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Literature Review

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Health Literacy and Osteoarthritis Self-Management

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Abstract

Background: Osteoarthritis is a disabling joint disease with no known cure that negatively effects life quality among high numbers of aging adults.

Aim: To examine the concept of health literacy as a potentially overlooked, but highly salient, disease correlate among this older chronically disabled group.

Method: A literature search using the key terms *osteoarthritis* and *health literacy* was conducted using the major data bases.

Results: Although almost no work has focused on health literacy and osteoarthritis, the concept of health literacy is clearly linked to health status and health outcomes. Varying from marginal to high, health literacy is not always assessed or recognized as being clinically relevant, however, despite a large volume of related literature.

Conclusion: Acknowledging the possible role of limited health literacy in the context of osteoarthritis disease progression, and applying carefully tailored directives for overcoming any related health literacy limitations may offer a novel approach for improving the outcomes for older people with this condition.

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Introduction

An important attribute of the ability to function effectively in a changing health care environment, predominated by high rates of chronic health conditions, and aging populations, is the concept of health literacy. An offshoot of the concept of literacy, health literacy focuses on the extent to which an individual is able to understand health information, and act on this information. Denoting one's ability to perform basic reading and numerical tasks, the concept also implicates the ability to garner health knowledge, to specifically comprehend and apply this knowledge to affect positive outcomes, and to successfully navigate the health care environment, as required (See Table 1).

Unfortunately, the required or desired level of health literacy in general, as well as in specific health contexts, is not a given, and varies from complete illiteracy to adequate health literacy, with most aging adult populations falling into the inadequate or marginal health literacy category. This is unfortunate because those defined as having inadequate health literacy, have been shown in multiple ways to be more challenged in attaining higher levels of well-being, in general, compared to those with adequate health literacy. They are thus more likely to be challenged in the context of efforts to minimize or prevent disability associated with obesity, diabetes, most cases of the joint disease osteoarthritis, and other chronic conditions. However, as outlined in numerous studies, the role of health literacy as a salient health outcome determinant is often ignored, rather than being considered relevant in the process of developing long-term as well as short term self-directed health recommendations for the aging chronically disabled patient.

This article was designed to provide the reader with a brief introduction to the concept of health literacy, and the specific rationale for considering health literacy as an important possible osteoarthritis determinant, and the societal costs and others of failing to do so.

It was hoped that health care clinicians and researchers in the field unfamiliar with health literacy, as potentially powerful health correlate, would have their awareness of this concept and its relevance heightened, and would consequently begin to consider utilizing this information for purposes of improving their clinical practices and research endeavours, with the aim of fostering more optimal osteoarthritis self-management practices than is currently observed.

Methods

To address the aims of this report, the **PUBMED, Academic Search Complete**, **Scopus**, and **Web of Scienc**e data bases were scanned for English language articles that focused on health literacy, in general, or health literacy and osteoarthritis, 1980-August 2018. The available reports were carefully scrutinized and the broad array of available literature selected was categorized into key themes. The lack of any substantive body of research in this realm, especially in recent years, along with the many varied conceptual models reported in the literature, generally precluded any formal meta-analysis or systematic review. Hence a narrative report and commentary is provided. Excluded were non English publications, and abstracts, but all research formats were deemed acceptable**.**

Results

General Observations

Although health literacy has been deemed as fundamental to well-being in the 21st century and is supported by the World Health Organization (WHO) Millennium Development Project [1] plus the United States Healthy People 2020 goals [2], an array of current data show many adults in the United States (US) and elsewhere can be considered to have low to deficient 'health literacy' skills. As such, they may have challenges seeking information, understanding instructions, as well as acting upon these. Given the high importance today of self-management practices in securing health, a low health literate individual may arguably be severely comprised in efforts to achieve the health goals advocated by their practitioner, especially in the absence of remediation or acknowledgement of this situation. According to several studies, this situation may be an especially deleterious one to older adults, and to older adults suffering from painful disabling osteoarthritis, where self-management approaches and effective joint protection strategies are crucial to apply accurately and on a consistent basis, but where many overlapping complex health issues and physical

Table 1. Summary of Differing Annotated Definitions of Health Literacy Showing Concepts Pertinent to Osteoarthritis Self-management.

