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Assessing eHealth skills across Europeans

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Abstract
The Internet has made health information more assessable to the general public. However, some serious concerns remain about the quality and reliability of that information, and the ability of the population to accurately interpret these data. An important aspect interpreting healthcare information are eHealth skills. To date, the available evidence is usually based on national analyses of composite measures of eHealth skills. To contribute to the debate our paper analyses particular eHealth skills based on data from a pan-European Union data set. In particular, with microdata from a representative sample, five skills are analysed, viz. searching, locating, understanding, evaluating and using online health information. We use a discrete choice model to identify statistical associations between respondent socio-demographic characteristics and skills. Our analysis reveals a complex pattern of eHealth skills is present across socio-demographic groups, with only self-reported health status and Internet experience influential for all skills. This finding suggests that targeted training actions are necessary to improve eHealth kills, with the seniors and the less educated the groups most in need of training.

Introduction

With an increasing amount of health information now available online, individuals require particular skills to understand and fully utilize these data. eHealth skills (alternatively known as eHealth literacy or digital health literacy) include the ability to search and locate health information online, and also to understand, apply and use this information [1–5]. People with few, if any, skills will probably not be able to make best use of the available online information [6,7]. For instance, errors may occur in interpretation that lead to poor health-related decision making. The core problem is the inability to distinguish between biased non-evidence-based information and unbiased and evidence-based information sources [4,6,8,9]. Importantly, those persons with more skills demonstrate more sophisticated eHealth behaviors, and consequently achieve better healthcare outcomes [10,11]; and develop greater personal empowerment in healthcare [12,13]. In contrast, inadequate eHealth skills can result in low-quality care, the inefficient use of healthcare resources that increase costs and create disparity in healthcare access [5,14,15]; thereafter worsening inequity already present in (offline) health literacy [14–16]. Accordingly, eHealth skills are an increasingly important focus of the current health policy debate [5,17].

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Empirical evidence has shown that the eHealth skills bases are primarily formed by community socio-economic profiles; with younger and more educated population having better skill bases [3,11,18,19]. However, such evidence is usually based on composite measures of eHealth skills. While aggregate indexes are helpful for providing general assessments, the approach is unable to identify common skill patterns. A commonly employed composite measure is the eHEALS scale [2]. This measure attempts to summarize an individual's self-perceived skills at finding, evaluating, and applying electronic health information to health problems[2]. The scale was initially evaluated on a sample of Canadian younger persons. However, subsequent analyses applied the scale to sampled populations in various countries and age groups [11,18-20]. For instance, [11] applied the eHEALS scale to a sample of the Israeli adult population to show that enhanced eHealth skills are associated with more educated and younger individuals. Moreover, highly eHealth literate persons demonstrate more sophisticated search behaviors on the Internet. Another study confirms the association between eHealth skills, age and education using data from a sample of Greek adults [19]. They find that eHealth skills appear positively correlated with other abilities, such as computer and information skills. The eHEALS scale is also employed to investigate eHealth skills of low-income homebound [18] and immigrant senior populations [20].

Performance measures have also been used to analyse eHealth skills. An advantage of performance measures is that they allow cogent evaluation of individual skill proficiency; however this use is limited as the process is time-intensive and expensive [3,4,21,22]. Interestingly, self-reported measures, such as the eHEALS, reach similar conclusions about revealed eHealth skill socio-demographic profiles. Early studies that assess eHealth skills based on performance measures are conducted in the Netherlands [3,4]. A sequence of tasks are designed to measure: medium-related (ability to operate an Internet browser and navigate the Internet) and content-related (ability to locate and respond to information) skills. Task performance is evaluated over a sample of Dutch individuals, paying attention to the number of tasks completed and the time spent [4]. To our knowledge, Van Deursen is the only study to examine particular skills [3] and reports that, while younger persons are generally more skilled than the elderly, the importance of socio-demographic predictors vary by skill. For instance, while younger Dutch persons have better operational skills, they encounter more difficulty in the selection and use of information.

eHealth skills have also been assessed via case-based studies [12,23]. This approach allows an in-depth understanding of the behaviors and motivations underlying online information search processes and strategies to be directly obtained. For instance, case study analysis about online health communities revealed that online communication is largely shaped by societal dynamics and, in particular, by the implicit power processes between patients and doctors [12]. These processes are usually difficult to capture and conceptualize through standard survey questions [12]. Thus, qualitative methods are viewed as a complementary to quantitative research. For instance, case-based studies clearly show that seniors develop appropriate skills when the organizational and institutional contexts are suitable [24,25].

Within this context, the aim of this paper is to contribute to identifying and characterizing the eHealth skills divides revealed by our quantitative approach. In particular, our analysis attempts to add to knowledge about eHealth skill bases by analysing particular skills for the European Union (EU). Our analysis is unique in that it does not focus on national situations.

Data and method

Data

Data in this study are sourced from the Flash Eurobarometer 404 [26]. The European Commission compiled these data to better assess Europeans' digital health literacy. Survey data were collected from persons aged more than 14 years old in the 28 EU Member States. Sampling was both random nationally representative. A total 26,566 persons were interviewed by CATI (computer assisted telephone interviews) during September 2014.

Two screening questions asked individuals whether they used the Internet: firstly, whether respondent used the Internet; secondly, whether he/she had searched online for health information during the past 12 months. When respondents answered ‘yes’ to both questions: their ability to search, find, understand, distinguish and use health online information was assessed though further questioning. 13,078 interviews were completed on the eHealth skills component of the survey.

EHealth skills

The survey measured eHealth skills via five questions which largely matched the eHEALS scale [2]. Items analysed include: (i) knowing how to seek the Internet for health information; (ii) knowing where to find reliable health online sources; (iii) understanding the terminology of health online information; (iv) being able to identify the quality of the health information found online; and (v) knowing how to use it. Each item is measured on a 4-point scale from: (1) ‘totally disagree’ through (4) ‘totally agree’. Table 1 reports the percentage distribution of individual responses.

In Table 1 less than 3% of the sample records ‘totally disagree’ responses. Small response categories can create problems for the precise estimation of explanatory models. Because there are relatively few responses, it is statistically difficult to attribute the cause of any change to particular explanatory variables. Accordingly, the ‘totally disagree’ category is merged with those of the ‘tend to disagree’ responses.

Figure 1 shows the national distributions of Europeans self-reported skill of surfing the Internet to find health information. Substantial variation is apparent across Member States. Cyprus reports the highest percentage of people totally agreeing on having this search skill (72%) followed by Sweden (69%). Meanwhile, Italy and Poland show the lowest percentages, the former with about half percentage of the leading countries (30% and 39%, respectively); in fact, Italy has been found to have the poorest health literacy levels in the EU [14]. National distributions of the other eHealth skills are provided as Supplementary material.