

Clinical, classroom or personal education: Attitudes about health literacy

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Abstract

Purpose:

This study explores how diverse attitudes about health literacy are assessed by medical librarians and other health care professionals.

Procedures:

An online survey of 36 items was conducted using Q methodology in two phases in spring 2005 and winter 2006. Respondent (n=51) were non-randomly self-selected from a convenience sample of members of the Medical Library Association and a group of environmental health consultants to the National Library of Medicine.

Findings:

Three factors were identified. Factor one is optimistic and supportive of health literacy's transformative socio-cultural and professional potential - if clinical settings become a launching point for health literacy activities. Factor two is less optimistic about health literacy's potential to improve clinical or patient outcomes and prefers to focus health literacy initiatives on classroom education settings. Factor three is supportive of improving the nation's health literacy, but tends to support health literacy initiatives when persons privately interact with health information materials.

Conclusions:

Each factor's attitudes about the appropriate educational venue to initiate health literacy activities are different and somewhat mutually exclusive. This suggests that health literacy is seen through different perceptual frameworks that represent a possible source of professional disagreement.

Highlights

- * Respondents are divided whether the appropriate venue to launch health literacy initiatives is a clinical (provider-patient) environment, K-12 health education classes, or settings where consumers learn more informally about health, such as through the mass media.
- * The educational settings to launch health literacy initiatives are more salient to respondents than criticisms of health literacy's socio-cultural influence.
- * The findings suggest the acceptance of health literacy initiatives could run into some professional resistance.

Implications for Practice

- * Health literacy supporters should be mindful that there are differences regarding how some peers envision the implementation of health literacy initiatives.
- * Respondent differences provide a basis for a dialogue to address: a) the relative benefits of launching health literacy initiatives in clinical settings, classroom or personal educational venues and b) how the perceptions of health literacy are impacted by a health professional's characterization of the persons they serve as "patients," "students" or "consumers."

Introduction

The Institute of Medicine's report on health literacy; its impact and critique

In a recent report, the Institute of Medicine [1] found that about 90 million Americans could not follow basic medical instructions. The Institute of Medicine (IOM) defined health literacy as “the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions” [1, p.32].

The IOM [1] reported that even well-educated Americans have problems understanding medical jargon, medical service forms and prescription information as well as following navigational directions within some hospitals and medical centers. Marcus [2] characterized the nation's poor health literacy as public health's “silent epidemic.”

After reviewing anecdotal and statistical evidence, the IOM concluded that improving health literacy is one of the most pressing health care delivery and health policy challenges facing the U.S. health care delivery system [1]. The former U.S. Surgeon General noted that improving the nation's health literacy should be a national health and public policy priority [3]. Norman and Skinner [4] add that e-health literacy represents essential skills to improve consumer health.

In addition to providing findings about the nation's health literacy, the IOM report encouraged health care professionals, medical associations and the medical industry to initiate programs to improve health literacy. Bass [5] finds the IOM report generated national attention about health literacy among the latter groups.

McCray [6], Erlen [7], Parker, Ratzan and Lurie [8], Rudd, Moeykens and Colton [9] and Zarcadoolas et. al. [10] agree that health literacy (as defined by the IOM) represents

an important, even foundational, idea that weaves together a significant array of issues in health policy, health services research, health communication and health care delivery.

The issues in health policy, health care delivery and health services that have become associated with health literacy include:

- reducing health disparities or improving the access and delivery of care to African-Americans, Hispanic Americans, Native Americans and other medically underserved groups
- improving adult understanding of quantitative and visual medical information
- tailoring health care materials to audience literacy levels
- communicating health information in jargon-free, easy to understand language
- enhancing patient empowerment and compliance with medical instructions
- providing more patient-centered health care delivery
- improved patient-provider communication
- a focus on disease prevention instead of treatment to reduce health care costs
- better health education for adults and for K-12 students
- improving patient compliance
- better patient screening to assess health literacy capabilities
- fewer errors in hospitals and health care institutions
- improved health services utilization
- improved health care outcomes for patients [5,6,8,11,12,13,14,15].

However, as soon as the richness of health policy issues associated with health literacy were identified and improving health literacy was embraced as a priority, some uneasiness about the pace of and readiness to initiate health literacy activities surfaced in

the academic literature and some mailing lists for health professionals. Although there was little disagreement about: a) the data describing the nation's health literacy within the IOM report, b) the idea that Americans should be able to understand medical instructions and c) the assertion that consumers should receive optimal access to evidence based health information, some critics in 2004-05 questioned if it was premature for health care professionals, medical associations and government and non-governmental organizations to make significant investments in health literacy initiatives.

For example, Tones [16] noted the IOM's definition of health literacy might be clear, but its rhetorical interpretation and implementation were so far reaching that the term was losing its clarity and purpose. Bass [5] found it was difficult to pinpoint the precise meaning of the term 'health literacy' and Speros [17] implied it was a challenge to operationalize the term into research variables.

McCray [6], Lee, Arozullah and Cho [13] added that it might be premature for government, medical associations or others to advance health literacy as a significant health policy priority because its evidence base is in a formative (as opposed to an advanced) stage. McCray [6] found research needs to be developed in several areas including: the interactions among general literacy, health literacy, information technologies and the existing health care infrastructure.

In addition to scholarly reservations, a range of informal criticisms about health literacy surfaced on mailing lists populated by health care, medical and public health professionals in 2005. Mailing lists, or online forums, are increasingly important to researchers as a venue to track the range of public and especially professional discourse regarding topics of current concerns [18].

