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Finnish adolescents' selection and assessment of health information sources

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Introduction. It is challenging for young people to determine who or what information sources they can trust in health issues. This study examines adolescents' understanding of health, health information needs and credible health information sources and discusses the ways some information sources can be regarded as adolescents' cognitive authorities in health matters.
Methods. Thirty-seven Finnish secondary school students from fourteen to sixteen years were interviewed during a school health education project.
Analysis. The data were transcribed verbatim and analysed qualitatively through open, axial and selective coding.
Findings. Two broad categories of young people's understanding of health and well-being were identified: a narrow disease-oriented view and a wider view including aspects of mental and social well-being. These views were connected with recognised health information needs, preferred health information sources and credibility evaluation.
Conclusions. The interviewed young people found family members and health professionals to be the most credible information sources in health problems. Thus, they can be regarded as adolescents' cognitive authorities who are likely to influence their opinions. In more general health information needs and in lifestyle issues, the range of the information sources was wider and credibility assessments were dependent on the subject.

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Introduction

Health information is widely available from a variety of sources, such as the Internet, media, books and other people, but the information is often contradictory. Therefore, it is challenging to know what sources or who to trust on health issues. Moreover, in today's multimedia environment, anyone seeking health information has to learn to interpret and use more visual and interactive content (Subramaniam, et al.,

2015; Cusack, et al., 2017; Fleary, et al., 2018). Health information literacy is therefore essential (Huhta, et al., 2018a; 2018b). Today's youth have grown up in a digital environment, and a serious concern has been voiced about their ability to critically evaluate information, especially when it is presented on the Internet and in social media (Graham and Metaxas, 2003).

In the past few decades, people's health and well-being have steadily improved in Western countries, but young people's lifestyles have raised serious concerns. For example, obesity rates among young people are increasing, and children's and adolescents' physical condition has declined because of their unhealthy diet and inactive way of life (World Health Organization, 2021a). This phenomenon is expected to lead to severe health problems in the future.

Patrick Wilson's (1983) concept of cognitive authority offers an interesting perspective into how people construct their understanding of the information they can trust, and we can apply this to young people and their health information needs. Wilson argues that people create knowledge either by their first-hand experience or by second-hand knowledge. Most of what we know is based on second-hand knowledge; on the information we are told. The people who have an influence on our thinking are cognitive authorities in their spheres of interest. Wilson notes that cognitive authority is not restricted to people; it can be found in books and other texts, institutions and organizations.

This study focuses on Finnish secondary school students' (from fourteen to sixteen years' old) understanding of health and well-being in association with their health information needs and their assessment of credible health information sources. Of particular interest is who or what sources can be regarded as young people's cognitive authorities in health matters.

Literature review

Cognitive authority and credibility

Wilson's idea of cognitive authorities suggests that authority is a relationship involving at least two people. Cognitive authorities are established early: 'One begins to learn very early who knows about what; one develops a stock of authority beliefs' (Wilson, 1983, p. 125). Parents can be universal authorities, the people who know everything, when their children are in their early years. However, growing up requires getting to know new and different authorities as parental influence diminishes (Wilson, 1983, p. 126).

Wilson notes that cognitive authorities have an influence on others' thoughts by being perceived as 'credible, worthy of belief' (1983, p. 15). Cognitive authority is thus connected to credibility. According to Wilson, credibility has two main components: competence and trustworthiness. Competence relies on occupation, formal education, performance and reputation. Trustworthiness is defined as the ability to be relied on as honest or truthful. Cognitive authority is also influenced by other aspects, such as recognised expertise, intrinsic plausibility and personal trust (Wilson, 1983, p. 21-26).

In health care, confidence, competence, trust and trustworthiness are crucial. Smith (2005) argues that confidence is expressed in systems and can be defined by position; it is based on rationality and cognition (see also Huotari and Iivonen, 2004). Confidence is thus related to competence. Trust is interpersonal, and it includes moral, ethical and affective bases, and it has emotional connotations (Huotari and Iivonen, 2004). Personal trust in a health professional is constructed in the interaction between the professional and the patient. Health professionals' credibility builds on both the patients' perceptions of the professionals' medical competence and their communication skills (Brashers et al., 2006).

