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Everyday health information literacy in relation to health behavior and physical fitness: A population-based study among young men

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1. Introduction

Lack of competencies related to finding, evaluating, and understanding health-related information may impair the capability to make informed decisions concerning health (Eriksson-Backa, Ek, Niemelä, & Huotari, 2012; Furuya, Kondo, Yamagata, & Hashimoto, 2015). These competencies have become increasingly important in information intensive societies, where people are surrounded with vast amounts of health information in their everyday lives. Free access to health information creates opportunities for empowerment, civic engagement, and information sharing (Savolainen, 2011), and may help people to engage in health promoting behavior (Niemelä, Huotari, & Kortelainen, 2012). However, the likelihood of misuse, misunderstanding, and information overload has also increased (Kickbusch, 2008).

People are faced with a need to take care of their own health, for example, by eating healthily, avoiding harmful substances, and engaging in physical activities. At the same time, the authoritative role of health professionals and experts has diminished, and media is filled with lay information on health issues (Chew & Khoo, 2016; Oh & Worrall, 2013). Consequently, it is often difficult for people to know where to find credible and relevant information and what, and whom, to trust in health issues (Robins, Holmes, & Stansbury, 2010).

2. Problem statement

The concept of health information literacy has been introduced to describe the competencies needed to find relevant information, evaluate its reliability, and use it to make decisions concerning health (Eriksson-Backa et al., 2012; Medical Library Association, 2003). A low level of health information literacy may hinder the ability to make well-advised health decisions (Johnson & Case, 2012) and increase the experience of information overload (Kim, Lustria, Burke, & Kwon, 2007). There seems to be a positive relationship between health information literacy, health-promoting behavior, and good self-reported health (Eriksson-Backa et al., 2012; Pálsdóttir, 2008). Yet, there is a lack of studies on health related literacies in non-medical settings (Mancuso, 2009) and in generally healthy individuals (Berkman, Sheridan, Donahue, Halpern, & Crotty, 2011). Moreover, there are no studies on health information literacy in relation to a variety of health behaviors or objectively measured indicators of health. This study addresses this issue by investigating everyday health information literacy (EHIL) in a generally literate and healthy population of young people, in relation to their health behaviors and physical health.

The study seeks to increase the understanding of the association between EHIL and health behavior as well as physical fitness among young men. The research questions are: 1) How is EHIL associated with health behavior (physical activity, dental hygiene, smoking, eating habits) among young men? 2) How is EHIL associated with physical fitness (body mass index, body composition, aerobic fitness, grip strength) among young men? 3) Are these associations independent of socio-demographic factors?

3. Literature review

3.1. Health literacy and health information literacy

The concept of health information literacy brings together the concepts of health literacy and information literacy, and specifically concerns research among literate populations (Niemelä, Ek, Eriksson-Backa, & Huotari, 2012). Health literacy can be defined 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" (Institute of Medicine, 2004, 20). Generally speaking, basic health literacy refers to an individual's capability to apply literacy skills to health related materials (Chinn, 2011). Fairly recently the focus of health literacy research has shifted to explore a wider variety of social, personal, and cognitive skills, such as critical thinking, problem-solving, information seeking, and communication (Chinn & McCarthy, 2013; Mancuso, 2009). Different levels of health literacy have been distinguished, namely,

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functional literacy, communicative or interactive literacy, and critical literacy (Chinn & McCarthy, 2013; Nutbeam, 2008), ranging from skills needed to function in everyday situations (functional) to those required to critically analyze information and use it to exert control over life events (critical). However, most studies still investigate health literacy as a set of basic reading and numeracy skills using health literacy measures such as the Test of Functional Health Literacy in Adults (TOFLA) and the Rapid Estimate of Adult Literacy in Medicine (REALM) (Jordan, Osborne, & Buchbinder, 2011; Mancuso, 2009). The way in which health literacy has been operationalized in these studies directs research to detecting individuals with limited basic literacy (Niemelä, Ek, Eriksson-Backa, & Huotari, 2012) and does not represent the health information related challenges that literate people face in their everyday lives (Mancuso, 2009; Niemelä, Ek, Eriksson-Backa, & Huotari, 2012). Other related concepts, such as health numeracy and eHealth literacy are not covered in the present article.

Information literacy, in turn, can be defined as a set of abilities enabling individuals to "recognize when information is needed and have the ability to locate, evaluate, and use effectively the needed information" (American Library Association, 1989). Information literacy is understood to form the basis of lifelong learning (Lau, 2006) and is considered to be a key to empowerment and "survival" in the information age (Yates, 2013). The concept of information literacy has mainly been applied in educational settings (Smith, Given, Julien, Ouellette, & DeLong, 2013) but more recently the focus has expanded to other context as well (Lloyd, 2005). The United Nations Educational, Scientific and Cultural Organization (2014) considers information literacy and media literacy increasingly intertwined and suggests the concept of media and information literacy.

The concept of health information literacy focuses on the higher level cognitive and social skills needed to cope in the complex health information environment. Basic health literacy skills are the basis of higher level cognitive abilities. Although having adequate basic health literacy, people may lack the necessary competencies to find and use health information (Andrews, Johnson, Case, Allard, & Kelly, 2005).