Many of the mailing list postings discussed the intent of health literacy initiatives, or what health literacy research and public intervention campaigns might strive to accomplish. Other postings proposed definitions of health literacy, limiting or expanding the term's conceptual range and the wisdom of a broad or narrowly based definition. Some of these postings speculated on the long range health policy, patient outcomes and socio-cultural impacts of health literacy initiatives. Some of the more sociologically-grounded discussion questioned, for example, if the assignment of persons into marginal and low literacy categories might undermine the cultural acceptability of health literacy campaigns among both groups?

By spring 2005, the aggregate of the mailing list and scholarly criticisms suggested health literacy was greeted with support as well as some uncertainty and apprehension by some health professionals. More recently, Parker and Kindig [19] asked if the IOM's health literacy recommendations were being taken seriously by medical professionals?

Overall, the literature and mailing list comments suggest that many issues surrounding health literacy are salient to health care professionals but there are differences of opinion about the pace and appropriate strategies to advance health literacy initiatives that could impede its momentum.

Problem Statement

In turn, a current question among health literacy advocates and critics is: how do health care professionals assess some of the health literacy opinions expressed by their peers? Do contentious or supportive opinions about health literacy resonate with health care professionals engaged in thinking about health literacy?

This study attempts to provide insights into how persons with a professional reason to be conscientious about health literacy assess a spectrum of favorable and unfavorable attitudes about some of the ideas, definitions, strategies, tactics and longer range social implications that the IOM report raised.

More specifically, this study seeks to better understand how a spectrum of attitudes about health literacy are perceived among medical librarians, as well as environmental health experts from public health programs and medical colleges that historically assist African Americans, Hispanic Americans and Native Americans.

The study examines how opinion clusters are forming among two of the professional groups engaged in an evolving debate about an important health policy issue -- where their broader judgments and attitudes are critical to the health literacy's evolution and development. The array of opinions found within the study attempt to reflect the operant dialogue and subjectivity in summer 2005 (the time this research was initiated) among some interested professionals.

The study does not explore a specific hypothesis about what health literacy research and campaign initiatives should strive to accomplish or a preferred conceptual definition of health literacy. The study does not evaluate how respondents project the impact of health literacy initiatives on patients or society. Instead, the study explores how its respondents assess diverse opinions taken from a professional discourse regarding health literacy.

Methods

Sample

An online survey of 36 items using Q methodology of n=51 non-randomly chosen respondents was conducted in two phases in spring 2005 and winter 2006.

Explanation of Q methodology

Q methodology is a mixed method that uses quantitative methods to determine factor arrays and qualitative judgment to interpret a factor's broader meaning [20,21,22,23]. Several books explain Q methodology's theoretical foundations as well as provide a guide to its applications and methods [21,22,23,24]. While the use of Q methodology in political science and public opinion research and contemporary psychology is explained by Brown [20] and Smith [25], Q methodology also is used in a variety of disciplines outside of the social, medical and communication sciences [22,25].

Brown [20] explains that Q methodology is ideally used to explore how diverse opinions are structured. In contrast to most public opinion research, respondents in Q studies ideally are well-informed, directly involved and the issues raised within the survey instrument are highly salient [20,21,23,24,25].

Brown [20] and Smith [25] explain that other important differences between social science opinion measurement approaches and Q methodology include the latter's procedural embellishment that asks participants to sort through their opinions within a balanced, quasi-normal distribution after scoring each item individually. As a result, each factor actually represents how some of the participants sorted all the statements in common.

Some other major differences are: factor analysis is used in Q methodology as an exploratory technique to discover how opinions are clustered or segmented within groups. In traditional social science opinion measurement, factor analysis is often used to confirm if factor patterns are consistent with predetermined hypotheses or expected patterns. So, in Q methodology, an investigator avoids prejudgments by deliberately not positing hypotheses or research questions.

Researchers also are encouraged to explain how factor scores articulate a distinguishing thematic voice irrespective if they fit within the predetermined categories or expectations that fostered the survey instrument. Hence, factor descriptions emphasize each factor's distinguishing perceptual perspective, or discerning characteristics.

In contrast with quantitative analyses, where the mean scores of predetermined variables are statistically assessed, in Q methodology the need for reliability and validity tests are moot since the emphasis is on each person's unique mean score or individual subjectivity.

Finally, in Q methodology the 'n' is not the number of respondents but the number of respondents multiplied by the number of items in the survey that were sorted. In the current study the number of responses is not $n=51$; it is $n=1,836$ (51 respondents multiplied by 36 statements).

Data collection

Similar to the process of assembling the items or statements for a Q sort as described by Brown [20], the instrument used in this study was derived primarily from verbatim statements of opinion about health literacy. In this case, statements of opinion (which are called 'statements' throughout the rest of the manuscript) were derived from literature

and mailing lists. Verbatim statements were sampled from mailing lists where comments from health care professionals about the IOM report and health literacy related issues were expressed. Two mailing lists were monitored: Literacy NIFL-HEALTH Forum (http://www.nifl.gov/lincs/discussions/nifl-health/health_literacy.html) and a Florida- based mailing list (http://www.floridaliteracy.org/discussion_links.htm). Most of the statements used in the study were sampled from the NIFL-HEALTH Forum mailing list. Some statements of opinion about health literacy were sampled verbatim from the literature to obtain a more diverse spectrum of opinion.