The cognitive authority status of health organizations is based on common confidence in evidence-based Western medicine (Zheng et al., 2017) and on the professions' status (de Raeve, 2002). The competence of health professionals and health organizations is generally recognised, although alternative opinions about professional's knowledge, understanding, objectivity and honesty have recently gained more

visibility (Cummings, 2014). In Finland, most people seem to have confidence in the health care system's competence (Aalto et al., 2016, Finnish Medical Association, 2019).

In information studies, earlier empirical studies on cognitive authority have focused on online information seeking and evaluation (e.g., Rieh and Belkin, 2000; Rieh, 2002; Hirvonen, et al., 2019) and on discursive strategies to construct cognitive authority (McKenzie, 2003; Genuis, 2013; Doty, 2015; Neal and McKenzie, 2011; Hirvonen and Palmgren-Neuvonen, 2019). The abstract concept of cognitive authority has mostly been applied in an assessment of credibility (e.g., Savolainen, 2007; Rieh, 2010). Rieh suggests that our assessment of cognitive authority and credibility is a continuing process rather than one evaluative event. Savolainen (2007) found that media credibility and perceptions of cognitive authority are situational; likewise, Sundin and Francke (2009) concluded that school pupils assess information credibility for the particular situation. Huvila (2013) suggests that a Web search as an approach and as an activity could serve as a cognitive authority. Mansour and Francke (2017) meanwhile conceptualised cues to evaluate information credibility in social media as cultural tools such as language use and writing style, expertise, life experience, educational background, and similar lifestyles, parenting values and worldviews.

Adolescent health

In Finland, the overall physical health of children and adolescents is considered to be at a good level. It is supported by the healthcare system that focuses on early prevention and monitoring of diseases (Mäki et al., 2010; Finnish Institute for Health and Welfare, 2021). Municipal health authorities provide school healthcare, which is based on Finnish laws and decrees (e.g., Finland. *Ministry of Social...* 2011). The children are invited to an annual check-up, and the health examinations in the first, fifth and eighth school year are more thorough. Finnish sixth graders (11-12 years old) perceive that their interaction with school nurses takes place in a friendly and trustworthy atmosphere (Mäenpää, et al., 2007). In addition to the check-ups, the students can go to the nurse without a scheduled appointment (Mäki, et al., 2017). However, because resources are limited, the school nurses may only be available at the school for a couple of days a week.

Previous research indicates that a family's socioeconomic position has a great impact on the young's health behaviour and health until at least early adulthood (Kaikkonen, et al., 2012; Myllyniemi, 2012; Hirvonen, et al., 2015, 2016). Finnish children seem to become more independent and rely less on their parents at about the age of eleven, when they are in the fifth grade (Myllyniemi, 2012). At this age parental influence decreases and the importance of peers increases. However, children still depend on their parents for many years after this for many things, such as nutrition, clothing and other everyday necessities.

Adolescents' understanding of health, health information needs and preferred sources

The World Health Organization´s (2021b) definition of health encompasses physical, mental and social well-being. However, in traditional medical research and in people's general understanding of health, the term health tends to be disease focused and defined as absence of disease (Brussow, 2013). Adolescents' health behaviour has been studied widely, but their thoughts and feelings about health remain uncovered (Ioannou, 2005). Michaelson, McKerron and Davison (2015) suggest that adolescents' ideas about health derive from their own and close contacts' experiences, from observing others and from common discourse. Young people seem to associate health with a healthy lifestyle that emphasises individual responsibility but leaves out the broader social determinants. Health is perceived as being fit, not having an illness and being able to perform activities (Giskes, et al., 2005; Woodgate and Leach, 2010; Crondahl and Eklund, 2012). Adolescents may find it difficult to distinguish between the concepts of health, well-being and quality of life (Johansson, et al., 2007; Crondahl and Eklund, 2012).

