Poster Session II: Monday 5:30pm

Poster #42

Extreme health disparities among Pakistani girls and women residing in urban area of Lahore city. Zafar, Noreen[1]; Zafar, Muhammad Abdullah[2]; Rana, Muhammad Saleem[1]; Khan, Ayesha[1]. [1]GWHI, Lahore, Punjab. [2]SIMS, Lahore, Punjab. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Objective analysis of health disparities among girls and women in Lahore city and identifying a cost effective and sustainable plan to reduce these.

Methods

GWHI (www.gwhi.org) is a non-profit organization, working for girls & women by empowering them with knowledge. We work in the most socio-economically deprived area of urban Lahore, Nishtar Town (one of the 9 towns of Lahore city with a population of around 1 million). Our team of volunteers visits the area bimonthly. An awareness session is held to discuss sanitation, hand washing, safe drinking water, nutrition, gynecology issues, contraception and general health. Demographic (66 variables) and anthropometric (Height, weight & BMI) data is collected .All attending girls and women are provided with free lab diagnosis (complete blood count, random sugar, blood group testing). Following the detailed interview, complete (free) course of treatment along with required supplements is given for 3 months.

Results

In spite of same racial, geographical & ethnic backgrounds, huge health disparities exist. The affluent population has access to excellent private health facilities, even for cosmetic surgery & weight loss etc, whereas poor girls & women are largely unaware of their right to health, with no concept of health screening or reproductive rights & suffer due to gender inequity, poor literacy & financial constraints. The average monthly household income is equivalent to $88USD, with usually 1 bread winner for a family of 7. Taboos restrict access to medical facilities, especially treatment for gynecological problems. 85% of women spend at least a year chasing quacks or so called spiritual healers. Anemia (78% Hb <9), fatigue & depression are common & tragically, in young girls too. Daughters are often the only ones to share their mother's worries! Emotional abuse, especially in context of reproductive issues, domestic violence, Hepatitis, TB, undiagnosed hypertension, diabetes & malnutrition are common. With a teaching hospital located right in the heart of Nishtar Town, these girls & women suffer from gross under-utilization of state health facilities. Malpractices are rampant, poor service standards, waiting times & sub-optimal staff attitude are common. Community health workers often receive outdated & out of season drug supplies (e.g. anti malarials received in December).

Conclusions/Implications

Socio cultural change is crucial to achieve MDGs 4 &5. Girls and women are receptive to information & put it into practice for their families .We need to communicate well in their language to stress lifestyle changes with emphasis on exercise ,weight management ,balanced nutrition &health screenings Health literacy is an important tool to shift the focus from illness to wellness & to end gender inequity. Behavior Change Communication is proposed for public & health care providers. We use peer education model with success & need to sustain, consolidate & extend our outreach program. Training of medical & community staff in communication skills

& better quality of service is crucial. Public private partnerships & advocacy for affluent groups to help their under privileged counterparts through volunteerism works well. We propose a structured media campaign using easy language & picture models specifically targeted for women’s health & de-stigmatization of gynecological issues.

Poster #43

Adult Education Teachers Help Students Become Health Literate: Evaluation Findings and Lessons.

Clift, Joseph,[1] Lee, Kien S.[2]; Chervin, Cara R.[3]; Krause, Elizabeth[4]; Woods, LaKeesha[2]. [1]Agency for Healthcare Research and Quality, Rockville, MD, [2]Community Science, Gaithersburg, MD. [3]Columbia University, New York, NY. [4]Connecticut Health Foundation, New Britain, CT. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

The Health Literacy in Adult Education Settings Grant Project integrated health literacy instruction into adult education curricula to increase the capacity of racial and ethnic minorities to care for their health. Six adult education centers in Connecticut received funding from The Connecticut Health Foundation and technical support from the Literacy Assistance Center (LAC) to develop their teachers' ability to integrate health literacy instruction into their classes. Community Science evaluated the project. The evaluation questions were:

1. To what extent did the teachers implement or modify the health literacy curriculum?
2. Did the adult learners improve the health literacy skills needed to navigate systems, manage diseases, and engage in preventive behavior?
3. Did self-efficacy for health literacy increase among the adult learners?
4. How did the centers increase their capacity to teach health literacy skills to adult learners from racial and ethnic minority groups?

Methods

The data collection methods included:

- Implementation of the short form for the Test of Functional Health Literacy in Adults (S-TOFHLA) to gauge students' health literacy skills
- Implementation of a Self-Efficacy Assessment (SEA) to assess students' self-efficacy in health literacy
- Survey of participating teachers to determine how they modified the curriculum and the usefulness of the support they received from the Foundation and LAC
- Telephone interviews with the adult center directors about how health literacy instruction was integrated and institutionalized in their centers
- Short essays by students about how they applied their health literacy skills.

Results

Improvements in pre- and post-test S-TOFHLA and SEA scores were statistically significant, indicating that students improved their health knowledge and increased their confidence to interact with health providers. By the project's end, health literacy instruction was incorporated into other classes at each adult education center, beyond those taught by the teachers who participated in the project. Each center developed new partnerships with local health programs, clinics, and hospitals. Almost half of the participating teachers continued to attend professional development activities related to health education and shared their knowledge with other teachers. The teachers' efforts to integrate health literacy instruction into their curriculum progressed as expected by LAC. They had to spend a substantial amount of time to tailor the health literacy curriculum provided by LAC to the reading and comprehension levels of their students, especially the English-as-a-Second-Language students.

Conclusions/Implications

Infusing health literacy instruction into adult education curricula appears to be an effective strategy for increasing the capacity of racial and ethnic minorities to care for their health. With sufficient support, health information can be used as content to teach adult students English, computer, conservational, and writing skills. Foundations need to consider the following types of support: funding for adult education centers to enable their teachers to participate in trainings and to train other teachers; extensive technical assistance to help the teachers tailor their materials to their students' reading and comprehension levels; evaluation support to help the teachers test the students' health literacy knowledge and skills; and facilitated peer exchange and support for the teachers.

Poster #44

Association between health literacy and different components of cognitive impairment.

Yost, Kathleen J.[1]; Lindquist, Lee A.[2]; DeWalt, Darren A.[3]; Pankratz, Vernon S.[1]; Hahn, Elizabeth A.[2]. [1]Mayo Clinic, Rochester, MN. [2]Northwestern University, Chicago, IL. [3]University of North Carolina, Chapel Hill, NC. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

We developed a new measure of health literacy administered using an audio-enabled touchscreen computer: the “Talking Touchscreen for Health Literacy Assessment” (TT-HLA). The TT-HLA, which measures three types of print literacy (prose, document and quantitative), is acceptable to a wide variety of patients, including those who are computer naïve and older. Patients with low health literacy have difficulty comprehending health-related material, as do patients with cognitive impairment. An association between health literacy and cognitive impairment has been reported in several previous studies. Our objective was to evaluate the association between cognitive impairment and health literacy as measured by the new TT-HLA.

Methods

We obtained health literacy and cognitive impairment data for 526 primary care patients seeking care at safety net facilities and clinics dedicated to underserved patients. Health literacy was measured with the TT-HLA. Cognitive impairment was measured using the Mini-Cog. This brief screening tool combines a delayed three-word recall task (WRT) measuring working memory and a clock drawing task (CDT) measuring visuospatial skills to yield an overall dichotomous classification of normal vs. cognitively impaired. We assessed the association between health literacy and cognitive impairment using the overall Mini-Cog classification. A secondary analysis was conducted using the separate CDT and WRT scores.

Results

The sample was 50% male, predominantly non-Hispanic black (68%) with a mean age of 46. 57% had no more than a high school education. 21% were cognitively impaired based on the overall Mini-Cog classification, 59% had an abnormal CDT and 33% failed to correctly recall one or more words in the WRT. In bivariate regression analyses, health literacy was more strongly associated with the CDT (R^2=6.7%) than with the overall Mini-Cog classification (R^2=3.0%) or the WRT (R^2=2.0%). In a multivariable model, overall cognitive impairment was significantly associated ($p<.001$) with health literacy after adjusting for other variables, including recruitment site (urban vs. suburban), race/ethnicity, education and physical health. In the secondary multivariable analysis, a stronger association was observed between the CDT ($p<.001$) and health literacy than between the WRT ($p=.04$) and health literacy.

Conclusions/Implications

We observed a significant association between a new measure of health literacy and cognitive impairment. However, we found that combining CDT and WRT scores from the Mini-Cog to derive an overall classification may mask some of the association between cognitive impairment and health literacy as measured by the TT-HLA. One possible explanation may be related to the TT-HLA item format. All document and most quantitative items in the TT-HLA have health-related prompts (e.g., charts, tables, graphs) displayed on the touchscreen. Answering these items requires finding and interpreting information embedded in the prompt. It is possible that these tasks utilize visuospatial skills similar to those required for the CDT. Although the prose items do not include health-related prompts, navigating the display of the text and response buttons on a touchscreen computer may also require visuospatial skills.

Poster #45

Emergent Literacy as a Predictor of Pre-adolescent Health Literacy Skills: Results of a Longitidinal Study.

Sanders, Lee M.[1]; Xue, Lihua[1]; Glavach, Manya[1]; Accornero, Veronica H.[1]; Bandstra, Emmalee S.[1]. [1]University of Miami, Miami, FL. [2]University of North Carolina, Chapel Hill, NC. [3]University of Maryland, College Park, MD. *Presented via poster on Monday at 5:30pm.*

Background

Emergent literacy (< age 5) is known to be an important predictor of school readiness, and limited literacy is a known risk factor for negative health behaviors among adolescents. Little is known, however, about impact of early literacy experiences on the trajectory of health literacy skills across the life course.

The objectives of this study were (1) to determine the relationship between emergent literacy and the acquisition of health literacy skills during adolescence and (2) to assess the psychometric properties of two health literacy instruments among adolescents.

Methods

Two measures of health literacy (REALM and S-TOFHLA) were administered to parent and child at 12-13 years post-natally in a birth cohort of > 400 English-speaking, mother-child dyads. Approximately half the children were perinatally exposed to cocaine. At age 5, emergent literacy was measured by parent report on two scales: the Caldwell HOME, which measures parent-child verbal interaction, and the Clinical Evaluation of Language Fundamentals (CELF-P), which measures child verbal skills. At age 12, child cognitive skills were measured by the WISC (IQ), WIAT (language and math skills), WRAML (short-term memory) and CELF (receptive and expressive language). Children with S-TOFHLA score >= 23 were considered to have adequate literacy. Multivariate analyses were performed by GLM, with child S-TOFHLA and REALM scores as outcomes.

Results

Complete data was available for 353 mother-child dyads. 268 children had adequate health literacy. Compared with children with low literacy, children with adequate literacy had higher mean scores on the HOME (32.1 v 27.2, p< .0001) and CELF-P (86.1 v. 73.7, p<.0001). Adjusting for perinatal drug exposure, child age, child gender, and income – HOME and CELF-P scores remained significant (p<.001) predictors of either S-TOFHLA or REALM. Child S-TOFHLA scores correlated most highly (r >.6) with psychometric subscales of spelling, word reading, and reading comprehension. REALM scores correlated most highly with verbal IQ, expressive language, pseudoword decoding, and word reading.

Table - Predictors of Adolescent Health Literacy Skills

		All	**Low Health Literacy (STOFHLA < 23)**	**Adequate Health Literacy (STOFHLA >= 23)**	**P**
		350	82	268	
Early Childhood Stimulation (Age 5)	Caldwell – Total Score	30.9 ± 9.3	27.19 ± 8.9	32.0 ± 9.2	<.0001
	Caldwell – Language Score	5.56 ± 1.5	5.13 ± 1.45	5.69 ± 1.46	0.003
Early Childhood Language Development (Age 5)	PPVT	67.4±14.5	54.3±12.8	68.6±14.1	<0.0001
IQ (Age 12)	WISC Full IQ	78.6±12.3	69.2±9.5	81.5±11.6	<0.0001
	WISC Verbal IQ	81.1±13.1	70.8±10.4	84.2±12.3	<0.0001
	WISC performance IQ	79.7±12.2	72.3±9.2	81.9±12.1	<0.0001
Cognitive Skills (Age 12)	WIAT – Math Reasoning	84.0±15.3	72.2±13.2	87.5±14.1	<0.0001
	WIAT – Numerical Operations	83.6±15.8	71.9±13.8	87.1±14.6	<0.0001
	WIAT – Pseudoword	84.2±15.2	71.3±11.8	88.1±14.0	<0.0001
	WIAT – Spelling	88.2±15.1	73.3±12.7	92.6±12.8	<0.0001
	WIAT – Word Reading	84.3±16.0	68.3±14.7	89.1±13.0	<0.0001
	WIAT – Reading Comp	85.3±17.9	67.6±16.6	90.7±14.5	<0.0001
	WIAT – Written	82.8±17.3	68.3±13.8	87.1±15.9	<0.0001

Conclusions

In a high-risk population, the literacy environment before age 5 years (e.g., reading aloud, frequent conversations) is independently and significantly associated with child health literacy in early adolescence. This relationship remains strong even after adjusting for common socioeconomic confounders. These findings add health literacy to the growing list of important adult life skills whose architecture is established in early childhood.

Poster #46

Using Decision Aids among adults with low education and literacy: A qualitative study embedded in a randomised controlled trial. Smith, Sian K.[1]; Kearney, Paul[1]; Trevena, Lyndal[1]; Barratt, Alex[1]; Nutbeam, Don[2]; Simpson, Judy[1]; McCaffery, Kirsten[1]. [1]University of Sydney, Sydney School of Public Health. Sydney, Australia. [2]University of Southampton, Southampton, United Kingdom. *Presented via poster on Monday at 5:30pm.*

Background

Enhancing patient understanding and informed choice through effective health communication and decision support is important for promoting safe, high quality health care. While there have been major advances to support patient involvement in decision making, there is little work with low literacy populations, a group with poorer health knowledge and outcomes. This could potentially widen health inequalities between advantaged and disadvantaged groups, with more educated groups becoming more informed and involved, and less advantaged being left behind.

This study presents findings from a qualitative study embedded within a randomised controlled trial (RCT) evaluating the effectiveness of a bowel cancer screening decision aid (DA) in supporting informed choice and involvement among adults with lower education and literacy. Specifically, it aimed to shed light on the underlying thought processes that occur when people use DAs, and how the DA may influence their decision making and behaviour.