While some statements from the published literature were taken from articles written before the release of the IOM report toward the end of 2003, all comments from mailing lists were taken from postings in 2004 and 2005. The original corpus of almost 500 opinion statements about health literacy was reduced to n=36 statements. Following a process recommended by McKeown and Thomas [21] and Stephenson [26], statements were organized into broad discourse themes. Three discourse themes were identified:

1. What should be the primary intent of future health literacy initiatives? What should health literacy research and campaign initiatives primarily strive to accomplish?
2. What is health literacy? How should health literacy be conceptually defined?
3. In the long run, what will be the primary health policy, cultural, patient outcomes and impacts of health literacy initiatives?

Within the 36 statements selected for the final instrument, 12 represented each of the three dimensions, which were balanced to reflect opposing points of view as recommended by McKeown and Thomas [21]. Opposing points of view were operationally defined as assertions favorable or unfavorable to the IOM report's

suggestions and its projected social and clinical outcomes. The intercoder reliability for coding statements as critical or favorable was 92 percent for n=2 coders. Intercoder reliability was determined by a formula suggested by Holsti [27].

Although the author used verbatim statements expressed in natural language whenever possible, some statements were edited for clarity after a pretest of the proposed instrument. A pretest of the instrument with n=18 officials from several U.S. federal health agencies, who have a professional interest in health literacy, occurred in summer 2005.

Respondents self-selected to participate and were invited from a non-random, convenience sample of two groups. One invited group included members of the Consumer and Patient Health Information Section within the Medical Library Association (MLA). Forty two of the study's n=51 respondents participated from this group. The Medical Library Association is an international academic and professional organization of about 4,500 medical librarians.

All members of the Consumer and Patient Health Information Section within MLA were invited in an email sent by the president and president-elect of MLA and MLA's executive director in early February 2006. MLA's was selected because the organization historically has been concerned with service to consumer library clients and elevating the public understanding of medicine. The Consumer and Patient Health Information Section was selected because health literacy issues have received significant attention within this MLA division. MLA initiated a health literacy task force in 2003 and assessed MLA members about health literacy activities in 2004. Medical librarians also are one of the key professional groups that the IOM identified as vital to the success of public health

literacy initiatives since medical librarians often are a primary resource to explain basic medical terms and facilitate consumer health information seeking [1].

The second invited group consisted of some members of the Environmental Health Outreach Information Program at the U.S. National Library of Medicine. This is an advisory group of environmental health experts representing schools of medicine and public health that specialize in assisting medically underserved audiences. At the time of the study, the topic of health literacy was current among the public health programs and medical colleges that the group represents [15,28,29]. Nine of n=51 respondents were members of the Environmental Health Outreach group.

Participation was voluntary; no incentives were provided. The study was exempt from review by the U.S. Office of Management and Budget.

In a post-Q sort question, all n=51 respondents either agreed or strongly agreed with the statement, “I am personally interested in health literacy.” Forty six of the 51 respondents agreed or strongly agreed with the statement, “I read extensively about health literacy.” These results suggest face validity to the assumption that health literacy issues were salient to respondents.

Respondents were given a three week period to complete the instrument online. The members of the Environmental Health Outreach Information Program completed the survey from mid-June to mid-July 2005; MLA members completed the instrument in February-March 2006.

To administer the instrument online, WebQ, a program which permits Q sorts to be placed and completed on the Internet, was modified (<http://www.qmethod.org/Tutorials.downloads.htm>). The instrument was hosted by a server with

password access at the Lister Hill National Center for Biomedical Communications within the U.S. National Library of Medicine, National Institutes of Health. PCQ, a commercial software package designed for Q methodology, was used for data entry and analysis (<http://www.pcqsoft.com/>).

Fifty one completed and four partially completed surveys were received. Incomplete surveys were discarded. The 93 percent completion rate suggests the instrument and the study's Internet interface were not significant barriers to respondent participation.

As recommended by McKeown and Thomas [21], respondents assessed each of the 36 statements within the instrument in two separate steps. First, respondents assessed each statement individually in a Likert scale from -4 to +4 (representing a spectrum from strongly disagree to strongly agree). Second, respondents ranked, or intercompared, their opinions of all 36 statements on the same scale. The factor scores, reported in Table 1, are based on the latter sort.

Data analysis

Respondents' sorting of all 36 statements were correlated and three factors were derived from a principal components factor matrix, subject to a varimax rotation. The number of factors was determined by an Eigenvalue of greater than 1.0. The Guilford-Lacey expression was used to determine significant factor loadings, in this case greater than .40, which is statistically significant ($p < .05$). Weightings based on each respondent's factor loadings were applied to individual statement rankings so factors could be represented as normalized arrays, or Z scores. Three factors, or patterns of opinion segmentation, were interpreted from the normalized factor arrays. The normalized factor arrays are displayed in Table 1. A key to interpreting Table 1 is provided.

Factors were interpreted by identifying persistent themes and patterns as well as the items or statements within the instrument that distinguished each factor's perspective, as recommended by McKeown and Thomas [21]. The label assigned to each factor summarizes each factor's most distinguishing judgmental pattern, or point of view.

Results are presented selectively for each factor.

In Table 1, Z scores of -4 are qualitatively interpreted as representing a strong disagreement with a statement within the instrument reported in Table 1. Z scores of -3 and -2 are interpreted as representing disagreement. Z scores of -1 are interpreted as representing a slight disagreement. Z scores of +4 are qualitatively interpreted as representing strong agreement by the factor with the item, or statement taken from the survey instrument reported in Table 1. Z scores of +3 and +2 are interpreted as representing agreement. Z scores of +1 are interpreted as representing a slight agreement. A Z score of zero is interpreted as representing a neutral view, or neither an agreement or disagreement with the statement taken from the survey instrument (reported in Table 1).