Previous research indicates that adolescents have a wide variety of health information needs ranging from

physical diseases, health behaviour and sexuality to mental health concerns (Smart, et al. 2012; Buzi, et al., 2013; Adams, et al., 2017). Young people often use personal health information from sources such as family members, health professionals and peers, and they perceive these sources as being trustworthy (Ackard and Neumark-Sztainer, 2001; Marcell and Halpern-Felsher, 2007; Adams, et al., 2017; St. Jean, et al., 2018; Kim, et al., 2020; Abdoh, 2020). Some issues, such as drugs, smoking, alcohol, eating, exercise and sexually transmitted diseases, can be too embarrassing or sensitive do be discussed with health professionals (Ackard and Neumark-Sztainer, 2001; Klein and Wilson, 2002; Leavey, et al., 2011; Katavić, et al., 2020). Young people often use the Internet to look for information because of its accessibility, convenience and speed and to find information about sensitive issues (Buzi, et al., 2013; Cusack, et al., 2017; St. Jean, et al., 2018; Katavić, et al., 2020). However, many adolescents are concerned about the quality of information on the Internet and about the confidentiality of social media (Sundin and Francke, 2009; Selkie, et al., 2011; Smart, et al., 2012; Fergie, et al., 2013). At the same time, professional information sources on social media are considered more credible than, for example, media, friends, family, patients and caregivers (Kim and Syn, 2016).

Aim and research problems

Students (from fourteen to sixteen years) in secondary schools are at an age when they become more independent from their parents and begin to construct their own understanding of health and well-being as well as basic living habits. As their bodies and minds undergo significant alterations, their health information needs are also likely to change. Young people increasingly rely on Web resources for their health information needs, but it is not well known how they assess the credibility and trustworthiness of information originating from different sources. To our knowledge, adolescents' conception of cognitive authorities in health matters and how these authorities are constructed have not yet been widely studied.

The overall aim of this study is to examine Finnish secondary school students' understanding of health and well-being, their health information needs and sources, and to investigate which sources they find most credible.

The research questions are:

1. How do adolescents understand the concepts of health and well-being?
2. What are the adolescents' main concerns and information needs regarding health and well-being?
3. Which sources of health information do adolescents perceive as the most credible?

In addition to answering these research questions, the aim is to reflect to what degree the most trusted health information sources can be regarded as cognitive authorities in health matters.

Data and methods

This study is part of a project called Cognitive Authorities in Everyday Health Information Environments of Young People. The project is based on a socio-cultural viewpoint and uses mixed methods to examine which information sources young people consider credible and how cognitive authority is constructed in modern, multimodal health communication. The data of the study reported in this paper consist of semi-structured theme interviews with thirty-seven Finnish secondary school students aged between fourteen and sixteen years during the spring term of 2017. The interviews were conducted in conjunction with an observational study on health education lessons where students worked on projects involving collaborative information seeking. In total, nineteen female and eighteen male students volunteered to be interviewed. The purpose was to have one or two interviewers interview the students in pairs to allow a dialogue among the interviewees. Besides fifteen paired interviews, two interviews were conducted with three informants and one with one informant only.

The first ten interviews were conducted before the group project, and eight interviews were conducted after the project. The focus of the pre-project interviews was to get acquainted with the students'

information practices in general, while the post-project interviews were based more on reflecting on the collaborative information-seeking process. Accordingly, the interview guide was tailored to match the focus of the interview. However, in both series of interviews, the participants were asked about their understanding of health and well-being, their main health information needs as well as sources they used when seeking health information and their methods of evaluating information. The interview questions were not restricted to the school project. All the interviews (with a duration ranging from eighteen to forty-three minutes) were conducted in Finnish and were audio- and video-recorded by the researchers.

The CogAHealth project is guided by the ethical research principles in the humanities, social and behavioural sciences set by the Finnish Advisory Board on Research Integrity (2012). The interviewees were recruited through their health education teachers. Both the students and their guardians gave their informed consent. The participants were guaranteed confidentiality and anonymity and the right to withdraw from the study at any time. The study findings do not use the participants' real names.