Methods

We undertook face-to-face, semi-structured interviews with 30 trial participants who had been purposively selected from each arm of the trial (DA booklet vs standard government information used in the National Bowel Cancer Screening Program), who had, and had not, completed the bowel cancer screening test. Interviews were conducted 2-6 months after the trial and were analysed using Framework. Participants were grouped according to whether they had made an informed choice about screening using Marteau et al.'s (2001) conceptual model of informed choice.

Results

Participants' approaches to decision making could be described as an interplay between how they made sense of the screening information (in particular, their reactions to the risk information about screening outcomes), their approach to health and screening/testing in general, and their personal experiences/history of cancer. While many did not feel the decision to screen required too much deliberation, they valued information that was honest and offered them a choice, even if they did not use it in their decision making.

Participants' responses to the quantitative risk information could be organised into 2 broad groups: (1) those who took the risk information seriously and questioned whether screening was really necessary for them and; (2) those who chose to ignore the risk information because they perceived themselves as 'not statistics' people or did not fully understand it.

Conclusions

Integrating a qualitative component alongside an RCT shed light on how participants used health and risk information within a decision aid to make bowel screening decisions. The findings demonstrate how adults with lower education and literacy may choose to integrate evidence based information presented in DAs to inform their decision making, and how they viewed informed choice in the context of screening.

Poster #47

An investigation of health literacy and healthcare communication skills in adults with speech and hearing disorders.

McCarty, Sarah R.[1]; Hester, Eva J.[1]; [1]Towson University, Towson, MD. *Presented via poster on Monday at 5:30pm.*

Background

People with speech and hearing problems reportedly are at risk for poor health literacy and inadequate healthcare communication during healthcare visits (Chew et al., 2004; Hester & Stevens-Ratchford, 2009; Hoffman & Yorkston, et al., 2005; IOM, 2004; Wengryn & Hester, in press). However, to date, no published studies have specifically examined the health literacy and healthcare communication skills of this population. The purpose of this study was to collect information on self-reported health literacy and healthcare communication skills and to determine the relationship between these skills in people with speech and hearing disorders.

Research Questions

1. What is the nature of healthcare communication skills of people with speech and hearing disorders during healthcare visits?

2. What types of health literacy skills do people with speech and hearing disorders demonstrate according to self-report measures?

Methods

Participants: Preliminary data was collected on 25 adults with speech and hearing disorders in the Baltimore-Metropolitan area. The age of the participants ranged from 25-84. All participants passed the Mini-Mental State Examination (MMSE) screening.

Procedures: Participants completed a demographic form and two self-report questionnaires based on a Likert Scale (1= never to 5 = always): (1) The Healthcare Communication Profile (HCCP) included frequency of questioning, initiating, informing, and understanding information during healthcare visits (Wengryn & Hester, 2010); (2) the Health Literacy Screening Form (HLS) involved frequency of understanding written health materials (Chew, et al., 2004). Frequency statistics were used in preliminary analysis of data.

Results

Preliminary findings from the HCCP indicated the following participant reports concerning frequency of questioning, initiating, informing, and understanding information during healthcare visits:

12 % = occasionally
28 % = sometimes
48 % = often
12 % = always

Preliminary findings for the HLS indicated the following participant reports regarding frequency of understanding written health materials:

16 % = often
84 % = sometimes

Conclusions/Implications

These preliminary findings indicate that almost 50% of the participants may demonstrate depressed healthcare communication skills and more than 80% may have difficulty understanding written health materials. These results will be discussed within the context of improving health literacy skills of this population. Data completion for the poster session will involve 50 participants with additional statistical and regression analysis.

References

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Poster #48

Impact of Communication on Preventive Services Use among Deaf American Sign Language Users. McKee, Michael M.[1]; Pearson, Thomas[1]; Barnett, Steven[1]; Block, Robert[1]. [1]University of Rochester, Rochester, NY. *Presented via poster on Monday at 5:30pm.*

Background

Information on health care communication and other factors that impact preventive services utilization for deaf American Sign Language users are lacking. We do know that limited English proficiency and poor health literacy can impact health care delivery and utilization. Deaf ASL users comprise a linguistic minority group in America that historically has been excluded from health educational programs as well as health research studies. This is likely due to communication and language barriers that isolate this group from mass media and health care messages. As a result, researchers have documented health disparities in this population including health literacy and in areas of sexual health, cancer, preventive health, and cardiovascular disease. This population is considered to be the non-English speaking minority group at greatest risk for miscommunication with their health providers, due to their low likelihood of communicating directly in their preferred language, resulting in decreased opportunities to correct misinformation. With other linguistic minority populations, the removal of language barriers between health care providers and patients resulted in higher rates of preventive screenings. Therefore, we sought to examine the effect of mode of provider communication on preventive service utilization among deaf, ASL fluent adults who resided in Upstate New York.

Methods

The cross-sectional study included 89 deaf respondents aged 50-75 years old from the Deaf Health Survey (an adapted Behavioral Risk Factor Surveillance System accessible for deaf sign language users). Association between the respondent’s method of communication with the health care provider (categorized as either “my doctor uses sign language” or “other”) and preventive services use (flu shot, colonoscopy or sigmoidoscopy, and cholesterol screening) were assessed using multivariate logistic regression adjusting for age, race, gender, income, health status, health insurance, and education.

Results

Deaf ASL users who reported utilizing a provider who signs were 3.4 times as likely to receive additional preventive services when compared to respondents who report other modes of communication with their doctor (CI: 1.307-8.928 p value=0.0122). Also, respondents were more likely (OR 4.547; p=0.0162) to receive influenza vaccinations when they had a language-concordant provider. These findings appear to be consistent with medical literature suggesting better health care utilization through accessible health communication between the provider and the patient.

Conclusions

This study demonstrated for the first time the effect that language concordant providers have on preventive services (i.e. influenza vaccination rates and sum of all preventive services received) among deaf ASL users. Direct communication in ASL between the provider and the deaf ASL user was associated with better preventive service adherence. Accessible health communication can help eliminate health disparities seen among deaf ASL users in our health care system as directed by *Healthy People 2020* while also helping to improve understanding on the role of preventive services among deaf ASL users.

Poster #49

Health Literacy (HL): The various economic angles to a measureless concept, implications for the NHS in England. Coughlan, Diarmuid. Trinity College, Dublin, Ireland. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

The contribution of health economics to the HL field is currently much sought-after. The pertinent economic angles of HL will be explored in the context of a universal healthcare system such as the National Health Service (NHS) in England.

The Department of Health (DH, England) view HL as a health inequalities issue whereas the State of Missouri has approached HL as a public health concern. What are the economic implications of these differing approaches?

Methods

Using a combination of costing models from the literature, an estimate of the financial burden of low HL to the English NHS system is derived.

A conceptual model classifying HL as a health inequality is discussed using a social justice perspective.

The Skilled for Health (SfH) initiative is a touted HL intervention. Using guidance from the National Institute of Health & Clinical Excellence (NICE) the economic requirements of UK reimbursement agencies are explored.

Results

The two models of estimating additional healthcare costs of low health literacy to the NHS gave a range of between £5.03 and £10.4bn annually. The validity of the assumptions and data used in the models are considered.

Inequality of opportunity in health may be the best way of characterizing HL as a health inequality.

For SfH to be made available on the NHS, it will need to secure approval from (NICE). The differences in how SfH would be evaluated as a clinical intervention or as a public health intervention are significant. NICE’s strictly extra-welfarist approach of using cost-effectiveness analysis (CEA) for a clinical intervention is different to their public health guidance which allows for cost benefit analysis (CBA) or even cost consequence analysis (CCA) to be used in economic evaluation.

Conclusions/Implications

The way that the healthcare system operates in England has major implications for the HL advocacy community there. The contribution of health economics may shape how future HL initiatives are designed and proposed to national decision-makers.

Poster #50

A new multimedia health literacy item bank developed using item response theory. Hahn, Elizabeth A.[1]; Choi, Seung W.[1]; Griffith, James W.[1]; Yost, Kathleen J.[2]; Baker, David W.[1]. [1]Northwestern University, Chicago, IL. [2]Mayo Clinic, Rochester, MN. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

More precise measurement of health literacy is needed to determine the level at which low literacy begins to adversely affect health outcomes. Better measurement precision will enhance the ability to estimate the size of the population at risk from low health literacy, and to identify vulnerable patients in clinical settings. Measures should also be brief and easily scored in real-time to enable communication tailoring for the patient's literacy level, and to provide reliable and valid scores for use in testing interventions.

Methods

We developed over 100 prose, document and quantitative items, and 25 images. Each item has four possible answer choices, and many items include audio recordings of questions. All items were formatted for self-administration on a touchscreen. After pilot testing using qualitative and quantitative methods, we conducted calibration testing of 90 items with English-speaking primary care patients in clinics for underserved populations. We used a sparse matrix sampling design with six forms of 30 items each. Psychometric analyses included confirmatory factor analysis (CFA) and an item response theory (IRT) model for dichotomous response data. Poorly performing items were identified by an adjusted point-biserial correlation <0.20, or by poor model fit (chi-square statistics, $p<0.05$).

Results

We completed testing with 610 adult patients: 51% female, 10% age 60+, 67% African American, 18% without a high school education, and 14% who had never used a computer. The majority (93%) had no difficulty using the touchscreen, including those who were computer-naïve (87%). The average time to complete 30 items was 18 minutes. Only 8 items (9%) were dropped due to poor performance. Although a three-factor CFA had slightly better fit compared to a one-factor solution, correlations between factors (grouped by prose, document and quantitative items) were 0.90-0.95, suggesting good evidence for unidimensionality. The IRT model fit the data well and provided good information (low standard error, high reliability), especially in the low to middle range of health literacy (see top part of figure). Health literacy scores (theta) were normally distributed (see bottom part of figure).

Conclusions/Implications

This new measure of health literacy includes three item types that work well together as a unidimensional construct. This means that separate tests of these item types are not needed to estimate an individual's reading-related health literacy. IRT is useful in developing item banks because it offers unique advantages over other approaches: equal interval measurement, representation of respondents and items on the same scale, and independence of person estimates from the particular set of items. Using our calibrated bank of 82 items, we are developing a computer-adaptive test (CAT) that will allow precise and efficient measurement of health literacy. CAT will allow patients to complete the minimum number of questions to achieve an accurate score. The calibrated item bank also allows researchers to design their own custom short forms by selecting items from the bank. This new health literacy measure can be administered on the same touchscreen used for other patient-reported outcomes, thus providing a feasible way to assess patients’ literacy in clinical practice and research.

Poster #51

Health Literacy and Lifelong Educational Practices and Resources in Enabling Internet Health Information Seeking Among Older Adults. Malloy-Weir, Leslie J.[1]; Wister, Andrew V.[2]; Rootman, Irving[3]; Desjardin, Richard[4]. [1]McMaster University, Hamilton, ON. [2]Simon Fraser University, Vancouver, BC. [3]University of Victoria, Victoria, BC. [4]Aarhus University, Aarhus, Denmark. *Presented via poster on Monday at 5:30pm.*

Background

Over the past decade there has been considerable debate in both policy and research documents about the benefits and shortcomings of health information published on the Internet. The debate is particularly relevant to older adults in Canada who are the fastest growing group of Internet users, but possess extremely low levels of health literacy. Older adults are also more likely to be in poor health relative to younger adults, and more likely to require information necessary to maintain or restore health. In this study, we hypothesized that older adults with higher levels of health literacy would be more likely to seek access to Internet health-related information. Secondarily, we explored the influence of informal educational practices (reading, studying, volunteering) and resources on this behaviour.

Methods

A sub sample of older adults (n = 2,979) derived from the 2003 Canadian version of the International Adult Literacy and Skills Survey (IALSS) was used. These data were unique since they were the first to collect information on health literacy from Canadians over the age of 65. Logistic regression was employed to examine the association of health literacy as well as formal/informal education practices and resources on Internet health information seeking. An expanded Andersen-Newman model was used to frame the study and guide the organization of variables.

Results

Eighteen percent of our sample had a home computer with Internet access, and fewer (10%) reported searching for health-related information online. Eighty-eight per cent of our sample possessed an inadequate level of health literacy. Older adults with adequate levels of health literacy were three times more likely to seek access to Internet health-related information compared to those with an inadequate level. Of the informal educational practices examined, using the computer/Internet to learn; reading letters/notes/e-mails; monthly and weekly visits to the library; and reading books increased the likelihood for online searches for health-related information. Participation in adult education and being sent to an organization to learn decreased the likelihood of doing so.

Conclusions

Our findings support our principle hypothesis and have both positive and negative implications. On one hand, older adults with adequate levels of health literacy may be better to able to comprehend, integrate, and reconcile contradictory sources of health information retrieved online. On the other hand, older adults with low levels of health literacy are more likely to be in poor health than those with adequate levels, more likely to benefit from the credible health information and resources available online, but less likely to seek access to Internet health-related information. Based on our findings we: 1) believe that the benefits of Internet health-related information may be overestimated when it comes to older adults; 2) support the assertion that universal access to the Internet will not necessarily eliminate disparities in access and use of health and medical information among older adults due to the barrier of health literacy; 3) advocate for the provision of health information that is accessible to older adults; and 4) believe that “access” may be important to the definition of health literacy.

Poster #52

Older Adults, e-Health Literacy, & Collaborative learning. Xie, Bo. University of Maryland, College Park, MD. *Presented via poster on Monday at 5:30pm.*

Background

The older population has the lowest level of health literacy among all adult age groups, with only 3% of older Americans have proficient health literacy. The increasing use of information technology in health care presents both opportunities and challenges for developing and implementing effective health literacy interventions for older adults. On the one hand, as government agencies like NIH are increasingly putting health information online, the Internet has already become an important source of such information. On the other hand, however, individuals who have low health literacy, for instance, older adults, are likely to also have low Internet literacy and thus may have difficulties making use of Internet health information. To improve the health literacy of the older population in the Internet age, it is critical to develop effective interventions that can meet the unique needs and preferences of this population.

Collaborative learning features students learning from both an instructor and other students and working in small groups toward common goals. While the effectiveness of collaborative learning has been well established in formal educational setting with younger adults, its generalizability to the older population in health-related content remains unanswered. To assess the effectiveness of collaborative learning in informal settings of older adults, an exploratory field experiment was conducted during August 2009-February 2010 in two public libraries in Maryland, focusing on e-health literacy, or the ability to obtain, process, and use electronic health information.