All three factors accounted for 44 percent of the study's possible variance. Factor one accounted for 17 percent of the variance; Factor two accounted for 12 percent and Factor three accounted for 15 percent of the variance.

Each respondent's factor loading as well as some demographic information are presented in Table 2. Of the 51 respondents, 14 persons loaded significantly on factor one, 8 persons loaded significantly on factor two and 12 persons loaded significantly on factor three. Twelve respondents were 'confounded,' or had multiple loadings on more than one factor. Q sorts from five respondents were not significant.

Factor one included ten MLA members and four persons from the Environmental Health Outreach Information Program. Thirteen of the fourteen persons who loaded on Factor one were female, seven had graduate degrees. Factor two included six MLA members and two members from the Environmental Health Outreach Information Program. Six of the eight persons who loaded on Factor two were female; seven had graduate degrees. Factor three included ten MLA members and two persons from the Environmental Health Outreach Information Program. Eleven of the twelve persons who loaded on factor three were female and nine had graduate degrees. Table 2 does not suggest there are other important demographic patterns. Since the emphasis in Q methodology is on psychographic archetypes rather than demographic differences [20], the focus of the discussion within the results section is on each factor's distinguishing thematic pattern.

Results

Factor one: Clinical and Patient Orientation

Factor one is partially distinguished by its endorsement of health literacy initiatives that are designed to boost patient cognitive skills. For example, Table 1 reports that Factor one strongly agrees or agrees with these statements:

- The primary intent of health literacy initiatives is to empower patients
- The primary intent of health literacy initiatives should be to improve the ability of consumers/patients/caregivers to think critically about the health information they receive
- The primary goal for health literacy initiatives is to increase the use of plain language in all consumer instructions and communication about health

- Health literacy initiatives should focus on helping patients, caregivers and consumers better navigate the health care delivery system.

Similarly, Factor one perceives that improving patient cognitive skills has pragmatic economic and psychological advantages. Table 1 reports Factor one agrees or slightly agrees:

- Health literacy should conceptually encompass how patient misunderstandings and confusion add hidden costs to the nation's health care delivery system
- The concept of health literacy needs to better encompass the stress (even the panic) people feel when they need to know and are then, left to seek health information.

Factor one's broad support for patient empowerment and cognitive development is accompanied by an interest in improving patient interaction with physicians and other health care providers. Table 1 reports Factor one strongly agrees, agrees or slightly agrees that:

- The primary intent of health literacy is to help patients better understand what a physician tells them as well as prescription information
- The primary intent of health literacy initiatives is to improve patient adherence with physicians' instructions
- Improving health literacy will first, result in patients who are more discerning about the medical advice they receive.

Also, Factor one's interest in empowering patients (to enhance provider-patient interactions) has some limitations. Factor one is uncomfortable with a clinical

environment where the perceived locus of control shifts from providers to patients. For example, Factor one slightly agrees or is neutral about these statements:

- The concept of health literacy should be expanded to include an emphasis on consumer skills to access health services and to engage in patient advocacy
- The foundation of health literacy is all communications between patient/caregivers/consumers and providers need to be conceived as a dialogue.

Besides supporting clinical settings to advance health literacy, Factor one also is less supportive of some non-clinical venues, which are endorsed by the other two factors. For example, Factor one does not believe that broad health education programs or efforts to improve K-12 health instruction are a panacea to improve the nation's health literacy.

Table 1 reports that Factor 1 disagrees or slightly disagrees that:

- The primary intent of health literacy initiatives should be to help primary or secondary school educators teach health literacy as a basic subject (e.g. such as English or math)
- Poor K-12 health education programs are the major barrier to improving health literacy
- Health literacy initiatives should help more people of all ages understand how the human body functions rather than focusing on lay translations of medical terms and vocabularies.

This set of responses illustrates a conceptual distinction between Factor one and Factor two's attitudes about the appropriate venue to address health literacy challenges and launch initiatives. Factor one seems more interested in health literacy initiatives that

support patients within a clinical environment than health literacy efforts aimed at students in a classroom setting.

Unlike Factor two, Factor one also is skeptical if a conceptual framework derived from public health should underlie how health literacy initiatives are conceived. Table 1 reports that Factor one either disagrees or slightly disagrees that:

- Health literacy should conceptually shift its focus from improving comprehension skills to urging disease prevention and early detection
- The primary intent of health literacy initiatives should better document the casual pathway of how poor literacy affects health.

In addition, despite their support for improving patient cognitions, Factor one does not endorse some health literacy initiatives designed to improve a consumer's personal general medical knowledge or education. Factor one's lack of enthusiasm regarding questions related to improving a consumer's personal education differentiates their attitudes from those endorsed by Factor 3. For example, Table 1 reports that Factor one slightly disagrees or is neutral about the following statements:

- Foremost, health literacy should be conceptually conceived as improving a consumer's basic medical knowledge
- The concept of health literacy should focus on a consumer's skill to interpret media messages, enable people to look for (and assess whom to ask for) more health information
- The primary intent of health literacy initiatives should be to provide demographically targeted, just in time medical information.

Overall, Factor one's emphasis to advance health literacy initiatives seems directed at improving primary care delivery for patients during clinical interactions. Factor one also is less enthusiastic about alternative delivery points, such as through school instruction or via personal-educational targeted media. To Factor one, apparently the 'teachable moment' where health literacy initiatives become viable is when adults encounter clinical care and the health care delivery system.