The data were transcribed verbatim and analysed qualitatively through open, axial and selective coding (Strauss and Corbin, 1990). In the open coding, the original expressions were formulated into substantive codes, which were categorised into subcategories (axial coding). Two broad categories of the understanding of health were identified, namely, a narrow disease-oriented view and a wider view with social and mental aspects. Nine subcategories of health concerns or interests, which were information needs, were identified. These were: rest and sleep; exercise; miscellaneous symptoms; general interest in medicine and biology; friends', family members' and relatives' diseases; food and nutrition; intoxicants; mental health; and lifestyle. Four main categories were formulated based on conceptual and content similarities, namely, (1) own symptoms and concerns; (2) the family's, other near relatives' or friends' diseases or health concerns; (3) a universal interest in health, well-being, medicine and biology; and (4) an interest in the individual's own life, health and well-being. The interview quotations were translated from Finnish to English by the authors.

Findings

The students' understanding of health and well-being and related health information needs

The students were asked about their understanding of health, well-being and the relationship between the concepts. The question appeared to be challenging; not all the interviewees gave an answer. However, eight students directly described health as an absence of disease: '*When you don't have any diseases and so*' (Lily).

Moreover, twelve students clearly associated their health information needs only with health problems when answering the further questions about health information needs and sources, which indicates the disease-oriented view of health.

This narrow understanding of health as an absence of disease directed their information needs, which were mostly related to health problems (see Figure 1). For example, symptoms in one's own body led to information needs:

> When I often used to have headaches… (Isabella).
>
> Well, at least when I do not feel well (Ruby).

The adolescent's families', relatives' or friends' illnesses could arouse information needs:

> I have many relatives who have died of cancer, which we tend to have in the family (Olivia)..
>
> My brother has diabetes, and my sister has something called Crohn's disease (Isla).

Eight students expressed a general interest in health issues. These interviewees' understanding of health can be either disease oriented or a wider view (see Figure 1). For two adolescents, this interest was associated with future career plans:

> I am very interested in medicine. I think that I want to be a doctor or something else in that field (Grace).
>
> I would like to work with people's health in future (Sophie).

Some students were generally very worried:

> There are many diseases, which have no cure or medication … many people die. And if they do not die, they cause a lot of suffering (Isabella).
>
> Well, I am interested in many things. I have always been like, so that I am afraid of all diseases and such… (Isla).

Mental health and well-being were also a universal interest:*'Perhaps this mental well-being, too. It is always interesting to read about those things'* (Logan).

The students were asked to explain what, in their own opinion, is the difference between the concepts of health and well-being, but this task was not easy. One way they made a distinction between health and well-being was to describe health as a physical condition and well-being as mental status:

> I think that well-being is more mental, or that health is physical and that your body feels good, but well-being is like your mind feels good (Olivia).
>
> Well-being is more like a mood (Victoria).

Four students described a broader concept of health, which included aspects of well-being. For example, health was defined as:

> Everything is fine, also mental health and everything else (Lily).
>
> Healthy, good life, and that you have a good family and all this (Victoria).

Moreover, well-being meant a healthy lifestyle for four students. For example:

> I do not know, all I can think about is vegetables, I do not know why but … a carrot (Amelia).
>
> What I think about first is a common well-being that all basics are OK and all these healthy diets and so on (Evie).