Methods

This exploratory study involved a pre-intervention-post design. The intervention entailed 4 weeks of collaborative learning-centered computer training (twice a week, two hours each time). Ninety-three older adults aged between 60-87 (Mean=68.5; SD=8.0) participated in the 4 week-long collaborative learning intervention. Almost half (46%) of the participants had less than one year of prior experience with computers. Participants completed the pre- and post-intervention instruments.

Results

Several key measures showed statistically significant improvements from pre to post intervention, including: computer knowledge (Pre=3.22; Post=4.13; p<.001); Web knowledge (Pre=2.69; Post=4.24; p<.001); Internet health information searching skills (number of successfully completed tasks: Pre=14.59; Post=22.31; number of assistances: Pre=1.63; Post=.59; p<.001 in both cases); computer anxiety (Pre=2.31; Post=2.07; p<.01); perceived e-health literacy (Pre=2.64; Post=4.03; p<.001); perceived usefulness of the Internet in helping to make health decisions (Pre=4.00; Post=4.53; p<.01); and perceived importance of being able to access health resources on the Internet (Pre=4.33; Post=4.60; p<.01). Other key measures (self-esteem, self-efficacy, computer interest and efficacy, and attitudes toward the aging experience) showed trends toward positive changes. Seventy percent of participants reported that what they had learned through the intervention had helped them “a lot” in taking care of their own health or caring for a loved one.

Conclusions

These findings provide preliminary support for the effectiveness of collaborative learning in improving older adults’ e-health literacy in informal settings.

Poster #53

Health Knowledge and Older Adults' Comprehension of Multimedia Health Passages.

D'Andrea, Laura M.[1]; Morrow, Daniel G.[1]; Stein-Morrow, Elizabeth[1]; Shake, Matthew C.[2]; Bertel, Sven[1]; Graumlich, James F.[3]; Conner-Garcia, Thembi A.[3]; Murray, Michael D.[4].
[1]University of Illinois, Urbana-Champaign, Savoy, IL. [2]St. Bonaventure University, St. Bonaventure, NY. [3]University of Illinois College of Medicine, Peoria, IL. [4]Purdue University, West Lafayette, IN. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Health literacy, the ability to obtain, understand and use health information to make health decisions, is associated with poorer self-care and health outcomes, especially amongst older adults with chronic disease. Such relationships partially reflect age-related differences in fluid cognitive abilities (e.g., working memory), which tend to decline with age and can impair comprehension of information needed for self-care. While crystallized abilities (e.g., knowledge) remain stable with age and can benefit learning, low health literacy individuals frequently do not have high knowledge of their disease. To support comprehension of self-care information, texts are often supplemented with pictures, which may reduce comprehension demands on vulnerable cognitive abilities. However, little is known about how elders, especially those with lower health literacy/knowledge, process pictures and text in health-related materials. We used eye tracking to study how hypertensive elders with and varying health literacy/knowledge read illustrated texts about hypertension. Processing was analyzed during the first read of the text and during re-reading, as rereading strategies have been shown to influence text comprehension.

Methods

Forty-three older adults completed measures of fluid ability (e.g., working memory), crystallized ability (vocabulary), hypertension knowledge, and health literacy (STOFHLA). 29 of these elders (mean age=73; SD=8.4) had fixation patterns (e.g., viewing time), saccades between pictures and text, and passage comprehension (question accuracy). Participants viewed a set of 6 passages about hypertension-related topics. Each passage consisted of a text accompanied by two pictures; one directly relevant to the textual concepts, one irrelevant.

Results

Participants who performed better on the STOHFLA and health knowledge measures (which were correlated) better understand the passages. Health knowledge and comprehension were associated with several phase-related reading process measures, but not to overall time allocation (i.e., time spent: reading text; looking at pictures; during/after first read of text; etc.). During the first read of a text, higher knowledge participants spent more time looking at text and less looking at pictures, and looked to pictures less frequently, than did lower knowledge elders. After the first read of a text, elders with higher knowledge and better comprehension spent less time reading text and more looking at pictures, compared to those with lower knowledge/comprehension. The time spent on pictures can be attributed to their looking at the relevant picture (not the irrelevant), suggesting that these participants were better able to distinguish between relevant and irrelevant pictorial information. We also found that shifts in participants' looking behavior across phases (initial read vs. re-read) were related to knowledge and comprehension, suggesting an optimal phase-based looking pattern that was characteristic of more knowledgeable readers.

Conclusions/Implications

As expected, more knowledgeable participants better understood the passages. Partitioning eye fixation data into phases based on the re-reading literature revealed patterns of reading processes that predicted better comprehension, and these strategies appeared to be used by participants with more health knowledge. Readers with more health knowledge tended to focus on reading the text during the first pass, and then focused on relevant pictures during re-reading, perhaps using the picture to consolidate their understanding of the passage.

Poster #54

Using Text Messaging to Foster the Development of Long-Term Health Literacy Skills.

Dalrymple, Prudence[1]; Zach, Lisl[1]; Rogers, Michelle[1]; [1]Drexel University, Philadelphia, PA.

Presented via poster on Monday at 5:30pm.

Background/Research Question

While health literacy is being hailed as the "newest vital sign,"[1] interventions to improve health literacy are still uncommon in clinical care settings. A nationally recognized nurse-managed, holistic health center (the Center) serving a largely African-American, low income population located in a public housing neighborhood, offers a variety of services to promote healthy living choices but does not yet include a health literacy component. To determine the most effective direction for such an effort, the following research questions are explored:

- Do targeted text messages about health issues help promote health literacy?
- Is a customized message from a trusted source (the Center) more effective than one from a standard source (text4baby)?

The project, undertaken by an interdisciplinary team of researchers, examines the extent to which the health literacy of participants in the Center's prenatal class is improved by providing health-related text messages and websites selected for their relevance to pregnancy and childbirth. The goal is to identify methods of fostering acquisition of health literacy skills that can be applied to other health situations and integrated into the Center's services. The desired skills include identifying information needs, accessing appropriate information sources, and evaluating that information.

This project builds on a previous assessment of Internet connectivity among a convenience sample of the Center's patients (n=53), which indicated that although 72% (38 of 53) of survey respondents reported having access to the internet, only 21% (8 of 38) of the patients at the Center reported using the Internet to search for health information. Finding methods for increasing the use of the Internet as a source of health information is part of developing long-term health literacy skills.

[1]Weiss BD, Mays MZ, Martz W, Castro KM, DeWalt DA, Pignone MP, Mockbee J, Hale FA. Quick assessment of literacy in primary care: the newest vital sign. Ann Fam Med. 2005 Nov-Dec;3(6):514-22.

Methods

- Participants are enrolled in the text4baby program, which provides expectant parents with three messages per week targeted at their gestational age (http://www.text4baby.org)
- Participants also receive customized text messages with a link to an informative website; messages are sent from a source identified as the leader of the prenatal class and provide culturally and educationally appropriate information.
- Participants complete health literacy pre- and post-tests using the Pfizer NVS screening tool plus a seven-question assessment of individual information seeking behavior; participants also complete a monthly questionnaire about their actual use of the messages.

Results

Participants self-select into three major groups: those who do not read the text messages (or read them infrequently), those who read the text messages but do not follow the Internet links to information, and those who both read the messages and follow the links. Based on feedback collected during the project, preferences for message type and frequency will be identified as well as changes in health literacy (as measured by the NVS) and attitudes toward information seeking.

Conclusions/Implications

Health information seeking and health literacy are closely related constructs. Using contemporary methods to deliver health information during a specified time period can yield insights as to how best to integrate health literacy and health information seeking habits and skills into the spectrum of services offered through health centers, especially those whose mission focuses on promotion of health choices.

Poster #55

Readability of Early Intervention Program Literature. Pizur-Barnekow, Kris[1]; Ryner, Paula M.[2]; Patrick, Timothy B.[2]. [1]University of Illinois at Chicago, Chicago, IL. [2]University of Wisconsin-Milwaukee, Milwaukee, WI. *Presented via poster on Monday at 5:30pm.*

Background

Early intervention program literature (e.g., brochures, program information, consent forms) is developed by agencies for various purposes, including: (1) assisting families with advocacy for their child, (2) guiding family participation in service coordination and delivery, and (3) providing families with strategies to achieve targeted developmental outcomes.[1] When early intervention program literature serves these purposes, it should enhance and facilitate family-centered care. A significant component of family-centered care is to engage the family so that they may best support the developmental needs of their child. In order for early intervention program literature to facilitate the family's engagement, it must be written at a readability level that makes it accessible to families who have children referred to and enrolled in early intervention programs; only then may it serve as an effective tool for engaging the family. The purpose of this study was to evaluate the readability and accessibility of early intervention program literature using readability analysis. The research questions that were addressed included:

1. What was the average reading level of the early intervention program literature that nine agencies provided to families?
2. Which early intervention program literature was written at or below the recommended fifth grade reading level?
3. Was there a significant effect of document type or agency on early intervention program literature reading level?

Methods

This study incorporated a retrospective design and used descriptive methods to determine the readability levels of documents (n=97) that characterized the literature for nine programs that served families and children in early intervention in a large county in the Midwest. Readability statistics were calculated using Microsoft Word software and the Simple Measures of Gobbledygook (SMOG) on the 97 samples of early intervention program literature. Means and standard deviations were calculated to answer research questions 1 and 2. An omnibus F test and post hoc analysis using Scheffe's multiple comparison test was performed to determine the effect of form type and agency on reading levels. Two from types were removed from this analysis as there was no variability in the form across agency. The significance level was set at alpha .05.

Results

Most of the document types were prepared above the recommended 5th grade reading level. The intake document was the only document prepared below a 5th grade reading level. There was a significant main effect of document type on Flesch Kincaid and SMOG reading grade levels $F(8, 60) = 8.58$, $p = .000$, $F (8 ,60) = 2.77$, $p = .01$.

Conclusions

These findings indicate that early intervention program literature is written at inappropriately high grade levels. Thus the literature may be difficult for parents to understand, decrease their participation in their child's early intervention program and contribute to health disparities.

Poster #56

Targeting health literacy environment in an urban hospital setting: A conceptual framework utilizing the Donabedian model. Ali, Nadia K.[1]; Meghani, Salima[2]. [1]Pennsylvania Hospital, University of Pennsylvania Health System, Philadelphia, PA. [2]University of Pennsylvania, School of Nursing, Philadelphia, PA. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Objectives:

1. To offer a conceptual frame-work for promoting health literacy in a hospital setting.
2. To discuss the application of the frame-work for improving communication between providers and patients with low health-literacy.
3. To describe the challenges of bringing about a change in a hospital setting.

Background:

National Center for Education Statistics estimates that 77 million Americans have basic or below-basic levels of health literacy. Patients with low health-literacy are unable to comprehend a typical patient handout. These patients feel ashamed of their reading difficulties and hide them from friends, families and health providers. Health-literacy skills are associated with important health/health services outcomes including healthcare utilization, cost of care, and behavior/life-style outcomes. An important factor contributing to the ability of these patients to obtain, process and apply health information is the health literacy environment of the healthcare institution. Creating health literacy environment necessitates effective communication of both verbal and written materials between patients and providers.

Methods

We began with an evaluation of the hospital health-literacy environment and identified significant knowledge, beliefs and practice gaps amongst nurses and residents. In addition the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey revealed that patients received inadequate information about newly prescribed medications. Thus communication was identified as a major barrier; the frame-work was used to address the communication barriers between providers and patients with low health-literacy.

The structural changes involved development of a ‘health-literacy taskforce’. The taskforce was charged with developing and implementing strategies to address identified barriers to patient-provider communication pertaining to new medications. The taskforce provided a platform for collaboration among clinical departments and community members. It promoted acquisition of specific tools to improve verbal and written communication in patients with low health-literacy as well as developed a tool ‘New Medication Form’ to be used by nurses for providing information about new medications to hospitalized patients. It also modified the nursing care plan to document the appropriate use of the tool.

The process to implement the new tool was outlined with the help of the nurse managers and clinical care coordinators. It involved creating a designated section for the new forms and patient education materials as well as provision of training to house staff and nurses regarding the appropriate implementation of the tool. Patients were encouraged to ask their providers for specific information about the newly prescribed medications.

Results

The outcomes being assessed to evaluate the patient-provider communication about new medications include patient feedback through the HCAHPS survey, the number of patients receiving the new medication form and the number of nurses accurately documenting and using the new tool.

Conclusions/Implications

The Donabedian's model, which has long been tested in the context of a number of health services and outcomes, can also serve as a unifying framework to organize health-literacy culture in a hospital setting.

Poster #57

Association of numeracy with health information seeking and health provider interactions for young adults.

Manganello, Jennifer[1]; Clayman, Marla[2]. [1]University at Albany, Rensselaer, NY. [2]Northwestern University, Chicago, IL. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Young adults ages 18 to 29 are beginning to live on their own and achieve independence. However, few have studied heath literacy issues for this age group. One component of health literacy is numeracy, the ability to understand numbers. This study is designed to assess whether numeracy skills are associated with self-reported ability to access health information and trust in health information sources. The study also examines whether differences exist for the association of numeracy skills with health provider interactions.

Methods

Using Health Information National Trends Survey (HINTS) 2007 data, we included respondents ages 18 to 29 (n=695) in our sample. The survey asked four questions related to numeracy and health. We used one of the questions, which was highly correlated with the other three, as an estimate of numeracy. That question asked: "In general, how easy or hard do you find it to understand medical statistics?" We placed 196 respondents (30%) who replied 'Hard'/'Very hard' in the lower numeracy group, and 465 respondents (70%) who replied 'Easy'/'Very easy' in the higher numeracy group. We dropped the remainder (n=34) who did not provide an answer from the analysis. We used chi-square tests to look for statistically significant associations.

Results

There were no differences by demographic factors for those with lower and higher numeracy, and no differences for trust in various health information sources. When asked about the most recent health information search, the lower numeracy group was more likely to report it took a lot of effort to get information (p=.0008), they felt frustrated (p=.0038), and the information was hard to understand (p=<0001). People with lower numeracy were less satisfied with their quality of care (p=.0003), less confident they could take care of their health (p<.0001), and reported less satisfaction with health provider interactions.