Source	Annotated Definition
Adams et al. [5]	… ability to understand and interpret the meaning of health information in written, spoken or digital form and how this motivates people to embrace or disregard actions relating to health
Bernhart et al.[6]	.. can explain and predict one's ability to access, understand, and apply health information in a manner necessary to successfully function in daily life and within the health care system, the skills and ability to successfully function and successfully complete health related tasks.
Peerson and Saunders [7]	...includes information and decision-making skills occurring in the workplace, in the supermarket, in social and recreational settings, within families and neighbourhoods, and in relation to the various information opportunities and decisions that impact upon health every day
Paasche-Orlow and Wolf [8]	…an individual's possession of requisite skills for making health-related decisions, in the context of the specific tasks that need to be accomplished
Rubenelli, Schulz, and Nakamoto [9]	reflects the individuals' capacity to contextualise health knowledge for his/her own good health, and to decide on a certain action after full appraisal
Stone [10]	…includes the ability to understand instructions on prescription bottles, education brochures, directions given by your doctor, consent forms and care decisions
Sihota and Lennard [11]	..the capacity of an individual to obtain, interpret and understand basic health information and services in ways that are health-enhancing
WHO (Nutbeam, 1998) [12]	..represents the personal, cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health
Yost et al. [13]	… degree to which individuals have the capacity to read and comprehend health -related print material identify and interpret information in graphical format, perform arithmetic operations in order to make appropriate health care decisions
Zarcadoolas, Pleasant, and Greer [14]	...is the wide range of skills, and competencies people need to develop to seek out, comprehend, evaluate, and use health information and concepts to make informed choices, reduce health risks, and increase quality of life.

limitations can prevail. These include, but are not limited to persistent pain, joint inflammation and swelling, muscle weakness, joint instability, limited mobility, obesity, poor balance, poor posture, sleep problems, depression and anxiety.

Low self-esteem, reduced work capacity, and high levels of comorbid health conditions are other common disease correlates amenable to intervention.

Health Literacy

Derived from the field of education, the term 'health literacy,' first employed by Simonds [3], has since been used to represent literacy skills related to vocabulary, materials, and directives employed in health care settings [4]. It has also been deemed a crucial 21st century skill, especially in the context of contemporary efforts to manage one's health. In addition to representing the ability to understand and analyze both written and verbal information, as well as to be able to act on health information, the term health literacy has also come to denote one's ability to effectively navigate the increasingly complex health care system. Also implied in the context of health literacy is the extent to which an individual is confident to carry out desired health recommendations, choose more helpful rather than harmful beneficial behavioral actions, and to derive sound decisions when faced with oftentimes complex, but essential disaggregated pieces of health related information that must be decoded accurately. There are many definitions of health literacy however, and the diversity of these attributes should be recognized, as well as their possible relevance [See Table 1].

Those Affected by Limited Health Literacy

Individuals most affected by health literacy challenges according to the research are those with poor past educational opportunities, those with limited educational access, and those with low incomes. Older adults are found to be more intently affected by health illiteracy than those who are more affluent or younger than 60 years of age [15].

Sondik [16] showed that more than a third of people living in the US, thought to be well-developed country, had problems in using charts to complete health-care tasks, and many had problems following prescriptions or interpreting over the counter medical labels. In addition, even though the majority ε of people in the US with marginal or low literacy are found to be white native-born Americans, the changing demographics in the US, including an increase in immigration of many diverse racial and ethnic groups who are non-English-speaking, with different languages and culture, plus those with low incomes and those over age 65 with limited schooling is compounding this situation [17]. As well, the gap between the required skills and actual skills of many Americans is compounded for persons coming from a non-English speaking household, due to insufficient numbers of appropriately trained interpreters, as well as culturally competent providers who can help assist non-English speaking families of different backgrounds with their health care needs [18].

Health Literacy Determinants

Since health literacy is context and possibly disease-specific as well as being subject to a variety of external influences including, but not limited to, the nature of the client-provider or other forms of health communication, the nature and availability of desired resources and services, as well as the nature of related policies [19], being health literate may implicate not only knowledge, but also major psychological, social and environmental constructs that influence peoples' health choices, such as motivation, personal skills, and policy factors [20].

In addition, the predominant focus of undergraduate medical training on the physical determinants of health and disease, rather than on the importance of health literacy attributes, as either a contributory disease factor, or an outcome mediator or moderator or both, may negatively affect healthcare outcomes. As well, medical providers may not only be relatively unfamiliar with the immense clinical ramifications of low health literacy, because this specific issue and its impact on health outcomes are seldom discussed during their training, but these facts are also very poorly documented in the mainstream literature, and especially neglected in the vast osteoarthritis-related literature.