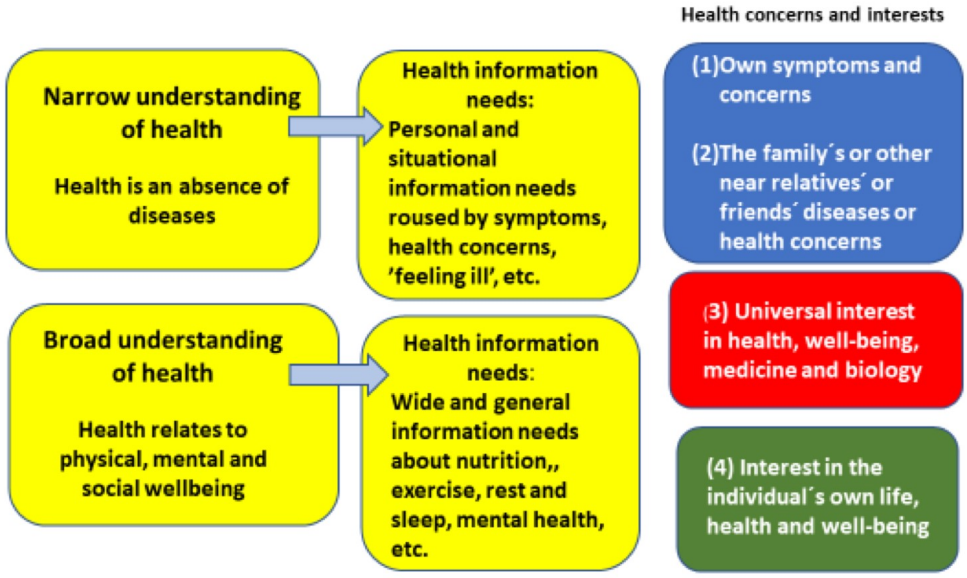

Figure 1: Students' understanding of health and related information needs

Information needs were thus also on a broad spectrum from diet to depression and everything in between (see Figure 1). Personal health information needs were focused mainly on nutrition and exercise: '*Well at least physical training and perhaps also these issues about food*' (Aiden), and sleep and rest:

> If you are tired all the time, even if you sleep well (Emily).
>
> I have grown a lot lately, and I suppose I should also sleep more (Isla).

There was also some interest in intoxicants and stimulants:

> Intoxicants, you see a lot of people who are in poor condition (Liam).
>
> I do not like to drink a lot of energy drinks any more, sometimes I have been drinking them more, but now, when I think about my heart health, I do not drink them any more (Elijah).

Health information sources and channels and their perceived credibility

Information sources and their credibility in relation to a narrow understanding of health

The disease-oriented view of health seemed to direct the students' health information needs as described in the previous section, and the information sources were selected based on their accessibility and credibility (see Figure 2). In their own health problems, the students relied primarily on their parents: '*I think I would rather ask my mother or my father*' (Jessica).

Many of the students' parents appeared to also have some medical expertise:

> Probably Mom because she works in that field (Sophie).
>
> Both my parents are doctors, so… (Elijah).

Moreover, the parents' life experiences were appreciated: *'The parents are more experienced, and they know about many things'* (Daisy).

Other people close to them were also trusted health information sources, mostly because of their expertise: '*My aunt is a doctor, so I can ask her about some matters*' (Emily). On the other hand, parents or other relatives were not always trusted:

If you ask your parents this and that, they are not always right (Logan). Father or mother are not doctors, so they do not necessarily know the right answer. It can be complete nonsense sometimes (Amelia).

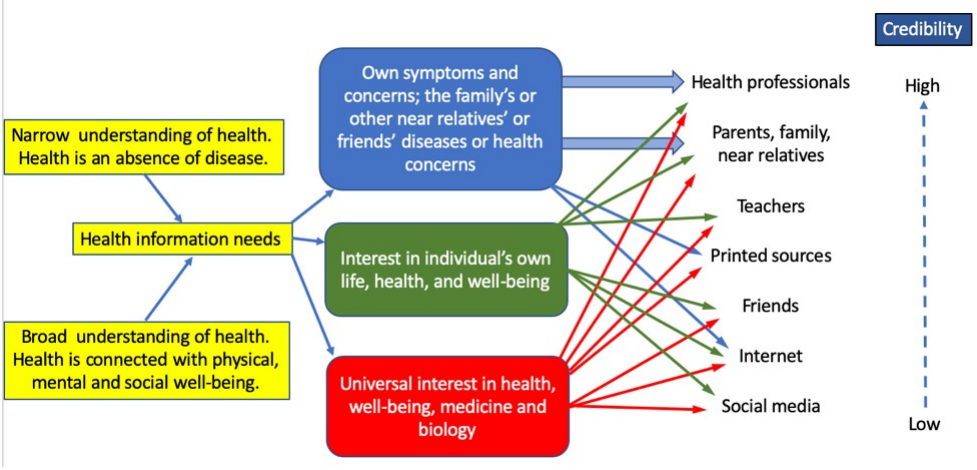

Figure 2: Students' understanding of health, health information needs and sources and their perceived credibility.