Health information literacy has been studied among various populations, including upper secondary school students (Niemelä, Ek, Eriksson-Backa, & Huotari, 2012), university students (Ivanitskaya, Hanisko, Garrison, Janson, & Vibbert, 2012; Ivanitskaya, O'Boyle, & Casey, 2006), the elderly (Eriksson-Backa et al., 2012; Yates, 2013), and people with chronic health conditions (Lloyd, Bonner, & Dawson-Rose, 2014). Yates (2013) approached health information literacy from a relational perspective in which the focus is on information literacy as experienced by individuals themselves (Yates, 2013). Lloyd (2005) and Lloyd et al. (2014) approached it from a socio-cultural viewpoint which focuses on the social settings in which health information literacy is developed. In this study health information literacy is understood according to the Medical Library Association's (2003) definition as "the set of abilities needed to: recognize a health information need; identify likely information sources and use them to retrieve relevant information; assess the quality of the information and its applicability to a specific situation; and analyze, understand, and use the information to make good health decisions". Thus, health information literacy is understood from a behavioral perspective (Yates, 2013) as the skills or competencies of an individual. This does not mean, however, that health information literacy is seen as distinct from socio-cultural aspects or individual experiences. Further, in this study the concept of everyday health information literacy (Niemelä, Ek, Eriksson-Backa, & Huotari, 2012; Niemelä, Huotari, & Kortelainen, 2012) is used to highlight that the study concentrates on individuals' general and non-professional competencies with regard to health information.

3.2. Health related literacies, health behavior, and health

Research so far clearly indicates that basic health literacy (Chinn, 2011) is positively associated with health promoting behavior and also with physical health, at least among the elderly and in specific patient populations (Berkman et al., 2011). For example, among older people, low basic health literacy has been found to be associated with poorer physical fitness (Berkman et al., 2011; Mõttus et al., 2014) and mortality (Berkman et al., 2011). In younger populations, associations have been found between adequate basic health literacy and health awareness including health-promoting eating habits (Chang, 2011; von Wagner, Knight, Steptoe, & Wardle, 2007), not smoking (von Wagner et al., 2007), moderate alcohol consumption, avoiding drugs, absence of dental disease, and a generally healthy lifestyle (Berkman et al., 2011). Despite these findings, the evidence for an association between basic health literacy and health behaviors, as well as physical health, has been deemed as inconsistent and insufficient (Berkman et al., 2011).

Even less empirical evidence exist on how interactive or critical health literacy (Nutbeam, 2008; Chinn, 2011) or health information literacy are associated with health. Lam and Lam (2015) found that "competency of health information acquisition" both online and offline was associated with intentions to act in a health promoting way. Basic health literacy, in turn, was not. Furuya et al. (2015) discovered a positive association between communicative/critical health literacy and self-reported health. The few existing studies on health information literacy and health indicate that there is a positive relationship between health information literacy, or some of its aspects, health-promoting behavior and self-reported good health. For example, Eriksson-Backa et al. (2012) found that aspects of health information literacy (e.g., knowing in which situations health-related information is needed and which sources to turn to in order to obtain health-related information) were associated with better self-rated health. Moreover, she found that the level of health information literacy is associated with self-reported level of HDL cholesterol and body mass index (Eriksson-Backa, 2014). In a study by Pálsdóttir (2008) a critical approach in the selection of information sources and low "information behavior barriers" (such as awareness of information, beliefs about the availability, accessibility, and trustworthiness of information, and the capability to interpret or understand information) were found to be associated with healthy behavior.

Health literacy has been suggested to influence health knowledge, and thereby attitudes, social norms, self-efficacy, and skills, all of which contribute to the development of an intention to modify health behaviors (Berkman et al., 2011). However, the mechanisms through which health literacy or health information literacy may influence health are not clear (Paasche-Orlow & Wolf, 2007; Osborn, Paasche-Orlow, Bailey, & Wolf, 2011). Moreover, it must be noted that the role of information and knowledge may vary in different health contexts.

It has been claimed that low health literacy is associated with poorer health largely because it reflects the general cognitive ability and the educational or occupational levels of populations (Mõttus et al., 2014). Inadequate health literacy (Chinn & McCarthy, 2013) as well as health-compromising behaviors, and poorer health (Lahelma, Martikainen, Laaksonen, & Aittomaki, 2004) have been found to be more prevalent among lower socio-economic groups, specifically among the less educated. This seems also to apply to health information literacy; the less educated are more likely to have poorer health information literacy (Eriksson-Backa et al., 2012; Hirvonen, Ek, Niemelä, Korpelainen & Huotari, 2015). This study does not attempt to reveal the mechanisms through which health information literacy may influence health behaviors, or any causal relationships between them. However, people's socio-demographic backgrounds are taken into account when investigating the relationships between health information literacy, health behavior, and physical fitness to ascertain whether the possible connections between them are explained by educational or occupational differences within this population.

Death and chronic illnesses (which have been used as health indicators in many health literacy studies) are not readily applicable to the evaluation of young people's health (Gore et al., 2011) and therefore the assessment of their health status focuses on physical (e.g., obesity) and behavioral (e.g., smoking, physical activity) risk and protective factors that influence health. The adult literacy rate in Finland is close to