Although it is not one of the perceptual focal points that distinguishes Factor one from Factor two or Factor three, it should be added that Factor one is somewhat optimistic about the public impact of health literacy initiatives. For example, Table 1 reports that Factor one strongly agrees or agrees that:

- Elevating the nation's health literacy is a vital step to improving the quality of health care and health outcomes
- Health care costs will decline as a result of improving health literacy.

Similarly, Factor one rejects forecasts that health literacy initiatives might have some deleterious socio-cultural consequences. For example, Factor one strongly disagrees or disagrees with these statements:

- Teaching health literacy to help consumers negotiate the health care system is a superficial fix because it fails to address larger problems underlying the U.S. healthcare system
- Paradoxically, health literacy blames the victim for a deeper socio-cultural problem
- Since health literacy efforts have not been generated at a grassroots level, they appear to be culturally paternalistic.

Hence, Factor 1 can be characterized as supportive of health literacy's potential to improve patient cognitions and the clinical interactions between providers and patients.

But Factor 1 is less enthusiastic about other venues to initiate health literacy.

Factor Two: Classroom education-oriented critics of health literacy initiatives

First, in contrast with Factors one and three, Factor two is interested in classroom education as a venue to advance health literacy initiatives.

Unlike the other factors, Table 1 reports that Factor two agrees with following statements:

- The primary intent of health literacy initiatives should be to help primary or secondary school educators teach health literacy as a basic subject
- Poor K-12 health education programs are the major barrier to improving health literacy.

In terms of what should be taught, Factor two agrees or slightly agrees with the following statements:

- Health literacy initiatives should help more people of all ages understand how the human body functions rather than focusing on lay translations of medical terms and vocabulary
- Health literacy should conceptually encompass how patient misunderstandings and confusion add hidden costs to the nation's health care delivery system.

The latter seems to be both a rationale for classroom health literacy initiatives as well as possible subjects for instruction.

In contrast to Factors one and three, Factor two also believes that public health intervention models provide a partially acceptable conceptual framework to advance

health literacy activities and initiatives. For example, Factor two strongly agrees or agrees with these statements:

- Health literacy should conceptually shift its focus from improving comprehension skills to urging disease prevention and early detection
- The primary intent of health literacy initiatives should better document the causal pathway of how poor literacy affects health.

Among other perceptual differences with Factor one, Factor two has reservations about whether patients and patient cognitive skills will be a beneficiary from health literacy initiatives.

For example, Table 1 reports Factor two strongly disagrees, disagrees or slightly disagrees with these statements:

- The primary intent of health literacy initiatives is to empower patients
- The primary intent of health literacy initiatives should be to improve the ability of consumers/patient/s caregivers to think critically about the health information they receive
- Health literacy initiatives should focus on helping patients, caregivers and consumers better navigate the health care delivery system
- The concept of health literacy should be expanded to include an emphasis on consumer skills to access health services and to engage in patient advocacy
- The concept of health literacy needs to better encompass the stress (even the panic) people feel when they need to know and are left to seek health information

- The primary intent of health literacy initiatives should be to improve the ability of consumers/patients/caregivers to think critically about the health information they receive.

Table 1 also reports Factor two disagrees with this statement:

- The primary intent of health literacy initiatives is to help patients better understand what a physician tells them as well as prescription information.

Instead, Factor two seems to believe the impact of health literacy on patient-provider communication (and clinical interaction) may benefit physicians. Unlike Factors one and three, Factor two strongly and slightly agrees that:

- The primary purpose of health literacy initiatives is to improve patient adherence to physicians' instructions.
- Health literacy efforts are a preemptive strike designed to reduce the liabilities of physicians, hospitals and insurance carriers when patients do not understand the information presented to them.

In further contrast with Factors one and three, Factor two slightly disagrees that:

- Improving health literacy will first result in patients who are more discerning about the medical advice they receive.

The latter three responses suggest that to Factor two, health literacy initiatives may not have a benign impact on patients and consumer clinical interactions. To Factor two, it is physicians, hospitals and insurance companies who may be a beneficiary from health literacy initiatives.

As a result, unlike Factor one, Factor two's responses suggests they are less comfortable with clinical settings as a primary venue to launch health literacy initiatives.

In contrast with Factor three, Factor two also is not enthusiastic about health literacy initiatives within personal educational settings. Unlike Factor three, Factor two strongly disagrees or disagrees that:

- The concept of health literacy should focus on a consumer's skill to interpret media messages and enable people to look for (and assess whom to ask for) more health information
- The primary intent of health literacy initiatives should be to improve the ability of consumers/patients/caregivers to think critically about the health information they receive
- The concept of health literacy should be expanded to access health services and to engage in patient advocacy.

Finally, in contrast to both other factors, Factor two is more skeptical about the long range social consequences of health literacy initiatives.

Table 1 reports that Factor two uniquely disagrees with this statement:

- Elevating the nation's health literacy is a vital step to improving the quality of health care and health outcomes.

Factor two also uniquely either agrees or slightly agrees with these statements:

- Writing health materials at the sixth grade level dilutes the quality of needed health information for all consumers
- Assigning people into marginal and low literacy categories sinks the cultural acceptability of future health literacy campaigns among the very audiences for whom they are intended.

Hence, Factor two reflects a more critical perspective about health literacy than the other factors. But Factor two believes health education is important and it can be advanced in classroom educational settings.

Factor 3 – Personal education perspective

Factor three agrees with some broad statements that underscore the importance for consumers and patients to be better informed about health and medicine. For example, Table 1 reports that Factor three (and Factor one) agree with these statements:

- Health literacy initiatives should focus on helping patients, caregivers and consumers better navigate the health care delivery system
- The primary intent of health literacy initiatives is to empower patients
- The concept of health literacy needs to better encompass the stress (even the panic) people feel when they need to know and then, are left to seek health information.