Conclusions/Implications

Further investigation of health literacy issues, including numeracy skills, for this age group is warranted. Given that young adults are learning their way around the health system as independent users of health services, health providers should consider that young adults with low numeracy skills may require additional attention or explanation of information. In addition, the development of interventions to facilitate health information seeking would be useful for young adults with limited numeracy skills.

Poster #58

Race and Ethnicity Moderate the Relations Among Internet Use, Health Literacy, and Health. Ownby, Raymond L.[1]; Waldrop-Valverde, Drenna[2]. [1]Nova Southeastern University, Fort Lauderdale, FL. [2]University of Miami, Miami, FL. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Various explanations have been advanced for the relation between race and ethnicity, health literacy, and health. Access to health information may be an important part of the explanation, since better access to healthcare information might be related to important health-related behaviors. African Americans and Hispanics have been shown to have less access to electronic information resources (the "Digital Divide"). In a previous mediation analysis, we had shown that access to electronic health information resources in part accounted the relation between health literacy and health. Given the demonstrated relation between race and ethnicity and access to health information on the Internet, we hypothesized that race and ethnicity would affect the way that access to electronic information resources linked health literacy and health.

Methods

Data from the National Assessment of Health Literacy (NAAL) were used to explore the relations among race and ethnicity, use of the Internet to find health information, health literacy, and self-reported health status. The 2002 NAAL survey included data from 18,081 persons selected to be representative of the US population. We first hypothesized that use of the Internet would mediate the relation between health literacy and self-reported health status. We then hypothesized that this mediating relation would be affected (moderated) by race and ethnicity. Both models were developed in the MPlus statistical software package.

Results

We first evaluated whether Internet use to obtain healthcare information could in part explain the relation between health literacy and health (mediation model). This first model showed that use of the Internet to get healthcare information in part accounted for the relation between health literacy and self-reported health status in a model that also adjusted for the effects of age, education, and income ($z = 6.23$, $p < 0.001$). A second model that included terms for the moderating effects of black race and Hispanic ethnicity showed that both significantly affected the relation observed in the first model (moderating effect of black race, $z = -9.39$, $p < 0.001$; effect of Hispanic ethnicity, $z = -5.00$, $p < 0.001$).

Conclusions/Implications

These analyses confirm the relation of Internet use to the relation between health literacy and health. In a model that accounted for age, education, and income effects, part of the effect of health literacy on health was related to seeking health information on the Internet. As hypothesized, race and ethnicity modified this relation. This finding confirms others' contentions that disparities in electronic access to health information may be an important issue to address in efforts to reduce race- and ethnicity-based disparities in health status.

Poster #59

How can we best support socio-economically disadvantaged women to make informed healthy eating and physical activity choices? The role of health literacy.

Edwards, Jill V.[1]; Jackson, Cath[1]; Cheater, Francine M.[2]; Holt, Janet[1]; McKenna, Jim[3]; Strachan, Emma[4]; West, Robert[1]; Robinson, Michael[5]. [1]University of Leeds, Leeds, West Yorkshire, UK. [2]Glasgow Caledonian University, Glasgow, Scotland, UK. [3]Leeds Metropolitan University, Leeds, West Yorkshire, UK. [4]NHS Leeds, Leeds, West Yorkshire, UK. [5]NHS Hounslow, London, UK.

Presented via poster on Monday at 5:30pm.

Background/Research Question

Poor health literacy is associated with socio-economic disadvantage and compounds health inequalities. Interventions to promote informed decision-making for healthy eating and physical activity commonly ignore the issue of health literacy. This study explored the barriers and facilitators to supporting socio-economically disadvantaged women to make informed healthy eating and physical activity choices for themselves and their families. Kwan et al's health literacy model[1] was the underpinning theoretical framework. This model identifies four health literacy domains (access, understand, communicate and trust).

Methods

Thirty eight health workers based in deprived areas of three northern cities in England were purposively sampled to include a broad range of professional roles. We included those with a specific remit for providing physical activity and healthy eating advice (e.g. dietician, primary care nurse) and those for whom this was a small part of their role (e.g. drug worker, pharmacist).

Semi-structured interviews explored how they support women to access, understand, communicate, trust and use healthy eating and physical activity information. Interviews were recorded, transcribed verbatim and analysed using the Framework approach[2].

Results

A broad range of health workers were interviewed including pharmacists, primary care physicians and nurses, health trainers, youth workers and community development workers.

Findings indicated that health workers *accessed* a variety of information to support them in providing lifestyle advice to women. Availability of appropriate resources in terms of literacy and cultural diversity was seen as 'patchy'. Workers whose role was more 'holistic' such as community development workers tended to signpost women onto other people with more 'topic specific' knowledge. Different methods were used to deliver (*communicate*) information to women, again reflecting the professional's role. For example dieticians and pharmacists worked one-to-one whereas food workers favoured group work. Health workers remarked that u*nderstanding* of the components of healthy eating (e.g. 5-a-day) and physical activity (e.g. 5 weekly bouts of 30 minutes) was poor across some groups of women and confounded by myths in the media. They were generally fairly confident in their own understanding. Building *trust* between health workers and women was seen as critical to supporting women to *use* the advice to make healthy choices. It was acknowledged that this took time.

Conclusions/Implications

These findings highlight the important role of the different health literacy domains in supporting socio-economically disadvantaged women to make informed lifestyle choices. They also identify potential ways to improve the quality of support and advice provided by health workers. A ‘Guidance for Good Practice‘ resource is now being developed.

1. Kwan B et al. (2006). The development and validation of measures of health literacy in different populations. Project report. 2006. University of Victoria, Canada.

Ritchie J, Spencer E. (1994). Qualitative data analysis for applied policy research. In A Bryman, A Burgess (Eds). Analysing Qualitative Data. Routledge, London.

Poster #60

Facilitators and Barriers to the Adoption of AHRQ's Health Literacy Tools for Pharmacies: Lessons Learned for Future Health Literacy Efforts in Pharmacies.

Shoemaker, Sarah J.[1]; Wasserman, Melanie[1]; Staub-DeLong, Leah[1]. [1]Abt Associates, Inc., Cambridge, MA. *Presented via poster on Monday at 5:30pm.*

Background

According to the 2003 National Assessment of Adult Literacy, only 12% of adults have proficient health literacy. Individuals with low health literacy are more likely to experience adverse health events, including medication errors. In order to help pharmacies improve patient safety, AHRQ supported the development of four health literacy tools for pharmacy. The purpose of this study was to learn about factors that affect whether pharmacies adopt and implement the tools, experiences of pharmacies that use the tools, and the tools' effects on pharmacy policies or practices. The study focused primarily on the Pharmacy Health Literacy Assessment Tool, which aims to help pharmacies assess their health literacy practices in order to identify areas for improvement. A broader goal was to understand the factors that facilitate the success of pharmacy Quality Improvement (QI) activities in order to inform design of similar tools in the future.

Methods

We used Rogers' Diffusion of Innovations theory as a framework to understand pharmacies' decisions to use or not use the tools. We employed comparative case studies of seven pharmacies (cases) that implemented one or more of the health literacy tools. The cases represent diverse pharmacy types: a pharmacy in a federally-qualified health center, an independent pharmacy, a retail chain, a grocery store, and a pharmacy at a clinic. Methods included in-depth interviews, site visits, review of pharmacies' assessment findings (based on a pharmacy staff survey, patient focus groups, and an auditor's assessment), and review of other relevant documents (e.g., presentations, reports). Analysis involved a narrative of each case identifying factors (i.e., variables) that i) affected the decision to use the tool(s), ii) were facilitators or barriers to adoption, or iii) impacted results of adoption and/or resulted in unintended consequences. The specific factors (variables) included staff availability and interest, prescription volume, pharmacy environment, perceived benefits/risks of the tools, other competing/complementary QI initiatives, resources available, patient population, presence of a change champion, and stage in the innovation-decision process. We used a cross-case analysis across the pharmacy sites to compare variables of interest.

Results

We will present a comparison of pharmacies' experiences, highlighting which variables (e.g., resources, staff) ostensibly facilitate or hinder tool adoption and implementation across sites, which factors have a varied effect depending on pharmacy-specific context, and which factors affect policy or practice change resulting from implementation. Case study findings will suggest the degree of adaptability of the AHRQ tools and provide lessons learned to inform development of new tools for pharmacists serving populations with low health literacy.

Conclusions

Preliminary results suggest the difficulty of securing pharmacist time for QI activities. Pharmacy students, interns and residents can play an important role in moving QI activities forward with the support of pharmacy leadership, however the temporary nature of their position presents a challenge to continuity and follow-through. Where AHRQ's tools were used, they were well received and found to be user-friendly. However, pharmacies that implemented the pharmacy health literacy assessment tool needed additional support and technical assistance to complete the assessment.

Poster #61

Improving Health Literacy in a Large Community Health Center. Buonocore, Erica C. Cornell Scott - Hill Health Center, New Haven, CT. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Cornell Scott – Hill Health Center is a large community health center with 18 different locations to provide services. The center provides care to patients with public, private, and no insurance. The main branch is located in New Haven, CT. We serve an extremely diverse community population. In 2007, Yale University students completed a research project to assess the level of health literacy for a sample of patients at CS-HHC. The results of this research lead to a grant awarded by CT Health Foundation. The goals of the grant were to 1) Reduce racial and ethnic health disparities by improving patient-provider communication and 2) Develop a model health literacy program for a large community health center that will be sustainable and replicable. I was hired as the Health Literacy Coordinator to write and execute an action plan that would move forward in achieving the goals set out by the grant.

Methods

Since January 2010, I have been putting the action plan into place by collaborating with many other staff including entire departments. With constant feedback from administration, staff, and patients, it has been a process of using research to support proposed changes in CS-HHC. We have begun to assess, modify, and create documents that are given to patients. We have a team that discusses which documents are essential and would be helpful for staff during patient-provider encounters and provides assessment and feedback on education materials. Since 70% of our staff does not have training in Health Literacy, I have setup and conducted training to start the process of elevating our awareness and providing strategies to facilitate patient – provider communication. Also, we have assessed our physical environment and have begun to make changes that ease navigation through the health center. It has taken a team of people from all areas of the corporation to come together and make change possible.

Results

The action plan is currently in progress and will continue until December. The steps taken so far have resulted in a greater awareness of how staff communicates with patients. We have seen improvements in how patients are able to navigate the health center because of the signage that we have changed. Using resources such as Hablamos Juntos, Department of Health and Human Services, Agency for Healthcare Research and Quality (Health Literacy Universal Precautions Toolkit), The Health Literacy Environment of Hospitals and Health Centers (Rudd and Anderson, 2006), and a variety of other literature has kept us at a fast pace to assessing and making improvements.

Conclusions/Implications

Even though I have been working on this project for such a short time, we have used so much of the health literacy research that is available. In conjunction with the research, we have used/developed many strategies that have made change a welcomed result. It would be a privilege to share my experiences working in a large community health center and the impact that it has had on health literacy in this short time so that other professionals may learn from our experiences.

Poster #62

Identification of Barriers to Health Communication: A Health Literacy Needs Assessment Survey.

Morgan, Joan E.[1]; Lewis, Kadriye O.[1]; Calderon, Kathleen[1]; Britigan, Denise H.[2]; Chambers, Anne[1]; Patterson, Tia[1]; Lierman, De'Shauna[1]. [1]Cincinnati Children's Hospital Medical Center, Cincinnati, OH. [2]Librarian and Certified Health Education Specialist. *Presented via poster on Monday at 5:30pm.*

Background

It is important to note that there is no current tool to accurately assess true health literacy. Many tools have been developed, but these only serve as a proxy for health literacy; they essentially measure literacy within a health context (Davis, 2008). The purpose of this study was to implement a hospital-wide needs assessment survey to better determine the knowledge, practices and attitudes of physicians, patient care personnel and parents concerning health literacy at Cincinnati Children's Hospital Medical Center (CCHMC).

This needs assessment study will assist the CCHMC's Health Literacy Committee, whose mission is to provide education to minimize the impact of low health literacy in moving forward the field of health literacy by translating research findings to practical strategies that can be easily implemented.

Methods

All physicians and other healthcare providers with access to CCHMC email were invited to participate in the survey. The survey combined open-ended questions and Likert scale items from four domains: communication, decision making, interpersonal skills, and health literacy knowledge. Quantitative data were analyzed through the statistical software package SPSS (descriptive statistics, Cronbach's alpha, and t-test). $P<0.05$ was considered significant. Open-ended responses were analyzed thematically. Trained survey assistants administered face-to-face surveys orally to parents of patients in waiting rooms of five venues: two primary care clinics and three sub-specialty clinics.

The interview tool developed was scripted, but also allowed for selective probing in order to illicit comprehensive answers from participants. Consented participants provided permission for audio-taping the interview and received compensation ($25) at the end of the interview.

Results

Participants: 145 physicians and 891 patient care personnel, and 94 patient caregivers completed the surveys. The results of Cronbach's alpha, which was used to estimate the internal consistency of the scale, were 0.7 or greater for all domains. Most of the respondents had a general idea of what health literacy means, but only 37% of patient care personnel and 65% of physicians were able to define health literacy adequately. Only 18% physicians and 16% patient care personnel attended communication skills training and/or sessions related to health literacy such as college courses, grand rounds presentations, training programs, in-services, workshops, and conferences. The vast majority of the professional respondents indicated that there is a need for health literacy training for health care professionals (91.2% Physicians and 93.9% Patient Care Personnel). Parent responses from the primary care clinic were compared to parent responses from three specialty clinics.

Conclusions

The goal of this needs assessment was to gauge the awareness of health literacy at CCHMC and provide data on where to focus resources. The outcomes of this study will be used:

1. To better determine the knowledge, practices and attitudes of physicians, patient care personnel and parents concerning health literacy at CCHMC and provide data on how the Health Literacy Committee can best serve the CCHMC community.

To use the findings to develop further health literacy initiatives and educational interventions that will help ensure that health information is communicated to families in ways that are clear and meaningful.

Poster #63

Prescribing Information Therapy Provides Channel for Physician-Patient Communication and May Improve Patient Health Literacy.