For health problems, the information source mentioned second, often after parents, was a health professional (see Figure 2): '*If my mother does not really know, I go to the school nurse*' (Evie). The school nurse is available at the school every week: '*She has these hours when you can go there if you have something*' (Jessica), and many students named a physician first: '*A doctor; they are professionals. You can trust them*' (Elijah).

All the interviewed students found that health information provided by health professionals is credible because they are experts in the field:

> Perhaps those people who have studied health issues (Isla).

> Straight to the doctor because there is so much nonsense on the Internet and health is important. You cannot trust only one source; it is better to go to a guy who has been studying this. School nurse or school doctor or then the health centre (Matthew).

However, there were some more critical views: *'It depends on the doctor; if you get a bad impression from him, then I would not try anything, but if he seems to be professionally competent, then…'* (James).

They sometimes sought information on the Internet: '*If you, for instance, think about some symptoms, you can use Google and you find it easily. There is such a Website as health, only health and you find everything there*' (Olivia). However, verification from people was needed: *'I do not necessarily trust the information on the Internet. You can go and ask the teacher or a doctor for more information*' (Jessica).

All the students expressed mistrust of information found on Websites: *'You can find the information easily, but is it so trustworthy? For example, something like Wikipedia; it is not necessarily trustworthy'* (Sophie).

The students gave many reasons for why Internet sources are untrustworthy. First, the Web page creator, blog author or participant in a Web discussion forum could be a layperson with no training in the field: '*When you see on the Internet such forums where anyone can write, I do not trust them*' (Lily). Secondly, the information can be misleading: '*You can diagnose yourself with a cancer, so even if you are quite healthy you get a cancer diagnosis; a diagnosis for a completely healthy person*' (Isabella). However, almost all students thought that they could easily assess information credibility:

> I look at who the writer is or the information source, and if it is a professional, I trust it more

than if it is just someone from the street who thinks that it is so (Evie).

I look what the Web domain is and if it is reliable (James).

Information sources and their credibility in relation to a broad understanding of health

Those with the wider understanding of health described health information needs on a broad spectrum. Information sources and channels varied widely (see Figure 2). Internet sources were easy to use. Moreover, the equipment to search for information on the Web was easily available; all the students had a smartphone with an Internet connection. All the interviewees mentioned that there is a lot of health information available on the Internet: *'It is much easier to write a search term and see the results than to flick through the pages of a book'* (James).

Many students mentioned that they sought information from multiple sources to evaluate the credibility: '*If it is a really important thing, you have to check it from three or four sites*' (James). If the information need was significant, other sources such as libraries were used, even if the information seeking required more effort: '*If it is a somewhat more uncommon issue, I can go to the library to find some books*' (Grace).

The Websites of medical centres and medical authorities, books and articles in magazines or journals with a health professional as the information source were perceived as credible: *'All the Websites of medical doctors and pharmaceutical companies, I check them often'* (Elijah).

Open discussion forums were especially perceived as untrustworthy: '*If there is a discussion, the participant only supposes that it could be like that*' (Sophie) and some students were even more critical: ''I read them just to have a good laugh because people are so stupid, that is all'' (James). However, discussion forums provided a channel to share experiences and to get peer support: *'I often read on the Internet something like the discussion forum of 'Demi'-magazine about people's opinions about health and the things, which are connected to health'* (Victoria).

Social media (Instagram, Snapchat, WhatsApp) were not perceived as health information sources. Some students had encountered photos of food portions, and training and fitness posing on Instagram, but they did not say that they would have been actively seeking this kind of content in social media.

Well, on Instagram, some may share photos of sports or of food or something like that (Emily).