These responses suggest that Factor 3 is mindful of the emotional dynamics which occur when patients and caregivers receive a clinical diagnosis and need health information.

But, unlike Factor one and Factor two, Factor three uniquely strongly agrees, agrees or slightly agrees with these statements:

- The concept of health literacy should focus on a consumer's skill to interpret media messages, enable people to look for (assess whom to ask for) more health information
- The concept of health literacy should be expanded to access health services and to engage in patient advocacy

- Foremost, health literacy should be conceptually conceived as improving a consumer's basic medical knowledge.

Factor three also is the only group to strongly agree with this statement:

- The primary intent of health literacy initiatives should be to improve the ability of consumers/patients/caregivers to think critically about the health information they receive.

In short, while broad consumer, patient and caregiver health education are important to Factor three, they are the group most interested in encouraging critical thinking, patient advocacy and promoting basic medical knowledge. Factor three also uniquely agrees that helping consumers use the mass media to obtain health information should be an integral part of an approach to improve the public's health literacy.

These responses suggest that Factor three is: a) attentive to individual learning and b) they are distinctly interested in what occurs persons use the mass media, or inquire about health in settings without professional assistance. Moreover, by their relative lack of enthusiasm for clinical and classroom settings, Factor three (partially by default) seems to prefer to advance individual learning within situations where informal education resources are more available. The latter is evidenced by Factor three's lack of enthusiasm for health literacy initiatives centered on clinical or classroom education settings.

For example, in contrast to Factor one, Table 1 reports Factor three is much less enthusiastic about the following statement:

- The primary intent of health literacy is to help patients better understand what a physician tells them as well as prescription information.

Similarly, unlike Factor one's stronger endorsement, Factor three only slightly agrees with these statements:

- Improving health literacy will first result in patients who are more discerning about the medical advice they receive
- The primary goal for health literacy initiatives should be to increase the use of plain language in all consumer instructions and communication about health.

As a result, Factor three does not seem to be an unequivocal supporter of focusing health literacy initiatives on clinical settings.

Unlike Factor two, Factor three slightly disagrees with these statements:

- Poor K-12 health education programs are the major barrier to improving health literacy
- The primary intent of health literacy initiatives should be to help primary or secondary school educators teach health literacy as a basic subject.

Hence, Factor three has reservations about formal classroom educational settings, which contrast with Factor two's endorsement.

Overall, Factor three is characterized by a distinctive attitude about the best setting to encourage personal knowledge and improve health literacy. While Factor three agrees that improving the nation's health literacy is an important endeavor, the preferred setting to help persons learn about medicine seems to be when someone is not in a class or at a physician's office, but in a more private, less formal, health information seeking mode -- such as when one seeks reading materials, browses the Internet for health Web sites, or picks up information about medicine from the mass media. Factor three's interests seem to be to help consumers learn when they are not necessarily surrounded by health

educational professionals or providers. Yet, Factor three supports enabling consumers to discriminate among available health sources and materials.

Discussion and Conclusions

The findings suggest the respondents observe health literacy issues through different perceptual prisms. Factor one is optimistic and supportive of health literacy's transformative socio-cultural and professional potential -- if clinical settings become a launching point for health literacy activities. Factor two is less optimistic about health literacy's potential to improve clinical or patient outcomes and prefers to focus health literacy initiatives on classroom education settings. Factor three is supportive of improving the nation's health literacy, but is more inclined to support health literacy initiatives when persons privately interact with materials.

The three factors disagree about the appropriate venue to launch successful health literacy efforts. While Factor one believes primary care services represent optimal venues to focus health literacy efforts, Factor two partially rejects this approach and places more confidence in classroom educational settings.

Factor three disagrees with both Factor one and Factor two and seems to believe that health literacy initiatives may be more successful if they are focused on less formal, personal educational settings.

Although the findings and their implications are limited to the study's respondents, the study suggests that an educational setting makes a difference in how health care professional perceive health literacy issues. The differences in health literacy attitudes also may reflect different educational priorities and preferences among health

professionals even if they broadly support the idea that improving the public's health literacy is important.

For each factor the focal point regarding the appropriate venue to initiate health literacy initiatives also is somewhat mutually exclusive. While each factor supports its perspective about an appropriate educational setting, the findings suggest the other two options are less acceptable. For example, Table 1 reveals that Factor 1 (which supports clinical settings to initiate health literacy activities) simultaneously fails to support classroom educational and personal educational settings as the most appropriate venue to initiate health literacy activities. Similarly, the other two factors reinforce their preferred educational setting and either disagree or are less enthusiastic about the other two.

More broadly, the acceptance by each factor of one perspective and partial lack of acceptance of other options suggests that the educational venues to initiate health literacy activities might be a source of future dissonance for some of the health care professionals who participated in this study.

The importance of these differences become evident if they are extrapolated to future health policy decisions, such as prioritizing financial and human resources to support health literacy initiatives. While the respondents were not asked how they would respond to prioritizing financial and human resources to support health literacy initiatives in clinical, formal classroom or personal educational settings, the findings suggest each of the three factors would be supportive with decisions that reinforce their perspective. However, the findings imply that all three factors might demur about proposals to invest equally in clinical, education or personal educational settings, or invest unequally (if one factor's vested interest is funded inequitably at the expense of the other two).