Chesser, Amy K.[1]; Hart, Traci A.[1]; Keene, Nikki C.[1]; Kellerman, Rick D.[1]; Bradham, Douglas D.[1]. [1]KUSM-W, Wichita, KS. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

The long-term objective of this research is to investigate health literacy levels of patients participating in a new model of primary care using information prescriptions. Recent increased use of web derived health information (i.e., the e-patient revolution) has created another communication channel for providing health information, expanding clinician-patient communication, and potentially increasing patient health literacy rates. However, there remains a need for further research to investigate the impact of information obtained through the Web on medical decision-making processes.

Recently, experts have included Information Therapy (Ix) as a method for increasing clinician-patient communication, patient adherence, patient understanding of diagnosis and treatment options, and reduction in clinical encounters. The term “information therapy”, and its symbol “Ix®”, were coined by Healthwise® to mean: “providing patients with the right information at the right time, in understandable terms, so patients can make an informed decision about their health.” The *MedEncentive*® Information Therapy Program (hereafter “The Program”), has several years’ experience in development and successful testing of using financial rewards to both providers and patients to encourage “mutual accountability.” The Program has made an important contribution toward transforming health and healthcare as evidenced through previous pilot studies.

This study independently examined participating patient perceptions of the MedEncentive Program.

Methods

This study included a secondary, retrospective analysis of survey data collected by the MedEncentive Program. All participant data was transmitted to the Investigators from MedEncentive LLC. The informed consents for each employee and their dependents are a component of the insurance contract, which means that the study qualified for a waiver of consent. Surveys were administered through the online platform, for the City of Duncan (N=4037) and Wichita Clinic (N=8123) from January 1, 2006 through December 31, 2009. The survey initially included 13 questions. In August, 2008, two (2) questions were added to the survey and five (5) more questions were added in November 2009. Three (3) qualitative (open-ended) were included in the survey. Analysis was conducted as shown in Table 1.

Table 1. MedEncentive Patient Survey Data Information

Aims	Data	Data Source	Retrospective, Secondary Analysis Methods	Analysis
1. Participation	ID number; IX Type	MedEncentive Program	Questions presented on MedEncentive's online interface	SPSS for descriptive frequencies
2. Patient Perceptions	Self-reported physician-patient communication; compliance/adherence; satisfaction; health literacy	Participating patients	Questions presented on MedEncentive's online interface	1.SPSS for descriptive frequencies 2.content analysis of qualitative questions

Results

Preliminary findings indicate the majority of patients received information therapy through the claims-generated system (versus point of service). Responses indicated patients perceived high levels of physician-patient communication (68%), health improvement based on information provided through the Ix (70%), and self-reported medication adherence/compliance (83%). A key element in program success was the degree to which patients trusted and were satisfied with their physician. Ninety-six percent (96%) of patients were satisfied with their doctor's care. Additionally, patients indicated that their physician's access to their questionnaire responses motivated them to improve their health literacy and change their health behaviors.

Conclusions/Implications

Secondary data analysis indicates a relationship between prescribed Information Therapy (Ix) and self-reported health literacy. As web-based Ix increases in frequency, the evaluation of patient and clinician communication is important and should be expanded to increase the benefits for both patients and clinicians. Additionally, administration of a validated health literacy survey (i.e. REALM or S-TOFHLA) at baseline to assess patient health literacy rates prior to implementation of information therapy (Ix) is recommended.

Poster #64

Improving Health Literacy and Access to Reliable Health Information in Rural Oxford County Maine. Kurtz-Rossi, Sabrina[1]; Duguay, Patricia[1]. [1]River Valley Healthy Communities Coalition, Rumford, ME. *Presented via poster on Monday at 5:30pm.*

Background

The River Valley Healthy Communities Coalition (RVHCC) is a non-profit organization serving rural Oxford County, Maine. The goal of the RVHCC Health Information Literacy Outreach Project was to increase community access to reliable health information and improve health literacy skills. Medical and public librarians, k-12 teachers, adult literacy instructors, and health professionals worked together to achieve the following objectives: 1) assess community health information needs and inventory resources and services; 2) increase the capacity of teachers and librarians to use online health information resources to improve health literacy; 3) pilot a health literacy curriculum with intergenerational activities where young learners help seniors in the community use the Internet to find health information; and 4) model consumer health information outreach and encourage similar efforts throughout the state of Maine.

Methods

The project began with a community-wide inventory and needs survey. The survey was distributed to RVHCC individual and organizational members. A project kick-off/training introduced local teachers and librarians to online health information resources and prepared them to pilot the health literacy curriculum with youth and young adults. The project Health & Literacy Educator developed a first draft of the curriculum. Teachers and librarians were encouraged to adapt the lessons to meet the needs of their students. A number of evaluation tools were also developed including a curriculum pre- and post-evaluations distributed by teachers to all students to capture changes in knowledge, attitudes and behaviors; a teacher feedback form completed by all teachers who implement the curriculum to capture formative feedback; and a story-based evaluation form completed by students, teachers and librarians to capture how people in the community benefited from the project.

Results

Seventy-three RVHCC members responded to the community inventory and needs survey. Eighty-six percent said they worked in an organization that served the community, 63% said they provided community members with health information as part of their work, and 42% said they provided community access to the Internet. Eighteen local teachers and librarians participated in the project kick-off/training. All respondents to the training evaluation (n=13) said they felt more confident in their ability to teacher health information literacy as a result of the training. The curriculum was piloted in two middle schools, two high schools, and one adult education program. Among students that completed both the pre- and post-evaluations (n=121), 18% said they were confident in their ability to evaluate Internet-based health information on the pre-evaluation as compared to 48% on the post-evaluation. Sixty-five percent said they were confident in their ability to share what they learned with others in the community after participating in the curriculum. The RVHCC published a curriculum sourcebook that describes lessons learned from the pilot and distributed it to other Healthy Community Coalitions throughout the state of Maine. Also available at http://www.rvhcc.org/pdf/HIL_Sourcebook.pdf.

Conclusions

Results of this study indicate that an interdisciplinary partnership involving medical and public librarians, k-12 teachers, adult literacy instructors, and health professionals can improve access to reliable health information and health literacy in rural communities.

Poster #65

Use of a brief health literacy screening tool among urban adults in West Virginia. Sand-Jecklin, Kari E.[1]; Chertok, Ilana R.A.[1]. [1]West Virginia University, Morgantown, WV. *Presented via poster Monday at 5:30pm.*

Background/Research Question

Limited health literacy is associated with negative health outcomes including poorer overall health, increased use of acute care services, lower use of preventive care services, and poorer control of chronic conditions. Health professionals should assess patient health literacy status and assure patient understanding of important health information. However, more commonly used assessment tools require too much clinician time to be practical and may be perceived as demeaning by the patients. A brief screening tool by Chew et al. consists of three screening questions asking about confidence in completing medical forms, frequency of needing help reading hospital materials, and difficulty learning about health condition because of trouble reading written information. These three screening questions have been correlated with the TOFHLA and REALM tests and seem to be positively perceived by patients.

Many residents of West Virginia are at risk for limited health literacy due to the rural nature of the state, lower socioeconomic status, lower education levels, and a high elderly population.

Methods

Two convenience samples of adults in northern West Virginia--patients hospitalized in a tertiary care acute care facility and attendees of a health fair at a shopping mall in the same city--were included in a study to assess health literacy using Chew's health literacy screening questions.

Results

Data from 94 hospitalized patients indicated that 43% were somewhat or less confident in filling out medical forms, 38% reported sometimes or more often needing help in reading hospital materials, and 38% reported sometimes or more often having problems learning about their health condition due to trouble understanding written information. In contrast, of 330 health fair study participants, 21% indicated being somewhat or less confident in filling out medical forms, and only 10% reported sometimes or more often needing help reading hospital materials or sometimes or more often having problems learning about their health condition due to trouble understanding written information. There were significant differences in health literacy levels according to education level and age, and respondents to the health fair survey reported higher education levels than the hospitalized patient population.

Study respondents were also asked what they do when they do not understand health information. Hospitalized patients more frequently reported seeking clarification from family members rather than from a health provider, potentially contributing to continued lack of understanding. In contrast, health fair respondents more often indicated seeking information from more reliable sources: health professionals, books, or the internet.

Conclusions/Implications

Results from the study indicate that the use of Chew's brief health literacy screening questions can efficiently identify individuals at risk for low health literacy. Hospitalized patients seem to be at increased risk for not understanding medical information they are given, although the results suggest that even people who are actively seeking health information at a health fair, may have limitations in understanding that information. It is important for health professionals to assess patient ability to understand health information and to adapt patient interactions to assure adequate patient understanding.

Poster #66

The Relationship Between Health Literacy, Health Knowledge and Adherence to Treatment in Patients with Rheumatoid Arthritis.

Quinlan, Patricia[1]; Magid, Steve[1]; Kwanza, Price[1]; Mandl, Lisa A.[1]; Lyman, Stephen[1]; Stone, Patricia[2]. [1]Hospital for Special Surgery, New York, New York. [2]Columbia University, New York, New York. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Findings of the 2003 National Assessment of Adult Literacy Survey indicated that more than 75 million adults have only basic or below basic health literacy. Researchers have postulated that deficiencies in health literacy are likely to impact health knowledge and adherence to treatment as well as disease outcomes. Furthermore, inadequate health literacy is associated with higher health care costs (Hohn, 1998). The primary aim of the study was to determine whether health literacy is a predictor of health knowledge and/or adherence to treatment while controlling for socioeconomic factors in the context of rheumatoid arthritis.

Methods

A cross-sectional study design was employed. English speaking patients 18 and older were recruited from an urban outpatient Rheumatology setting. Pignone's (2006) conceptual model describing relationships between health literacy, health knowledge and adherence to treatment was used to guide bi-variate and multivariate analyses. Health literacy was measured using the Test of Functional Health Literacy in Adults (TOFHLA) brief version. The TOFHLA is internally consistent (r = .98) and reliable (r = .84). Health knowledge was measured using an adapted version of the Arthritis Knowledge Questionnaire, which also has established internal consistency (r = .98) and reliability (r = .84). The Morisky Medication Adherence scale, (r = .61) was used to measure adherence. Stepwise multiple regression was applied to determine an independent association between health literacy and health knowledge. Logistic regression was used to determine associations between health literacy and adherence to medications.

Results

The sample (N = 125) was predominately female (83%) and white (71%). Subjects ranged in age from 18 to 94 years (M = 58, SD =16). Forty-three percent (n = 54) were college educated, all had health insurance and 26% (n = 33) reported an income of less than 50 thousand dollars per year. On average, participants had high levels of health literacy (M = 90.8, SD13.83). The average health knowledge score was .727 (SD.262). The sample reported adherence to their medication regimen 84% of the time (SD .20). Controlling for patient covariates, health literacy was found to be a significant predictor of health knowledge (p = .002). Household income (p = .044), age (p = .004) and education (p =.001) were also independently associated with health knowledge. Health literacy was not found to be a significant predictor of adherence (p = .896) in adjusted analysis. However, neighborhood income (p = .041) and confidence with contacting provider about medications (p = .006) were found to be predictors of adherence.

Conclusions/Implications

The study findings indicate health literacy is independently associated with health knowledge but not adherence to treatment in patients with rheumatoid arthritis. The study findings provide useful information for planning patient education initiatives specific to chronic disease self-management.

Poster #67

Relationship Between Health Literacy and Consumer Engagement. Foytik, Michael D.[1]; Gates, Roger H.[1]. [1]DSS Research, Fort Worth, TX. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Consumer engagement is at the forefront of many initiatives to get individuals to take responsibility for their care and health literacy is a critical component of getting these consumers engaged. We tested the relationship between different literacy measures and the level of engagement amongst commercial and Medicare populations, in addition to the uninsured.

Methods

Primary research was used to collect metrics around health literacy and consumer engagement. Data were collected via mail, mail-to-Internet and Internet panel. Over 9,000 surveys have been collected since April 2009, testing a variety of measures of health literacy and correlating them with health care knowledge, attitudes and behaviors. Health literacy and engagement measures have also been compared to medical claims data, along with self-reported health care usage and behaviors.

Results

Even well-educated individuals lack confidence when it comes to understanding medical information and filling out medical forms. Those who are able to follow detailed directions and correctly distill information found on nutrition labels still admit seeking help or lacking confidence when it comes to medical information. Literacy is highly correlated with demographic characteristics such as education, income and ethnicity, as well as, attitudes about health care and current health status. However, engagement is more correlated with medical claims, health care knowledge and healthy behaviors than is literacy alone. Consumer engagement is more correlated with measures of confidence in reading and understanding health related information than it is with measures of reported problems or difficulties using health information and materials. Household income is a better predictor of self-reported problems with health information and level of confidence in filling out medical forms than is level of education. Hispanics are much more likely than other ethnic groups to report problems with health information, but are comparable to other ethnic groups regarding their level of confidence in filling our medical forms and the frequency with which they need someone to help them read instructions or other written materials.

Conclusions/Implications

There is a difference between having the ability to read and understand complex instructions and having confidence that you have correctly filled out a medical form or correctly interpreted medical instructions. Having the skills to read labels, interpret charts and make mathematical calculations does not insure that an individual is capable and comfortable interpreting verbal and written communications from health care providers and health insurance organizations. Only the most engaged consumers exhibit the levels of health literacy and health care knowledge necessary to navigate the complex health care system and follow all the recommended healthy behaviors. Health literacy is a necessary building block, but not sufficient in itself to insure consumer engagement. Confidence level and household income appear to be better estimators of an individual's likelihood of successfully obtaining needed medical care than more typical measures of literacy and education level.

Poster #68

Health literacy predicts self-efficacy for physical activity among latinas. Dominick, Gregory M.[1]; Dunsiger, Shira I.[1]; Marcus, Bess H.[1]. Brown University and The Miriam Hospital, Providence, RI. *Presented via poster on Monday at 5:30pm.*

Background

Health literacy has been shown to be associated with positive health behaviors and outcomes. Specifically, it facilitates navigation through the healthcare system; improves ability to communicate with primary care providers (PCPs); enhances comprehension of health information and one's own risk status, and empowers individuals to engage in preventive self-care. In addition, self-efficacy (SE) has been shown to be a significant predictor of health behaviors such as physical activity (PA). Although race and ethnicity (Black and Hispanic) have been shown to be negatively associated with health literacy, PA interventions often do not assess health literacy or target Hispanic populations (specifically, Latinas). The purpose of this study was to examine whether health literacy scores would predict change in SE for PA among Latinas participating in a culturally tailored PA or health/wellness intervention.