As a result of some of the aforementioned issues, older adults seeking health advice may not be able to follow-up on their health recommendations, and

discussions concerning salient health determinants that are imperative to follow such as daily exercise, adequate sleep, and nutrition, may hence go unheeded. Moreover, potentially compounding this problem may be a heightened sense of anxiety as well as fear if the patient with severe disabling osteoarthritis does not clearly understand their condition or why they must or must not undertake certain behaviours, while suffering from periodic bouts of pain, depression, fatigue, and low self-confidence, among other factors.

Health literacy is also influenced by a variety of socioeconomic, environmental, and demographic factors, health status, access to health care, having an empathetic provider, and the nature of any forthcoming educational directives and/or materials. For example, those with limited education, or mainstream language skills, as well as those with limited access to computers or computer skills may not only have difficulties negotiating the broader health care environment, but also accessing the appropriate level of healthcare, as well as problems in information seeking, plus finding materials that are written at an advanced reading level [21], and may hence underutilize available resources-even if available and of potential efficacy [22].

In addition, low health literacy may be especially problematic for adults with osteoarthritis using narcotic medications, and who may be experiencing both depressive symptoms, as well as intractable pain that makes concentrating difficult. These osteoarthritis sufferers may find available educational information especially overwhelming and challenging to decipher, even if they are literate, without some support, especially if the information is too technical, dense or complicated. This patient group may also not have a great deal of mobility or energy to follow through on complex details, nor to navigate the internet, or health care field, unless the nature of the health situation is taken into account and appropriate accommodations are forthcoming, whereby resources they need are made readily accessible and are simplified accordingly.

Farin et al. [23] who conducted a study using a total sample of 577 patients with chronic back pain or osteoarthritis who had undergone inpatient rehabilitation to assess the health education literacy of these patients found 20-30% of the patients admitted to having difficulty understanding important aspects of health education programming such as comprehending what medical information means in relation to their disease. Although the variance explained by sociodemographic and basic medical variables was small (4-8%), the authors concluded greater efforts are required to make health education programs easier to understand.

Consequences of Low Health Literacy

Since health outcomes today depend to a high degree on inputs and actions of the patient or client, rather than technology, surgery, or medications, alone, the failure of clinicians and service providers to consider and assess the degree to which their clients are likely to exhibit health literacy challenges, and to help them overcome this possible problem accordingly, may prevent them from rendering optimally sound health decisions. Moreover, it may prevent them from effectively negotiating the complex healthcare environment, as well understanding their rights to receiving health care, and high quality care.

Older adults who do not read well, have had a limited education, or have visual challenges or a combination of these issues, are also less likely to be able to critically examine available data, and if uncertain about any important issue may tend to refrain, rather than seek health care and receive treatment, as required. They may thus be sicker or more impaired than those who can critically examine available information, and are confident enough to seek help early on or on an annual basis.

Health literacy challenged patients may experience anxiety once they enter the medical sphere if the signs posted and information on forms is overwhelming. Even after they receive help, they may be more susceptible to medication errors, have less ability to correctly follow treatment instructions, a higher chance of hospitalization than those with adequate literacy skills, with poorer outcomes. They may similarly fail to convey the correct information or to engage in conversations with their health providers, may miss appointments for needed care, or under-utilize or misuse preventive health care resources and

services [24], simply because they have limited comprehension of what is required, along with fear of having to fill out forms or answer questions regarding their health status and behaviors. They may not only find challenges in navigating the health care system, but also in understanding their rights, along with their diagnosis, treatment plans and options, and more problems discerning the effects of false medication and food advertising, as well as the marketing of unhealthy foods and sedentary behaviors.

As a result, older adults with osteoarthritis may not adhere to one or more treatment recommendations, even if these are salient. Additionally, their actual diagnoses may be inaccurate, owing to their inability to provide accurate data, and to comprehend the importance of providing clarification about their personal situations, health condition, and foreseeable management challenges. In the context of osteoarthritis, a program to limit mechanical damage that is not adhered to, or is carried out 'incorrectly' due to misunderstandings can clearly result in more suboptimal outcomes than not, including a greater need for surgery, and medications than the health literate client with comparable health challenges.