Accordingly, the aggregate factor scores suggest the broader acceptance of health literacy initiatives might run into some professional resistance among the persons surveyed, which could be offset by an effort to engage participants in a debate about priorities and appropriate educational settings. Among the study's respondents, a dialogue about clinical, classroom and personal educational settings to initiate health literacy efforts should be appropriate, informative and lively.

The study also implies it may be important to assess how health professionals prioritize and characterize the role of a person who seeks health care information and health services. For example, the study suggests that if persons who seek health care information or services are identified as 'patients' or 'students' or 'consumers,' the assignment seems may make a difference in how health literacy initiatives are perceived and prioritized. The study suggests that the categorization of persons who seek health care information and services could be an underlying issue that impacts health policy and health literacy perceptions. Certainly, the study suggests it is important for future research to address role perceptions and the associations between role assignments with broader perspectives about public health and health literacy initiatives.

Independent of these categorizations, the study also implies its respondents think about health literacy in terms of its impact on individuals as well as its impact on educational settings. Taking the holistic perspective recently advanced by Shohet and Renaud [30], emphases on individuals and educational settings occur when health care professionals demur or disagree with sociological issues such as: a) the influence of socio-cultural undercurrents on the social impact of health care initiatives and b) how negative attitudes about health care organizations as social institutions impact the social acceptance of

health policy initiatives. Indeed, Table 1 reveals that all three factors agreed with few of the statements that addressed socio-cultural undercurrents that might adversely influence the social acceptance of health literacy. Yet Shohet and Renaud [30] emphasize the latter issues are important to the public's acceptance of health literacy policy initiatives, which implies their salience should be of greater concern to more respondents.

It should be noted that the thematic patterns that distinguished the three factors were not necessarily predictable from the issues raised by the survey's individual items or from the three dimensional structure that underlay the instrument. This illustrates one of the primary reasons to use Q methodology, which is its capacity to explore and discover perceptions that are not necessarily anticipated by the investigator [20,23,25]. The study additionally illustrates that mailing lists provide a promising venue to explore inter-professional discourse.

The study has important limitations including a small, nonrandom sample size that restricts the generalizeability of the findings. The use of Q methodology (which has a smaller number of respondents than most public opinion research) inhibits a researcher's ability to explore if differences or associations among demographic characteristics regarding health literacy issues are statistically significant. The interpretation of the factor structures also was thematically based and alternative explanations of the arrays reported in Table 1 may be possible.

In future research, it would be interesting to determine if there are attitudinal differences among and between medical librarians and public health practitioners and whether educational level and background, professional allegiance, gender, geography, ethnicity and other standard demographic factors differentiate opinion within one or both

groups. It would be interesting to explore if the study's factor structures (or psychographic segmentation among clinical, formal educational and personal educational settings) are sustained if a larger number of respondents are surveyed.

In addition, would a new factor surface if more diverse medical professionals, such as primary care physicians or nurses, completed the same Q sort? It should be noted that thematic patterns within factor arrays often remain stable in follow up research that uses the same Q instrument [20,21,25]. Indeed, the thematic patterns in Factor one and Factor two in the current study (where $n=1,836$) were similar to two of the factors in the pilot study (where there were 18 respondents and $n= 648$).

Further, the findings suggest that a future study which assesses how health professionals rank health literacy versus other health policy priorities might be instructive. As listed in the study's introduction, some of the health policy priorities that are sometimes mentioned as embedded or aligned with health literacy include: addressing the health care needs of underserved audiences, reducing health disparities or improving the access and delivery of care to other underserved demographic groups and many other topics. It remains uncertain and worth investigating if health literacy is seen as a comparative priority within an array of policy efforts that seek to remedy other pressing public health challenges.

Finally, the implications of the differences among the respondents yield a basis for an evolving, fluid, vigorous dialogue about health literacy issues among health professionals. One dialogue might address the relative benefits of launching health literacy initiatives primarily in clinical settings or whether efforts should be directed to classroom or personal educational venues. Another dialogue might address how the

perceptions of health literacy among health care professionals and medical librarians are impacted by their characterization of the people they serve.

The study suggests that intra-professional dialogues about the perception of health literacy initiatives might foster greater understandings among health professionals, which could be a catalyst to increasing support for health literacy initiatives.

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Table 1

	Statements	Factor 1	Factor 2	Factor 3
1.	The primary intent of health literacy initiatives should be to improve the ability of consumers/patients/caregivers to think critically about the health information they receive	2	-4	4
2.	The foundation of health literacy is that all communications between patients/caregivers/families/consumers and providers need to be conceived as a dialogue	1	-1	2
3.	The primary intent of health literacy initiatives is to help patients better understand what a physician tells them as well as prescription information	4	-3	1
4.	Health literacy is a concept that fails to capture the public's attention or imagination	1	0	-2
5.	Health care costs will decline as a result of improving health literacy	3	0	-2
6.	Health literacy efforts are a preemptive strike designed to reduce the liabilities of physicians, hospitals and insurance carriers when patients do not understand the information presented to them	-4	1	-4

7.	Poor K-12 health education programs are the major barrier to improving health literacy	-1	3	-1
8.	Teaching health literacy to help consumers negotiate the healthcare system is a superficial fix (or 'too little too late') because it fails to address the larger problems underlying the U.S. healthcare system (such as 45 million uninsured Americans)	-4	-2	-2
9.	The concept of health literacy has become overburdened with too many sociological, cultural, psychological, health communication and demography concepts	-1	2	-3
10.	Writing health materials at a sixth grade level dilutes the quality of needed health information for all consumers	-4	2	-1
11.	It is naïve to use public health or disease intervention conceptual models to resolve cultural challenges, such as health literacy	-3	0	-3
12.	Health literacy educational results will not be immediate. A generation or more may be needed to effect cultural changes for both caregivers and consumers	0	0	-1
13.	Health literacy and functional literacy are not the same thing	3	-3	0
14.	Improving health literacy will first, result in patients who are more discerning about the medical advice they receive	2	-1	1
15.	The primary intent of health literacy initiatives is to improve patient adherence with physicians' instructions	1	4	-3
16.	The concept of health literacy should focus on a consumer's skill to interpret media messages, enable people to look for (and assess whom to ask for) more health information	0	-2	2
17.	The primary intent of health literacy initiatives should better document the causal pathway of how poor literacy affects health	-2	4	-1