Methods

Data were analyzed from a six-month PA randomized control trial (RCT) that was culturally and linguistically adapted for Spanish speaking Latinas (N= 89) living in Providence, Rhode Island. Health literacy was assessed via the Spanish version of the Shortened Test of Functional Health Literacy for Adults (STOFHLA; inadequate = 0-16; marginal = 17-22; adequate = 23-36). SE for PA was assessed at baseline and six-months using a standardized measure.

Analysis: Multivariate linear regression was used to test the association between health literacy and SE scores (at baseline and separately, the change after six months). Models were adjusted for key demographic predictors of outcome including language spoken in the home, years of schooling, age of participant and number of young children living in the home. Residual diagnostics and influence statistics were assessed to test for adequacy of model fit.

Results

A mean STOFHLA score of 29.92 (SD=7.60) indicated most participants in this study had adequate health literacy. Higher health literacy was significantly associated with lower baseline SE scores (B=-0.04, SE=0.01) when controlling for key baseline demographic variables. In addition, lower baseline SE scores approached significance for participants who reported speaking only Spanish in the home (B=-0.38, SE=0.20; p=0.057), after adjusting for health literacy and other key demographic variables. At six-months, higher baseline health literacy scores were significantly associated with increased changes in SE for PA (B=0.04, SE=0.01) when controlling for treatment assignment and demographic predictors of outcome.

Conclusions

At baseline, higher STOFHLA score may indicate that participants have better comprehension of their SE for PA. After the six-month intervention, higher baseline STOFHLA score predicted higher SE for PA, suggesting those participants, regardless of treatment assignment, may have been more likely to have accessed and utilized PA resources. Having adequate health literacy may be an important asset for Latinas to engage in health promoting behaviors such as PA. PA interventions targeting Spanish speaking Latinas should assess for health literacy as this could influence their ability to access and utilize PA information and resources.

Table 1: Predictors of change in Self-Efficacy score after six-month physical activity intervention

	Coefficients*		
Baseline Variables	Beta	SE	p-value
More than 1 child under age of 5 years	0.076	.446	0.694
Only speak Spanish in home	-0.378	.196	0.057
Less than 12 years of school	0.414	0.199	**0.041**
STOFHLA score	-0.038	0.013	**0.004**
6-Month Follow Up			
More than 1 child under age of 5 years	-0.199	0.212	0.350
Only speak Spanish in home	0.244	0.216	0.262
Less than 12 years of school	-0.174	0.221	0.434
STOFHLA score	0.041	0.014	**0.006**

* Coefficients for 6-month follow up reflect change in SE score

Poster #69

Development of a low health literacy patient educational materials for an inpatient rehabilitation setting.

Hunter, Elizabeth G.[1]; Dignan, Mark[2]; Shalash, Sophia[1]. [1]Cardinal Hill Rehabilitation Hospital, Lexington, KY. [2]University of Kentucky, Lexington, KY. *Presented via poster on Monday at 5:30pm.*

Background

Low health literacy has been shown to negatively impact health outcomes and medical self-management. Little health literacy research has been focused on physical rehabilitation settings. Important health literacy concepts such as medication management, prevention and health behaviors closely tie into the physical rehabilitation goals and outcomes. The problem is compounded if the patient requiring rehabilitation is from a rural environment. One basic tool for supporting people with low health literacy is clear written communication. This presentation will describe results from an investigation carried out as part of an NCI-funded project exploring health literacy issues among people from Appalachia who received cancer rehabilitation in an inpatient setting.

Methods

Written patient education materials were collected from each unit and each discipline at a large free standing physical rehabilitation hospital. The materials were analyzed for reading level and readability using the Flesch-Kinkead reading assessment. Focus groups were held by discipline (occupational therapy, physical therapy, speech language pathology, nursing and psychology) to discuss the materials and to begin to develop a plan to adapt them. Focus groups were also held with each program manager (Brain injury Unit, Spinal Cord Unit, Pulmonary Unit, Stroke Unit) to explore educational materials that pertain specifically to the unit/diagnosis. Finally a focus group of former inpatient rehabilitation users and one on one interviews with former cancer rehabilitation patients were conducted, to explore the end users perceptions of the original and revised materials.

Results

A total of 97 pieces of patient education materials were initially assessed. The average reading level of the original educational materials was 16.02. The material had a reading level that ranged from 2.4 to 18.24. A subset of 22 documents was chosen for revision. A template based on the "Ask Me Three" public health campaign was developed. All materials were formatted to be 1-2 pages and divided into: "What is (problem/diagnosis)?", "What do I need to do?", and "Why is it important?" Once the template was agreed upon materials were edited to fit the format. The average reading level was lowered to 4.7 with a range from 1.9 to 8.2. The two largest problems with the original materials were vocabulary level and amount of information provided.

Conclusions

Physical rehabilitation needs to begin to focus more strongly on issues related to health literacy. Clear communication in patient educational materials is a crucial first step to providing the best client-centered care. Next steps will include exploring how these patients access appropriate health information once they return to their rural home communities to learn more about how the family and social context of these patients influence the transaction of accessing, processing and understanding basic health information? In certain high risk groups, interventions should be designed that support the physical rehabilitation patient in terms of health information.

Poster #70

Building A Partnership: Improving Health Literacy of Adult Learners While Improving Patient Education Materials. Behrenbeck, Julia G.[1].; Becker, Graylen K.[2]; Bjornsen, Susan S.[1]; Fanning, Kimberley S.[2]; Fynskov, Lonnie J.[1]; O'Brien, Mike W.[1]; Nigon, Julie A.[2]; Rho, Jennifer P.[3]; Smith, Becky A.[1]; Smith, Steven A.[1]. [1]Mayo Clinic, Rochester, MN. [2]Rochester Public Schools, Rochester, MN. [3]Hawthorne Education Center, Rochester, MN. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Mayo Clinic patient education and a local adult education program (Hawthorne School) developed a project with the following goals and aims.

Goals:

- Increase Health Literacy (HL) of Hawthorne learners through process of systematically evaluating materials
- Empower Hawthorne learners to advocate for themselves
- Utilize expertise of the Hawthorne community to improve quality of patient education materials

Aims:

- Gauge teacher/learner interest in field-testing patient education materials
- Determine feasibility of an ongoing partnership between Hawthorne and Mayo Clinic to field test materials
- Develop standard process for potential future projects

Methods

The field test was carried out during the month of March, 2010. A new education piece on weight management was introduced each week for four weeks. Each piece was tested in 7 – 10 classrooms and feedback was obtained from approximately 100 adult learners. After introducing the piece and having them read it, the adult learners were asked to circle the words/illustrations that were difficult to understand or confusing. Each adult learner answered 2 – 3 multiple choice questions, as a test of how well the material was presented. Finally, a structured group discussion was completed. After the field test, a debriefing was held with the adult literacy teachers to collect feedback of the field test, both on teachers' impressions as well as those of the adult learners.

Results

All four of the educational pieces were not at an appropriate HL level for the adult learners, especially those in levels 3 – 5. A strong theme was that the adult learners were very motivated to learn about weight management and healthy eating and engaged in active discussion. During the debriefing after the field test, participants agreed that too much data was collected and that the field test design could be significantly scaled back. In addition, a number of the adult literacy teachers reported that one hour for four weeks cut into their class time and that some students felt pressure to get back to the reading curriculum, even though they were interested in the patient education material. The field test coordinators shared that they thought it was awkward for adult learners to circle words/illustrations that they did not understand or found confusing, and found that discussing the material using open-ended questions was more revealing about what they did and did not understand.

Conclusions/Implications

Recommendations from the study are to re-write the four pieces to match the health literacy level of the Hawthorne learner consistent with ESL (English as a Second Language) level 4. An additional recommendation was to establish a process to field test select patient education materials with adult learners at Hawthorne School as part of the development cycle at Mayo Clinic. It is proposed to create this education content as part of the CASAS (Comprehensive Adult Student Assessment Systems) curriculum. This would enhance health education for adult learner participants.

Poster #71

A Video Education Program: A Methodology to Improve Health Literacy. Ferguson, Laurie Anne. Loyola University New Orleans, New Orleans, LA. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Video/DVD is an underutilized medium that can assist clinicians in health education. Research suggests the use of video/DVD may be particularly helpful in communicating health information to people with limited health literacy. Improving patient knowledge and self-efficacy can decrease health disparities and improve patient safety. A Video/DVD may enable patients to visualize and better understand specific health topics by concisely providing complex information in a visual format instead of only written educational materials. A video/DVD education program that is culturally sensitive, socioeconomically neutral and practice appropriate can have a significant positive impact. However, there are significant barriers to the routine implementation of such methodology. First, there is a lack of culturally sensitive video/DVDs available. Most available video/DVDs are long and therefore not practical as short video/DVDs (eight minutes or less) are recommended. Topics need to be broken down in shorter segments to improve comprehension and health literacy. Second, production of appropriate videos/DVDs are time consuming and expensive for practices to implement. Third, introduction of routine video/DVD use in busy clinical practice involves a practice change where there a few incentives for implementation and therefore staff acceptance can be challenging.

Methods

The focus of this translational project is to develop a series of video/DVDs on a variety of topics with accompanying pamphlets. To date, three video/DVDs have been produced which use simple language and highlight key points in pictures: using your inhaler; iron deficiency anemia in children; and administering medications to children. The video/DVDs developed are practice specific and provide real life demonstration. Portable DVD players rather than computers are utilized to play the appropriate video/DVDs thus reducing cost and equipment risk. The project was implemented in a busy southern, rural family practice. Patients and caregivers assessed the likeability and usefulness of the format. The staff was educated about limited health literacy including a vision for improved patient education by utilizing video/DVD methodology.

Results

Video/DVDs can be developed at the practice level using nonprofessional video recording equipment and editing software. Patients expressed high satisfaction with the video/DVD methodology and liked that the educator in the video/DVD was one of their own providers which provided credibility. Staff acceptance and adoption of video/DVD methodology was slow at first but ultimately enthusiastic when the value of the intervention became apparent. A change agent in the practice is critical for successful implementation.

Conclusions/Implications

Research has shown the effectiveness of video/DVD methodology to improve health literacy. Translation of the research by implementing video/DVDs in a busy primary care practice cost effectively is challenging but achievable. Script development, filming and editing the final product is a significant time investment and therefore expensive. Written standardized scripts and workshops to teach strategies for filming and editing with would make translation of the research more feasible. Resources to support the development and utilization of appropriate video/DVDs are needed for widespread implementation.

Poster #72

Knowledge and Perceptions of Health Literacy Among Nursing Professionals. Macabasco-O'Connell, Aurelia[1]; Fry-Bowers, Eileen K.[1]. [1]University of California, Los Angeles, CA.

Presented via poster on Monday at 5:30pm.

Background

Limited health literacy affects the ability of nearly half of the US population to adequately read, comprehend and act on medical information and interact with the health care system. Studies reveal that health care professionals may not recognize limited health literacy in their patients nor understand its impact on their patients' health outcomes. No study to date has exclusively explored what registered nurses, including advanced practice nurses, know about health literacy. The specific aims of the study are:

1. To describe nursing professionals' knowledge and perceptions of the impact of limited health literacy on individual patients, their practice and the health system.
2. To survey self-reported communication techniques used by nursing professionals to facilitate the care of individuals with limited health literacy.
3. To examine nursing professionals' perceptions of effectiveness of or barriers to implementation of health literacy provider and staff education at their place of practice.
4. To explore nursing professionals' perceptions of effectiveness of or barriers to implementation of health literacy programs for patients at their place of practice.

Methods

This cross-sectional, descriptive study will use a web-based survey to assess the current knowledge and perceptions of health literacy among nursing professionals. Registered nurses and advanced practice registered nurses licensed by the State of California will be invited to participate in this study. Potential subjects will be recruited from the Kaiser Permanente Nurse's Union, United Nurses Associations of California (UNAC). An email message linked to the UNAC website will be sent to all members. Participants' knowledge and perceptions of health literacy will be measured by the Nursing Professional Health Literacy Survey (NPHLS). The NPHLS is a 30 item, web-based survey developed by the investigators for this study from the questionnaires used in previous investigations of professional awareness of health literacy.

Results

Data analysis will include descriptive statistics to describe nursing professionals' general knowledge of health literacy, their self-reported use of communication techniques and their perceptions of effectiveness of and/or barriers to implementation of health literacy provider and staff education at their place of practice. Bivariate analysis, using chi-square test of proportions, will be used to examine differences in knowledge, perceptions and use of technique, including effectiveness perceived or barriers encountered, between nurse professionals as characterized by educational level, practice specialty and years in practice. Qualitative textual analysis will be conducted on participant responses to a survey question that asks participants to define health literacy using their own words. Results are pending.

Conclusions

Given nursing's role in direct patient care and its responsibility in the delivery and management of health services, what nurses know about health literacy may be directly related to the quality and safety of care that patients receive. An improved understanding of what nursing professionals currently know about health literacy will guide and facilitate continuing education regarding the issue and identify practical barriers to improving care of the low health literate patient at the point of nurse-patient contact.

Poster #73

Training Physicians to Perform Medication Counseling with an Emphasis on Low Health Literacy.

Osborn, Chandra Y.[1]; Kripalani, Sunil[1]; Vaccarino, Viola[2]; Jacobson, Terry A.[2].
[1]Vanderbilt University, Nashville, TN. [2]Emory University, Atlanta, GA. *Presented via poster on Monday at 5:30pm.*

Background

Patients with low health literacy commonly misunderstand medication instructions and may have lower adherence to prescribed regimens. Physicians often are not fully aware of patients' non-adherence, in part because they do not routinely assess patients' medication use during office visits. Physicians also commonly fail to provide appropriate counseling about prescription medications. Educational programs are needed to improve physicians' assessment of medication use and their patient counseling skills. We developed a workshop for physicians to teach skills in medication counseling, with an emphasis on the needs of patients with low health literacy. We assessed the effect of this educational intervention on physicians' confidence, attitudes, beliefs, knowledge, and behaviors with regard to counseling patients about prescription medications.