In particular, considerable research implies that adults with osteoarthritis who are health illiterate or marginally literate are less likely to seek preventive care, and more likely to be sedentary [25, 26]. They are also likely to have less knowledge about the benefits of physical activity [27], in particular, even though the maintenance of optimal overall fitness is potentially the single most important outcome determinant in this group [28].

Moreover, since health literacy specifically influences one's behavioural choices, plus one's competencies to take action and to carry out decisions that can influence health outcomes, clearly those who are not adequately health literate are likely to suffer more than those who have higher skills, if the individual has to simultaneously change more than one behavior at a time, or their health literacy challenges are overlooked when developing their treatment plans. In addition, having less than optimal disease-specific as well as general health literacy, may especially compromise disease overall self-management processes-an umbrella term used to denote the many types of health-related behaviors and activities that people with one or more chronic diseases such as osteoarthritis are expected to carry out on a regular basis to maximize their health. These activities include exercise, diet, getting enough sleep and controlling stress, among other behaviors, and all require some degree of understanding and an ability to carry out these understandings in a safe and life affirming manner.

In short, an older adult with low health literacy who is not clear about how to use information to manage their osteoarthritis, who cannot make effective decisions as a result, and who does not have the skills required to communicate their challenges, or is ashamed to admit they need assistance to process information, and act on this, may find they progress more rapidly towards disability, require more doctors visits and hospitalizations, or carry out too few visits, than if they are able to understand how they can personally optimize their health condition. Following the definitions provided in Table 1, some of these challenges are likely to include one or more problems with:

- Reading or comprehending pill/medication instructions
- Obtaining information and critically evaluating this
- Derive meaning from available information
- Engaging in the provider-patient and other health decision making processes
- Acting on health recommendations
- Reading and completing health surveys, insurance forms
- Overcoming barriers to recommended behaviors
- Imparting correct information to the care provider
- Interpreting dosage schedules.
- Comprehending appointment slips, educational brochures, or informed consent documents.
- Confidently filling out medical forms.

Solutions

To assist health illiterate or low health literate older adults with osteoarthritis to make informed

decisions, and to better understand their condition[s], and what they should do and what they should avoid doing, various educational strategies such as attending special group education classes, and having individual counseling, or a trained facilitator may prove helpful. Educators and clinicians can further try to help the individual client by utilizing careful straight forward explanations, understandable instructions, and plain, rather than technical language. A teach back method, and the fostering of any needed skills, while reducing navigational barriers to care, among other strategies, may help to overcome any significant health literacy challenge.

Examining the individual patient insofar as to whether they understand their condition, and health advice, ascertaining whether they can readily follow instructions, and whether they need assistance in this regard is very important in this respect. Moreover, because being health literate may not be predicted accurately solely by one's literacy ability or educational attainment, no assumptions about an individual patient's health literacy for managing their disease can be made without some direct assessment approach or standardized tool such as the SAM [29], a short practical comprehension test of health related facts. Even then, since patients may understand what needs to be done, but may have no access to the needed resources, nor the capacity, skills, and/or self-efficacy to undertake this, efforts must be made to ensure the management objectives can be achieved effectively [19]. Research clearly supports the view that extending the provider conversation in this direction is certain to have more beneficial long-term influences on the disease outcomes in osteoarthritis cases than not.

Additionally, the necessity of the active participation of the patient in their treatment plan and ensuring they have the requisite skills so they can act accordingly to limit disability should be stressed. This group also commonly presents with multiple other chronic health conditions that may require concurrent attention, thus compounding the management requirements of the patient, unless the provider is prepared to assist health illiterate or marginally literate patients in a comprehensive way.

In this respect, a study by Bill-Harvey et al. [30] showed this may take the form of an extended education course for older adults, such as those with low-incomes who are also patients with osteoarthritis. In this study, indigenous community leaders were trained to teach the course within inner-city neighbourhoods of Hartford, Connecticut with positive results. That is, the researchers found significant differences were obtained using a quasi-experimental group, pre/post-test design in terms of a knowledge increase on both a verbal knowledge test and a picture story test. There was also a significant increase in the subjects' exercise scale scores, and a slight functional improvement, and use of adaptive equipment after the program, suggesting education is very important to this population's well-being.

