane, Cindy[1]; Blumkin, Aaron[1]; Wolf, Michael[2]. [1]University of Rochester Medical Center, Rochester, NY; [2]Northwestern University, Chicago, IL.

Background

Health literacy (HL) problems have adverse effects on adults' health care experiences; however, less is known about adolescents. The objective of the study is to examine associations between HL and aspects of 1 care among 16-23 year-olds (youth).

Methods

127 youth interviewed at primary care visits at an urban teen clinic and a suburban practice in Monroe County, NY from 2/10 to 10/10. Measures addressed: 1) health literacy (age-appropriate REALM/REALMTeen); 2) health information; 3) trust in physicians (TiPS); 4) health interactions; and 5) visit satisfaction. We analyzed with STATA 9.

Results

HL was adequate for 72% and limited for 28%. HL was not associated with: trust in physicians; or with patients' self-rated ability to: a) Explain medical problems, b) Identify problems [adhering to] treatment plan, c) Describe the use of prescribed medicines, or d) Ask questions of providers. In contrast, HL was associated with patients' self-rated ability to: 1) Find answers to questions: [Never (1% adequate vs. 11% limited), Sometimes (58% adequate vs. 40% limited), or Always (41% adequate vs. 49% limited), p=.02)]; and 2) Describe [your] treatment plan: [Never (0% adequate vs. 6% limited), Sometimes (63% adequate vs. 40% limited), or Always (37% adequate vs. 54% limited), p=.009)]. In measures of satisfaction, HL was associated with report that the provider …"explained things so I could understand" [Never/Sometimes (9% adequate vs. 18% limited), Usually (35% adequate vs. 12% limited), or Always (57% adequate vs. 71% limited), p=.03)].

Conclusions

Youth with limited HL were more absolute in self-rating their skills (always/ never), whereas youth with adequate HL had more nuanced understanding of their knowledge and skills (sometimes). Providers should g beyond patient self-ratings to clarify knowledge and confirm understanding. Use of tools including AskMe3, and teachback can facilitate communication with adolescents and foster developing HL skills.