Methods

The study was conducted among Internal Medicine residents at Emory University School of Medicine. The 2-hour, single session workshop was developed from a literature review and other educational materials on clear health communication, medication adherence, and patient counseling. Participants were surveyed at the beginning of the workshop and 1 month later. The questionnaire assessed demographics, as well as previous training, confidence, attitudes, beliefs, knowledge, and behaviors with regard to medication counseling. A series of independent samples tests were performed to examine pre-post change on these variables. A series of one-way ANOVA models with a Bonferroni correction examined pre-test and post-test differences by post graduate year (PGY).

Results

Fifty-four residents enrolled in the study, completed the baseline survey, and participated in the workshop. Thirty-five residents also completed the follow-up survey. Among workshop participants, 46% were female, 57% were White, and 68% were PGY1. After exposure to the workshop, residents reported improved confidence in performing medication counseling, as well as more frequent counseling behaviors. Specifically, they reported greater frequency of assessing patients' understanding of how to take their medications; praising patients who are adherent; and asking patients about barriers to adherence, the costs of medications, to repeat back instructions, or if they had any questions. Overall, participants' attitudes and beliefs about medication counseling and management did not change substantially from pre-test to post-test. At pre-test, PGY1 participants had significantly lower confidence and knowledge, as well as less frequent self-reported counseling behaviors, compared to PGY2 and PGY3 residents. These differences were no longer significant at post-test.

Conclusions

A medication counseling workshop significantly improved residents' confidence (or skills) to perform adherence counseling, as well as self-reported counseling behaviors. PGY1 participants demonstrated the greatest improvements, catching up to the PGY2 and PGY3 residents as a result of the training. Teaching physicians to assess medication use and provide appropriate counseling has the potential to improve patients' understanding of and adherence to the medication regimen. Additional studies are needed to assess the effect of such training on patient satisfaction and outcomes.

Poster #74

Health Literacy: Curricular Changes to Improve Students' Ability to Impact Patient Health.

Berry, Tricia M.[1]; Tiemeier, Amy M.[1]; Hurd, Peter D.[1]; Reeds, Rebecca L.[1]; Gattas, Nicole M.[1]; Grice, Gloria R.[1]; Murphy, Julie A.[1]; Prosser, Theresa R.[1]; Rattine-Flaherty, Elizabeth[1]; Sailors, Jill S.[1]; Duncan, Wendy[1]. [1]St. Louis College of Pharmacy, St. Louis, MO.

Presented via poster on Monday at 5:30pm.

Background/Research Question

The purpose of this project is to develop, implement, and evaluate curricular changes related to health literacy at St. Louis College of Pharmacy (STLCOP). With approximately 250 million people entering a community pharmacy every week, pharmacists and pharmacies are ideal targets for improving health literacy. To optimize the pharmacists' role as a health literacy resource, we aim to ensure they have the knowledge, skills and attitudes to adapt to, effectively communicate with and positively impact populations with varied health literacy levels. The education of health professionals is an important strategy for enhancing health literacy. Although most health professional curricula provide education in health communication, few evaluate efficacy and learning outcomes with respect to health literacy and healthcare behaviors.

Methods

An interdisciplinary group of faculty at STLCOP identified health literacy outcomes using peer-reviewed literature on contemporary healthcare standards, evidenced-based communication methods, and accreditation standards for pharmacy/health professions. These outcomes served as the basis for developing a curricular framework and methods for teaching, assessment and evaluation. The team has begun to implement and evaluate phase one (2009-11) of curricular changes in the 3rd (P3) and last (P4) professional years to improve students' ability to impact patient health literacy. First, P3 students were concurrently enrolled in Interprofessional Patient Care (IPPC) and Advanced Pharmacy Practice (APP). In IPPC, the Four Habits Model (FHM) was taught in August and students' use of FHM with standardized patients was assessed (by faculty) in September. In APP, students' use of FHM was self/peer-assessed in October and evaluated by faculty in November. A three-point scale (unsatisfactory/competent/outstanding) was used to assess student performance on applicable FHM aspects. Changes in scores were analyzed using Wilcoxon signed-rank test. Secondly, a web-based questionnaire designed to assess students' skills/attitudes related to their use of various health literacy "tools" (Newest Vital Sign, FHM, teach back, AskMe3™, REALM); was administered to P3 and P4 students via e-mail. Results of P3 and P4 students were compared to determine the impact of new educational interventions in the P3 year. Three courses in the earlier in curriculum also included health literacy aspects in 2009-10, but these interventions were not individually evaluated.

Results

For P3 students, performance significantly improved ($p<0.05$) from September to November in 11 of 15 assessed aspects of FHM. On the web-based questionnaire, P3 students (receiving the health literacy training) assessed their overall health literacy skills ($t=5.21$, $df=118$, $p<0.05$) and use of Four Habits Model ($p<0.05$) significantly higher than P4 students (not receiving training).

Conclusions/Implications

The educational interventions in this first phase of curricular change have positively influenced students' knowledge, skills, and attitudes related to health literacy. Evaluation of the curricular changes is ongoing using a continuous quality improvement approach to assess and make further curricular adjustments. A pre-/post-test design is planned to monitor progress as students move through the pharmacy curriculum. The goal is to strategically integrate health literacy throughout the didactic and experiential curriculum to improve students' ability to select contextually appropriate "tools" that will ultimately improve patient understanding and use of medications.

Poster #75

Development of Consumer-Centered Icons to Promote Safe Use of Acetaminophen. King, Jennifer P.[1]; Davis, Terry C.[2]; Bailey, Stacy C.[1]; Jacobson, Kara L.[3]; Hedlund, Laurie A.[1]; DiFrancesco, Lorenzo[3]; Parker, Ruth M.[3]; Wolf, Michael S.[1]. [1]Northwestern University, Chicago, IL. [2]Louisiana State University HSC, Shreveport, LA. [3]Emory University, Atlanta, GA.

Presented via poster on Monday at 5:30pm.

Background/Research Question

In the United States, acetaminophen overdose has surpassed viral hepatitis as the leading cause of acute liver failure and misuse contributes to over 30,000 hospitalizations annually. Half to two-thirds of acetaminophen overdoses are unintentional, suggesting the root cause is likely poor understanding of medication labeling or failure to recognize the consequences of exceeding the recommended maximum daily dosage.

Objective: To elicit consumer feedback on label messages and icons designed to promote safe use of acetaminophen.

Methods

Design: Six, moderator-led focus groups with brief, in-person, individual interviews.

Participants: Forty-five adults in two cities recruited from a general internal medicine clinic, a public hospital outpatient clinic, and two adult education classes.

Approach: In-person, cognitive, individual interviews evaluating knowledge of over-the-counter (OTC) pain relievers, attention to product label information and literacy level, preceded a group discussion eliciting preference for and revisions to label messages and icons.

Results

Forty four percent read at or below sixth grade level. Individual interviews revealed <50% of participants routinely examine product label information and only 31% know acetaminophen is in Tylenol. The groups achieved consensus on a preferred icon for acetaminophen, found explicit statement of potential liver damage was desired in the warning against simultaneous use of acetaminophen products, and indicated preference for an icon and wording for the maximum dose.

Conclusions/Implications

With the high prevalence of OTC medication use, a consumer-centered approach to developing icons and messages to promote awareness and safe use of acetaminophen could greatly benefit consumers. A standard icon and warning message, coordinated across both OTC and prescription products, could reduce acetaminophen misuse.

Poster #76

Impact of health literacy and socioeconomic status on ethnic disparities in asthma.

Curtis, L Laura M.[1]; Wolf, Michael S.[1]; Weiss, K.B.[1]; Grammer, L.[1]. [1]Northwestern University, Chicago, IL. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Racial/ethnic disparities are well documented in asthma. While socioeconomic status has long been implicated as an explanatory factor, limited literacy has more recently been viewed as a potentially modifiable trait driving asthma inequities. We sought to determine whether literacy mediated the association between race and asthma outcomes.

Methods

Participants completed a face-to-face interview and were followed longitudinally by phone every 3 months for 2 years as part the Chicago Initiative to Raise Asthma Health Equity (CHIRAH) study. Health literacy was measured using the Rapid Estimate of Adult Literacy in Medicine (REALM) and data regarding participant demographics, socioeconomics, and asthma (symptoms, limitation to activities, medication and urgent care use) were collected by self report at baseline. Asthma knowledge was assessed using an 11-item assessment developed for this study. Asthma control (well controlled vs. not well/poorly controlled) was classified based on NAEPP 2007 guidelines and the mini-Asthma Quality of Life Questionnaire (AQLQ) was used to measure asthma quality of life (AQoL). We used a form of exploratory regression-based mediational analysis to examine the explanatory nature of health literacy and socioeconomic status in the association between race and longitudinal asthma related outcomes (knowledge, quality of life, and control) across 7 time points.

Population Studied:

345 community dwelling adults (99 Latino, 198 African American, and 48 White) in Chicago with persistent asthma and complete baseline data were included in this analysis.

Results

Rates of limited literacy differed significantly across the three racial groups: 31% Latinos, 38% African Americans, compared to 13% Whites ($p=0.003$). Controlling for age, gender, and duration of asthma, African American participants had less asthma knowledge ($\beta=-.66$, 95% CI -1.02 to -0.29, $p<.001$) and lower asthma quality of life ($\beta=-.48$, 95% CI -0.80 to -0.16, $p=.003$) than White participants. Literacy alone reduced these disparities by more than 30% for both outcomes (Knowledge $\beta=-.45$, 95% CI -0.78 to -0.11, $p=.01$; AQoL $\beta=-.32$, 95% CI -0.62 to -0.02, $p=.04$). The addition of SES reduced these differences further, to a point of non-significance. Differences in asthma knowledge and quality of life between Latino and White participants were partially explained by literacy and SES, but remained significant (Knowledge $\beta=-.61$, 95% CI -0.99 to -0.23, $p=.002$; AQoL $\beta=-.31$, 95% CI -0.59 to -0.03, $p=.03$). Ethnic disparities in asthma control were fully accounted for by literacy and SES across all racial groups (African American vs. White OR=1.08, 95% CI 0.61 to 1.92, $p=.79$; Latino vs. White OR=0.79, 95% CI 0.44 to 1.41, $p=.42$).

Conclusions/Implications

Limited literacy was identified as a significant mediator to the relationship between race/ethnicity and all examined asthma outcomes. Socioeconomic indicators also explained these associations.

Efforts to reduce asthma disparities should consider health literacy promotion strategies as well as improving access and quality of care. Specifically, evidenced based patient education and counseling interventions are available that could mitigate the impact of literacy and thereby reduce inequities.

Poster #77

Video vs. print materials for supporting patients' comprehension and recall of colorectal-cancer screening information. Wilson, Elizabeth A.H.[1]; Curtis, Laura M.[1]; Thompson, Jason A.[1]; Cameron, Kenzie A.[1]; Clayman, Marla L.[1]; Wolf, Michael S.[1]; Makoul, Gregory[2]. [1]Northwestern University, Chicago, IL. [2]Saint Francis Hospital and Medical Center, Hartford, CT. *Presented via poster on Monday at 5:30pm.*

Background

Design factors including the mode of presentation can impact how well information is encoded and remembered, and such effects may vary by the population being considered. The current study provides a direct comparison of the effectiveness of print-based and video-based educational tools for patients of varying literacy levels at promoting comprehension and recall over relatively short and long periods of time.

Methods

Four-hundred-thirty-five randomly assigned primary care patients ages 40 to 85 saw video-based, print-based, or no information about colorectal cancer screening and then completed a set of knowledge-based questions about colorectal cancer and a literacy assessment. At the end of this interview, print participants and half the video participants took home print materials. After one week, 285 patients completed the knowledge survey a second time by phone.

Results

Multi-linear regression models for immediate and delayed assessments of colorectal cancer screening knowledge were performed adjusting for age, race, education, site, and prior familiarity with colorectal cancer screening. At both immediate and delayed testing, intervention participants performed significantly better than controls that saw no information ($p < .001$ for all intervention groups versus controls at both time points). When examining immediate performance among intervention-receiving participants, video participants performed significantly better than print participants ($\beta = 5.3$, 95% CI = 1.8 – 8.9, $p < .01$), those with limited literacy performed significantly worse than those with adequate literacy ($\beta = -13.5$, 95% CI = -18.1 - -8.8, $p < .001$), and when the interaction between literacy and cognition was entered into the model it was highly significant ($\beta = -13.7$, 95% CI = -20.8 - -6.6, $p < .001$). Specifically, patients with adequate literacy who saw video and print performed equally well, but among those with limited literacy, those who saw video significantly outperformed those who received print. After a week, although there was a main effect of literacy ($\beta = -12.1$, 95% CI = -18.6 - -5.6, $p < .001$), there were no significant differences in performance across the different media. Among participants who were given print to take home, reporting having looked at the materials between the in-person and follow-up interviews did not significantly predict delayed performance.

Conclusions/Implications

Although video materials benefited low literate patients immediately after their presentation, after a one week delay initial presentation medium did not affect performance, with print-receiving participants performing as well as video-receiving participants, regardless of literacy.

Poster #78

A Medication Reconciliation and Education Strategy (NuMed) for Ambulatory Care.

Webb, Jennifer[1]; Rittenberg, Lexie[1]; Makoul, Gregory[2]; Dunham, Daniel P.[1]; Baker, David W.[1]; Wolf, Michael S.[1]. [1]Northwestern University, Chicago, IL. [2]Saint Francis Hospital and Medical Center, Hartford, CT. *Presented via poster on Monday at 5:30pm.*

Background/Research Objective

Prior studies have shown that patient-provider communication about medications is inadequate. Patients tend to have a limited understanding of medication instructions, warnings, and side-effects. Ineffective communication may result in prescriptions going unfilled or unused. In addition, common discrepancies between medication lists and actual use have a detrimental impact on patient safety. Our objective is to detail a practical medication reconciliation and patient education strategy for ambulatory practice in order to improve medication management and patient understanding of medications. The intervention uses a continuous quality improvement approach to 1) engage both clinic staff and patients in medication reconciliation activities, and 2) leverage the electronic health record to support clinician communication around prescription medications and generate low literacy print materials explaining their use.