Sperber et al. [31] who explored whether the effects of a telephone-based osteoarthritis self-management support intervention differed by race and health literacy, among 515 veterans with hip and/or knee osteoarthritis found African Americans in the sample with low literacy had the greatest improvement in pain. This group concluded that a similar telephone-based intervention program may be particularly beneficial for patients with osteoarthritis who are racial/ethnic minorities and have low health literacy. However, education alone, may not be sufficient in this case if environmental constraints and ongoing access to an empathetic provider prevail. Tailoring the desired educational information, and delivering it using process a step by step, including opportunities for monitoring and feedback to patients may further help to maximize the self-management ability of older adults with osteoarthritis whose health literacy levels to be suboptimal.

Other solutions that have been put in place given the series of overlapping health challenges that older adults commonly face, include the integration of several aspects of health literacy, including education of providers, and shared decision making into national health policies [28], and medical school curricula. However, the immediate needs of the health illiterate osteoarthritis patient clearly remain, so active focused interventions are needed in real time encounters. Since osteoarthritis is the leading disabler of aging adults, and its outcome is very strongly linked to personal

behaviours, every effort to ensure the resources to do this, as well as the directives are clearly articulated, and that all providers can successfully establish the degree to which more effort is needed to ensure their clients' understanding.

Persistent Challenges

Although an increasing volume of data show patients and caregivers can benefit markedly from forging active partnerships that can empower the patient, ample research indicates that many cases of osteoarthritis may not have an affiliation with an empathetic and knowledgeable provider as far as health literacy goes. They may also have limited knowledge of the fact that their health condition is amenable to the benefits of self-management, among other strategies, because many erroneous myths surround the origins and progression of this disease.

As well, health illiterate individuals may not seek help readily, and even if they do, they may have immense challenges in efforts to follow recommendations that could impact their health. In addition, even if they understand what is desirable, the skills needed to help them offset their risks of excess disability may remain quite limited, unless remediation is forthcoming. Moreover, many who are immigrants and those whose home language is not English or the first language of the country in question, may follow their own health practices, or ignore salient health messages thus placing them at risk for future health problems. As well, even if they understand their risks they may not be able to use, act on or gain access to information that would be helpful to them in offsetting preventable health problems in the future, especially if the provider ignores this potential barrier to obtaining favourable health outcomes. Others may be especially challenged if they have multiple diseases, eyesight and/or hearing problems, and limited functional ability, very common findings in this elderly osteoarthritis patient group. Their ability to positively influence their joint health may be further compromised if they are confused about where to start. Confounding these issues is the fact that most patients hide their confusion from their doctors because they are too ashamed and intimidated to ask for help.

In short, many overlapping issues that can be linked to health literacy challenges can be expected to prevent a low literate patient with disabling osteoarthritis from achieving a high life quality. Among these issues is the fact that not all providers are aware of the ramifications or importance of health literacy and its clinical implications in the context of disabling osteoarthritis, nor of methods that could help them assess this issue in the clinical setting. With so many factors to deal with, and limited time frames for doing this, they may not truly consider the impact of their patient's ability to understand or act on their instructions on their health outcomes as a major priority. Moreover, more commonly than not, they may assume their patients have the competency to make decisions and carry out their recommendations, even though this expectation is often unrealistic [32]. In addition, health literacy in medical settings is often diminished in the face of illness and complex health instructions [33], but the forms and paperwork that must be completed are increasingly overwhelming at the outset. Older individuals may also have cognitive challenges that require carefully construed instructions regarding their health recommendations.

Discussion

Health literacy, a discrete form of literacy, denoting the ability to understand, act on health information, as well as the ability to successfully negotiate the health environment and seek and utilize required resources, poses a challenge to many older adults, especially if they have to manage one or more complex chronic health conditions on a daily basis [2]. Moreover, having low or marginal health literacy not only affects daily management of one's health, but diminishes efforts to prevent health problems from emerging or spreading [27]. Low health literacy is hence currently viewed as a highly important public health issue [34] and key factor in health promotion efforts to attain a healthier society, in general, as well as a healthier outcome for all, even in the face of one or more disabilities [28].

However, in an increasingly technologically dependent environment, where many remain poorly educated, or do not communicate in the mainstream language, the literacy needed to decode health messages may be marginal at best. As well, given the nature of the medical model, and the increasing

importance placed on self-management for fostering healthy outcomes, limitations in understanding, acting on, or navigating the health system are consistently predicted to yield more unfavourable health outcomes than not.