18.	Health literacy should conceptually encompass how patient misunderstandings and confusion add hidden costs to the nation's health care delivery system	1	2	0
19.	The primary intent of health literacy initiatives should be to provide demographically targeted, just-in-time medical information	-1	4	0
20.	Elevating the nation's health literacy is a vital step to improving the quality of health care and health outcomes	4	-2	4
21.	The primary intent of health literacy initiatives should be to help primary or secondary school educators teach health literacy as a basic subject (e.g. such as English and math)	-1	3	-1
22.	The primary goal for health literacy initiatives should be to increase the use of plain language in all consumer instructions and communication about health	3	1	1
23.	A better informed patient is not always the most cooperative patient	0	-1	0
24.	Paradoxically, health literacy blames the victim for a deeper socio-cultural problem	-2	1	-4
25.	Foremost, health literacy should be conceptually conceived as improving a consumer's basic medical knowledge	0	0	1
26.	The primary intent of health literacy initiatives is to empower patients	4	-4	3
27.	Since health literacy efforts have not been generated at a grassroots level, they appear to be culturally paternalistic	-3	-1	-2
28.	Health literacy should conceptually shift its focus from improving comprehension skills to urging disease prevention and early detection	-1	3	0
29.	Health literacy initiatives should help more people of all ages understand how the human body functions rather than focusing on lay translations of medical terms and vocabulary	-2	1	0

30.	Health literacy initiatives should focus on helping patients, caregivers and consumers better navigate the health care delivery system	2	-1	3
31.	The concept of health literacy needs to better encompass the stress (even the panic) people feel when they need to know and then, are left to seek health information	2	-3	2
32.	Health literacy efforts will help amend the shame and stigma associated with limited literacy skills in American society because health literacy efforts provide a comprehensive, sustained effort to reduce these differences	-2	2	2
33.	Assigning people into marginal and low literacy categories sinks the cultural acceptability of future health literacy campaigns among the very audiences for whom they are intended	-3	1	-4
34.	The concept of health literacy should be expanded to include an emphasis on consumer skills to access health services and to engage in patient advocacy	0	-2	3
35.	The primary intent of health literacy initiatives should be to better match the reading level of the patient with the readability of the materials he/she is expected to understand	0	0	1
36.	The definition of health literacy needs to be expansive, multidisciplinary and multidimensional	1	-4	4

Guide to reading the table: Read down a column to interpret each factor's set of responses for the entire instrument. Read across the row to interpret how each factor answered each item/statement differently. The scores provided are each factor's Z score (or a composite response) for each item/statement. A description of how each Z score was interpreted is provided within the manuscript's methods section.

Table 2 – Respondent Demographics and Factor assignments

Respondent	Female	Male	Factor Assignment	MLA	ENHOIP	Location	MA/PhD
1		X	2	X		East	X
2	X		3	X		East	X
3	X		C	X		Central	X
4	X		3	X		Pacific	
5	X		2	X		Pacific	X
6	X		C	X		East	X
7	X		1	X		Central	
8	X		2	X		East	X
9	X		C	X		Central	
10	X		3	X		East	X
11	X		C	X		East	X
12	X		1	X		Central	
13	X		NS	X		East	X
14		X	C	X		Mountain	X
15	X		1	X		Other	
16	X		1	X		East	X
17	X		1	X		East	X
18	X		1	X		East	X
19	X		NS	X		East	X
20	X		2	X		East	
21	X		2	X		East	X

Respondent	Female	Male	Factor Assignment	MLA	ENHOIP	Location	MA/PhD
22	X		C	X		East	X
23	X		3	X		Central	X
24	X		C	X		Central	X
25	X		C	X		Mountain	
26	X		1	X		East	
27	X		3	X		Central	X
28	X		3	X		Central	X
29	X		1	X		Central	X
30	X		NS	X		Pacific	X
31	X		3	X		East	X
32	X		2	X		Mountain	X
33		X	1	X		East	
34	X		3	X		Central	
35	X		3	X		East	X
36	X		NS	X		East	X
37	X		C	X		Pacific	X
38	X		NS	X		East	X
39	X		C	X		Central	
40		X	2		X	East	X
41	X		1		X	Central	X
42	X		1	X		East	

Respondent	Female	Male	Factor Assignment	MLA	ENHOIP	Location	MA/PhD
43	X		3	X		Pacific	X
44	X		C	X		East	X
45	X		3		X	East	X
46	X		C		X	East	X
47	X		1		X	Central	
48	X		3		X	Central	
49	X		1		X	East	X
50	X		2		X	Central	X
51	X		1		X	East	X

MLA = Medical Library Association

ENHOIP = Environmental Health Outreach Information Program

Factor assignment = 1, 2, 3; NS=not significant, C=confounded (significant loadings >.40 on more than one factor). Confounded and not significant loadings are not assigned to a factor.

Location – U.S. time zone (East, Central, Pacific, Mountain, other)