Methods

A Patient-Physician working group was created consisting of clinic staff, physicians, and research staff (N=15) to create a medication reconciliation strategy for ambulatory care. A protocol was created and pilot tested twice among clerical staff (n=4), nurses (N=4), physicians (N=2), and patients (N=45). The clinic protocol used patient information materials, medication organizers, and medication information sheets to assist in the medication reconciliation and patient education process. Post-pilot interviews were conducted among medical staff to determine feasibility; a sample of 20 nurse-patient encounters were timed before and during the first pilot and 318 entire patient encounters were timed before, during, and after a second pilot to assess the additional time these activities required with the identified protocol.

Population Studied: Community-dwelling adults ages 18 years or older seeking care in one general internal ambulatory care clinic affiliated with a academic medical center in Chicago, IL.

Results: Preliminary data from our pilot tests shows that the average time the reconciliation process added on to a nurse-patient encounter was 13 seconds. Entire patient encounter visits were extended by approximate 5 minutes to include all the steps of the intervention. No problems were identified by clinicians or staff on the implementation of the reconciliation and education protocol. While not the intent of the pilot, 80% (n=36) of the first pilot patients' and 76% (n=54) of the second pilot patients' medication lists were completely reconciled by the physician during the clinical encounter. The remaining medications lists were at least partially reconciled.

Conclusions/Implications: In two pilot tests, this medication reconciliation and education strategy effectively reduced a majority of medication discrepancies in patients' medication lists in the EMR.

This study integrates interventions that target patients, providers, and the overall practice system. Initial findings are promising, and the intervention currently being evaluated in a controlled trial, may likely prove to be effective with the potential for rapid adaptation and dissemination among those practices that use an EMR.

Poster #79

Communication Indicators of Low-Health Literacy: A Descriptive Study.

O'Hara, Laura L.S.[1]; Shue, Carolyn K.[1]; Whitt, Justin K.[2]. [1]Ball State University, Muncie, IN. [2]Ball Memorial Hospital, Muncie, IN. *Presented via poster on Monday at 5:30pm.*

Background

With a few exceptions, oral health-literacy has received far less research attention than print and numerical health-literacy. However, understanding potential oral communication indicators of low-health literacy in the context of face-to-face patient-physician interactions is central to improving patient health outcomes. Specifically, identifying key communication indicators of low-health literacy may help physicians: 1) recognize those patients in the clinical setting who experience low-health literacy and 2) adapt their own communication to better serve those patients. To this end, this study investigates the following research questions: What are potential communication indicators of patients' low-health literacy? How do physicians communicatively respond to indicators of patients' low-health literacy?

Methods

Eighteen videotaped appointments between physicians and patients who were identified as experiencing low-health literacy based on the Single Item Literacy Screener (SILS) were selected for coding. Using a grounded theory approach, the first and second authors coded these videotapes independently, looking specifically for patients' verbal and/or non-verbal communication indicators of low-health literacy, as well as physicians' verbal and non-verbal responses to the patients' communication behavior. Once primary categories were identified, the first and second authors negotiated their independent assessments of the coded data and gained consensus about the coding categories.

Results

Patients used verbal and non-verbal communication that may have indicated low-health literacy. For example patients often brought a third party to the appointment and looked directly at that third party to solicit that party's response any time the physician asked the patient a health-related question. Other forms of patient communication potentially indicating low-health literacy included requests for their physician to clarify remarks, requests for their physician to write down complex dosage instructions, and efforts to reflectively interpret their physician's messages to ensure they understood these messages.

Physicians responded to patients' indicators of low-health literacy in interesting ways. In the case of those patients who brought a third party to the appointment, some physicians maintained primary verbal and non-verbal communication with the third party, rather than with the patient, while other physicians treated the third party as only a translator, maintaining primary verbal and non-verbal communication with the patient. Physicians also ranged in their ability to explain complex medical concepts to patients who experience low-health literacy (e.g., one physician used simple, concrete words, metaphors and non-verbal indicators to help explain differences in blood glucose levels while another physician used more abstract, jargon-laced language to explain pancreatic function). While virtually all physicians asked questions of patients, some physicians did not wait for patients' complete responses, often interrupting them with further questions. Many of the physicians used some form of summary at the end of the visit.

Conclusions

The results provide insight into oral literacy in the health context by examining patient communication as an indicator of low- health literacy and by focusing on the extent to which physicians respond to communication indicators of low-health literacy. Results suggest that physicians may need training to attend more carefully to communication indicating low-health literacy so that they can provide more effective medical care for this priority population.

Poster #80

Caring for family members at the end of life: Assessing caregiver agency in interactions with hospice nurses.

Chou, Wen-ying Sylvia[1]; Reblin, Maija[2]; Ellington, Lee[2]; Berry, Patricia H.[2]; Clayton, Margaret F.[2]. [1]National Cancer Institute, Bethesda, MD. [2]University of Utah, Salt Lake City, UT. *Presented via poster on Monday at 5:30pm.*

Background

Hospice has enabled more patients to spend the end of life in the comfort of home. However, while health care is moving increasingly into the home, lay caregivers who manage the day-to-day care often face unmet information needs and lack of emotional support, jeopardizing patient safety and quality of care. Empowering caregivers to provide quality home care is identified as a key priority by hospices. To this end, it is important to document caregivers' agency (defined as verbal expression of control) during visits with hospice staff. Findings have the potential to inform interventions that improve caregivers' ability to acquire the skills and information they need to provide optimal care. This project examined the display of agency during home visits through a combination of quantitative coding and qualitative linguistic analyses.

Methods

33 hospice nurse home visits (7 cases; length: M=55 minutes, sd=23) were audio-recorded and transcribed. Data were analyzed first using Roter Interaction Analysis System (RIAS); following RIAS analysis, two prototypic cases were selected and analyzed using in-depth analysis informed by the framework of interactional sociolinguistics.

Results

RIAS analysis indicated that caregiver talk represented 29% of total visit talk (nurse=54%, patient=17%; total visit utterances M=1123). The most frequent caregiver utterances as a percentage of total caregiver talk were lifestyle information (M=24%), medical talk (M=14%), psychosocial information (M=9%), laughter/joking (M=5%), and questions (M=3%). The relatively low level of participation, scarcity of questions, and high information giving is suggestive of overall low agency. Since RIAS was not designed to capture the process of agency expression, a complementary analytic approach was used. Preliminary sociolinguistic analysis suggested features of caregiver agency included topic initiation/interruption, unsolicited questions, and future-oriented talk.

Conclusions

Our mixed methods analysis described key elements of agency expression in nurse-caregiver interactions where knowledge and information about care giving is exchanged. The use of both quantitative and qualitative methodology provides a more accurate portrayal of caregiver communication and agency within hospice home care interactions. In addition to providing new ways to assess care giving dynamics, the results have implications for caregiver empowerment to improve end-of-life home care and ensure patient safety.

Poster #81

Older Adults' Health Status, Satisfaction, and Efficacy as a Function of Interactive Health Literacy. Rubin, Don[1]; Freimuth, Vicki[1]; Okundaye, Mumbi[1]; Parmer, John[1]; Kaley, Terry[1]; Mink, Sarah[1]. [1]University of Georgia, Athens, GA. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Current conceptualizations of health literacy (HL) acknowledge the primacy of oral interaction in health information exchange and utilization. Yet HL measures continue to be largely reading-based. A Measure of Interactive Health Literacy (MIHL) has been proposed to help remedy that deficiency in HL resources. Older adults, on average, score low in HL as measured by conventional reading-based instruments such as TOFHLA. Low HL often means that older adults receive little information during health care encounters. Nonetheless, previous research with this population shows little relation between conventionally measured HL and satisfaction with health care encounters. To ascertain whether reading-based measures might yield a biased representation of HL, the present study compares MIHL with TOFHLA with respect to predicting self-reported health outcomes and attitudes in a sample of vulnerable older adults.

Methods

Participants were 36 older adults (M_{age}=73.4, sd=8.6), who all received services of meals on wheels agencies. Other work with this sample indicates that multiple co-morbidities were common. Participants were administered the following instruments at their homes or senior centers: (1) self-reported health status, (2) self-efficacy to manage chronic disease, (3) barriers to health information, (4) satisfaction with provider, and (5) S-TOFHLA. (6) The MIHL, along with (7) a comprehension test, was administered by telephone. The MIHL functions by presenting respondents with scripted health messages (about pneumonia vaccine or shingles vaccine). The message contains information gaps (e.g., "Patients with certain diseases should not take the shingles vaccine"), direct question prompts, as well as 10-second pauses that invite interlocutor activity. Recorded MIHL protocols are coded for participativeness as reflected in (1) proportion of talk by examinee, and in (2) number of conversational turns, conversational initiative as reflected in (3) number of unprompted information seeking utterances (ISUs), (4) number of prompted ISUs, and (5) number of comprehension checks ("Did you say that…").

Results

In this exploratory analysis, simple bivariate correlations were calculated among MIHL variables and self reported health variables and between S-TOFHLA and those same variables. S-TOFHLA was uncorrelated with any of the self-report measures (it correlated—negatively--only with MIHL turn-taking at -.40). On the other hand, number of unprompted ISUs from the MIHL correlated with health status (.41) and health efficacy (.34). Number of prompted ISUs correlated with health status (.54). Number of conversational turns was likewise related to health status (.31). Number of comprehension checks correlated positively with health status (.37) but negatively with satisfaction with health care providers (-.33).

Conclusions/Implications

In this sample of relatively compromised older adults, indices derived from a measure of oral health literacy proved more informative than did a conventional test of HL based on reading. While TOFHLA scores did manifest considerable variance M_{TOFHLA}=20.9, sd=12.3), that variance was unrelated to such outcomes as satisfaction or health status. One possible explanation for the greater potency of oral HL indices in this study is that interactive HL is more important than document HL for older adults as they exert greater or lesser degrees of efficacy to achieve varying levels of satisfaction and health outcomes. HL interventions directed to older adults should cultivate oral interaction strategies.

Poster #82

Plain language training customized for researchers. Ridpath, Jessica R.[1]; Greene, Sarah M.[1]; Wiese, Cheryl J.[2]. [1]Group Health Research Institute, Seattle, WA. [2]University of Michigan, Institute for Social Research, Ann Arbor, MI. *Presented via poster on Monday at 5:30pm.*

Background/Research Question

Most institutional review boards (IRBs) recommend a reading level of 6th-8th grade for informed consent documents—a standard consistent with literacy assessments showing an average 8th-grade reading ability among American adults. But a 2003 study found that college-level research consents were common at US medical schools—and that only 8% of forms met institutional readability standards.

Researchers are ethically obliged to ensure that consent forms are understandable to the subject. But writing for a lay audience is often an underdeveloped skill, and researchers face many readability challenges unique to our setting. If researchers “default” to the scientific writing style to which they’re accustomed, comprehensibility of study materials may suffer. Skill-building and raising researchers’ awareness of readability for research motivated the work described here.

Methods

Group Health Research Institute (GHRI) created the Program for Readability In Science & Medicine (PRISM) in 2005 to address health literacy in the research context. PRISM evolved from a short-term, internal training initiative into a suite of resources providing specific tools and strategies to help researchers improve the readability of participant materials, especially consent forms. Our new public-domain online training course will be freely available by June 30, 2010.

We based the hour-long course on the PRISM Readability Toolkit and over a dozen in-person PRISM training workshops conducted with diverse audiences, including researchers, IRB professionals, health educators, and public health personnel. GHRI and the University of Washington’s Institute for Translational Health Sciences sponsored course development to make PRISM training more widely accessible.

Results

Course content includes: 1) Background on health literacy and readability; 2) Readability challenges in the research setting and links to helpful readability tools; 3) Plain language strategies and pre-post examples from participant materials; 4) Interactive editing examples and exercises. A built-in evaluation will inform periodic assessments of the training’s usefulness.

Seven beta-testers found the course helpful and suggested several enhancements expected to boost the course’s overall usefulness. This positive encouragement is congruent with a prior evaluation of the PRISM Toolkit and its uptake (more than 10,000 downloads since 2008). We will discuss the development and content of the PRISM online training, and the critical importance of disseminating both general information on health literacy and research, *and* providing the research community with skill-building tools, given that writing readable materials is not automatic. We will describe how health literacy resources at GHRI have had an impact on consent forms, the research review process, and health communication more broadly.

Conclusions/Implications

Online readability resources abound, but few address the specific readability challenges posed in the research setting. Without concrete guidance and real-world examples, easy-to-read consent forms have remained the exception rather than the rule. PRISM online training was created to help change this trend, and our experience suggests that this public-domain resource can help other research institutions. Proactive dissemination is central to widespread implementation. Making the research community aware of the course and engaging them in dialogue about how to maximize its reach and usefulness is critical to ensuring that our research is participant-centered and understandable.

Poster #83

Dyslexia and Low Health Literacy: The Experiences of a Mother with a Reading Disability in the Healthcare Setting.

Frasso, Rosemary[1]; Bennett, Ian M.[1]; Culhane, Jennifer[1]. [1]University of Pennsylvania, Philadelphia, PA. *Presented via poster on xx day at xx time.*

Background/Research Question

Dyslexia affects 5-17% of adults in the US, while there is no significant difference in the prevalence of dyslexia across socioeconomic strata, undiagnosed dyslexia, leading to persistent impaired basic reading skill, is more common among the poor. Basic reading skill is a necessary component of health literacy (HL). This qualitative case report addresses the obstacles encountered by a mother with dyslexia as she attempts to navigate the health care system on behalf of herself and her children.

Methods

The participant, who graduated from high school and had attended community college, had sought a reading evaluation in her mid-twenties. She received a diagnosis of severe dyslexia but, to date has not received any reading intervention. A series of in-depth, semi-structured interviews uncovered a long history of reading difficulties that interfered with timely and effective healthcare for both the participant and her children.

Results

Poor readers with dyslexia may be difficult to identify because the strategies they have developed to compensate for their learning disability may render common HL screening tools ineffective. Importantly, this participant's reading difficulties were not identified when her risk of low HL was assessed by the Rapid Estimate of Adult Literacy in Medicine, and the Short Test of Functional Health Literacy in Adults.

Conclusions/Implications

Further understanding of this population's experience with the healthcare system is crucial as the strategies they employ in their personal and professional life may fail in the healthcare setting, where anxiety is high and accuracy is crucial. Additionally, interventions designed to close the gap between health care consumers with low health literacy and their health care providers may not be effective in the context of dyslexia or other learning disabilities. This case study highlights.