This problem is also increasing, rather than decreasing if the ability to engage with technology, as well understand the materials that are on the internet, as well as other media outlets, is included in the definition of literacy, and may be a specially challenging for a majority of the older population. In addition, even though citizens both healthy and otherwise, are expected to assume a highly active role in fostering their own well-being and in making health decisions, many confusing messages exist alongside compelling messages to use or engage in unhealthy advertised health practices. It is also apparent that individuals choosing to seek information or to respond to a provider's recommendation to do this must not only have the ability to conduct the search, but also the ability to synthesize and critically analyze the results of the information search, navigate diverse communication channels, and be able to carefully select and process information among many competing approaches. One implication for providers here is that they might try to help clients become more skilled in seeking outside information sources, plus their ability to understand and utilize the information.

On the contrary, without intervention, the dual problem of high levels of exposure to powerful media, and the weak counter-efforts of providers to foster high health literacy among their patients is likely to ensure that negative rather than positive long-term outcomes will prevail [35]. In addition to matters related to the volume, quality, accuracy, credibility, and completeness of information available on the more than 70,000 health-related, often unregulated, websites [36], studies have found that the technical terms and medical language displayed required reading skills of high school level or higher [37], even among reputable government online sources [38].

Conceivably, therefore, as with literacy in general, many citizens, including older adults with osteoarthritis may not be able to take full advantage of available health resources, or related preventive or remedial messages that would be to their advantage. At the same time, current clinical efforts to address this issue in real time may be very limited and suboptimal, or non-existent in the context of osteoarthritis disability, as well as other chronic diseases, where the multiple overlapping symptoms can greatly increase the magnitude of the disease, and if the hands are severely affected, navigating the internet might not be a good option for these clients, even if they are literate.

A failure to appreciate all these overlapping factors, and to ensure efforts on behalf of patients with osteoarthritis are taken so they can clearly understand the importance of maintaining a healthy weight, exercising and getting enough sleep and why and how these factors among others affect the disease will in all likelihood prove highly disadvantageous. Moreover, even if the provider is otherwise, caring, empathetic, and knowledgeable, but does not really answer patients' questions, or recognize they have limited questioning skills as well as limited skills to follow instructions, the poor self-management adherence rates reported by practitioners among this group should not be surprising. As well, research has revealed that many patient education materials for people with one of the rheumatic diseases are written at readability levels above the recommended sixth-grade reading level and have only adequate suitability according to a validated instrument.

Moreover, even if some aspects of their health issue and its treatment are clear to them, they may still have problems differentiating among competing media messages, acquiring resources and skills, and a limited ability to navigate the complex health system both psychologically and physically if they remain unrecognized and/or unassisted. They may consequently experience poor rather than favourable health outcomes, even if they have access to care and adequate health insurance. Unfortunately, many older clients and others are found to often be ill-equipped to meet these overlapping demands [39] and subsequently may tend to cope less well with their self-management regimens than their healthy or literate counterparts. These regimens are essential for managing any prevailing chronic health condition, including osteoarthritis, thus the low health literate client who receives limited care in this regard is likely to experience a rapid downward spiral of negative disabling and

irreversible outcomes, unless carefully construed efforts are taken to avert this situation [40].

To this end, providers are encouraged to engage in straightforward two-way communications, using interpreters as required. They can also assist by carefully explaining medication labels and regimens, treatment contra- indications and their appointment cards [21], in the case of need. Those who are older, with poor educational backgrounds, or are non English speaking may be preferentially targeted.

Unfortunately, health literacy rates are generally poor, and are lower than literacy rates due to the added challenges of decoding and acting on health information in the real world [40], especially if one is in pain or has some form of mental health or physical health challenge, and inadequate health literacy can consequently reduce the ability of an individual to manage their health condition. They may also be unable to effectively participate in medical decision making processes [30] and have to resort to becoming passive recipients of treatment, rather than empowered actors and disease self-managers.

Hence more attention is clearly needed in this realm at the clinical level, given the fact that even in well-developed countries such as Australia, up to a quarter of the population may have suboptimal health literacy [41]. Moreover, if we consider the rising rate of older people across the globe and that more than half will have health challenges, including osteoarthritis, and poor health literacy, efforts to address health literacy are clearly imperative in the clinic as well as at national and global levels.

Summary and Conclusion

Health literacy, denoting the knowledge and competencies needed to meet the complex demands of maintaining good health in modern society, has immense health and social ramifications for all citizens, as well as societies, in general [42]. These ramifications include, but are not limited to problems with treatment adherence, medication usage, usage of appointment cards, and the ability to seek early directions for care. Moreover, a growing volume of current research attests to the fact that inadequate health literacy compromises participation in the health education process, as well information seeking practices, quite significantly. In addition to potentially limiting a patient's ability to access care [43], having a limited ability to navigate the health delivery system can clearly undermine the wellbeing of any patient, even if they understand basic instructions. Unsurprisingly, having limited health literacy is related to having an inadequate understanding of desirable and undesirable self-care behaviours [44], poorer than predicted health status, higher health care costs, numbers of hospitalizations, and reduced life quality [45], as well as having suboptimal skills to obtain, process and understand health information and services necessary to make appropriate health decisions, and to meet the demands of providers in complex health protocols and navigational systems (see Table 1).

To overcome possible health outcome limitations due to limited health literacy skills, which have been deemed essential for purposes of interpreting and discussing health issues, as well as for participating in personal health related practices by the Institute of Medicine in the United States [46], clearly more focused attention is desirable at the clinical level. Sorenson et al. [47] who examined this topic found 17 differing definitions of health literacy and 12 conceptual models, further implied that more should be done to overcome possible deficits in conversational competence, plus the ability to listen effectively, articulate health concerns, and explain symptoms accurately. As well more needs to be done for those patients with obvious limited decision making and analytic skills in the context of efforts to advance favourable health outcomes. Moreover, acknowledging that the ability to locate information, assess its quality, understand numbers, and being able to judge risk are essential health literacy attributes, is paramount.

However, despite the growing emphasis on increasing patient participation in healthcare [22], many health tasks may remain daunting for a large majority of today's populations, including the older adults with osteoarthritis [46]. This is owing to the fact health and its maintenance in this disease often involve tasks in more than one domain, and optimal management often requires the patient to be able to interact effectively within the complex healthcare system, as well as expecting patients to have skills to meet the various challenges involved in health decision making at home, work, and in the community [47]. Challenges may also

exist given the variety of skills often needed to carry out the diverse health recommendations that are needed to ameliorate this disease, because these may depend partly on one's ability to read and understand instructions [22]. Because of their shame, patients with low literacy may however be unwilling to disclose their health literacy related problems to a health care provider, thus some preliminary form of screening may be necessary to identify those who are likely to need special assistance [48].

Hence, even though there is often more than enough information available to citizens to master their health care, placing the onus on a generally health 'illiterate' population to be responsible for understanding and acting on health recommendations, and neglecting to assess basic health literacy, and intervening accordingly thereafter in the context of medical care must be challenged [49]. As proposed by Ratzan and Parker [46], it seems reasonable to suggest that to minimise the detrimental impact of health illiteracy on osteoarthritis and other chronic health conditions, thoughtful timely interventions are highly indicated especially for those from the lower socioeconomic and/ or poorly educated individuals or groups [50]. In support of Parker [40] and from the perspective of health promotion, prevention, or treatment of diseases, knowledge of ways to improve health literacy, as well as efforts to raise awareness about the costs of not addressing health literacy adequately are other approaches.

Healthcare Practice Considerations

More than 66 percent of U.S. adults age 60 and older, that is about 90 million [1/2 of all] adults have inadequate or marginal literacy skills.

An individual's health literacy may be worse than their general literacy-or ability to read, write and speak in English.

Not having adequate reading or numeracy skills could affect an individual's ability to understand concepts and tasks that are necessary for optimal health.

It could also affect a patient's access to necessary information or care itself [48], their health system utilization rate, and health care costs [51, 52].

According to Koh et al. [53] tens of millions of Americans have limited health literacy—a fact that poses major challenges for the delivery of high-quality care. Despite its importance, health literacy has until recently been relegated to the sidelines of health care improvement efforts aimed at increasing access, improving quality, and better managing costs. If public and private organizations make it a priority to become health literate, the nation's health literacy can be advanced to the point at which it will play a major role in improving health care and health for all Americans. Sudore et al. [54] further report that limited literacy is independently associated with a nearly 2-fold increase in mortality in the elderly. We hence agree that given the growth of the aging population and the prevalence of chronic diseases, the role of limited health literacy in particular warrants attention. For patients to actively participate in their care, research shows they must be able to seek health information; know where to seek health information; be able to verbally communicate; be assertive; have basic literacy skills; and the capacity to process and retain information; as well as application skills [55].

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