There are a lot of those fitness types, who tell about their own lifestyle and diet and training … celebrities and such (Isla).

The students thought that the teachers of health education, physical training and home economics were experts in their own field: '*If they teach it, they should know about it*' (Daisy). However, the teachers were seldom referred to as health information sources. *'The physical training teacher can know something, but everybody has his own ways to exercise. So, they can give you good advice, but it is not necessarily useful for you because you can exercise and do things somehow differently'* (Ella).

Friends seemed to provide good peer support for all kinds of worries and problems:

And friends! Yes, your friends, you get really peer support from them (Olivia).

If you are worried about something in your own life or in somebody else's life, you can talk about them with a friend. It is easy to talk with a friend (Victoria).

However, friends were not considered to be reliable information sources: '*I think that if you ask your friend, you cannot completely trust his knowledge'* (Elijah).

Some issues, such as food, exercise and intoxicants, were discussed with friends:

> For instance, about the diet we can talk a lot (Isabella).
>
> And if you exercise enough and all this basic well-being (Aiden).
>
> Perhaps these intoxicants and, for example, caffeine, we can discuss how they can affect you (Elijah).

Printed information sources, especially books, were considered trustworthy, even though '*if you have an old book, you do not know if it [the information] has changed a lot*' (Noah). The most used and most easily available book was the health education book used in the school, '*Perhaps it is the best health education book; it is trustworthy, and it is also otherwise very good*' (Victoria). The basis of the credibility assessment was the expertise of the writers: '*And printed text. There is always research in the background*' (Liam).

Students sometimes used magazines to seek health information: '*There are many magazines about health, and you can find them if you just look*' (Evie). They also encountered health information without actively looking for it: '*I have sometimes seen something in a magazine when I have not been seeking health information; I have just seen an article*' (Lily). The information in magazines was not considered as trustworthy as that in the books: '*In the magazines, it can be like somebody's opinion, and it is not always so trustworthy'* (Isla).

One student, whose parents were both doctors, thought that only the professional medical journals were credible: *'The medical journals, I trust them, but something like a health assessment in a tabloid I do not trust it. So, you can evaluate what to trust and what to not trust, and if there is some kind of research which is the basis of the article then it is OK'*Elijah).

Discussion

The findings indicate that over half of the interviewed students (twenty of thirty-seven) in the Finnish secondary school stated a disease-oriented understanding of health, which directed their views of health information needs and choices of information sources. The health information needs that were brought up were mainly associated with diseases related to their own, their families', other near relatives' or friends' symptoms and concerns.

The family, parents and especially mothers were the first ones many of the students would go to for all kinds of health problems (see also Nygård et al.; in press). Previous studies have shown similar findings (Ackard and Neumark-Sztainer, 2001; Marcell and Halpern-Felsher, 2007; Leavey, et al., 2011; Abdoh, 2020). Parents and other family members are close and thus a natural information source that is easy to reach. Furthermore, they were perceived as being mostly trustworthy information sources. Perhaps the students trust that their parents have their child's best interests at heart (Mansour and Francke, 2017, Discussion, para 7), which is related to Wilson's (1983) idea of parents' universal authority.

However, Wilson points out that parents' universal authority is not actually a cognitive authority because young children cannot evaluate the credibility of the information until they confront some alternative views (also Johansson, et al., 2007). Parents' cognitive authority in health issues is thus based more on trust than on credibility. Youth is the period of life when parents' universal authority is challenged, and peers and other cognitive authorities take the parents' place (Wilson 1983). Thus, it is interesting that the adolescents did not mention their friends as credible information sources on health issues. St. Jean and her colleagues (2018) state that teens seem to think that friends do not have enough experience or knowledge to be credible health information sources. In this study, however, peers gave emotional support and shared their emotional experiences. Perhaps the students also thought that the discussions with friends about health-related issues were not the kind of health information seeking that interested the researchers.

It seems that health professionals and, in this context, especially school nurses and doctors were highly trusted health information sources, which is a common finding in earlier research literature (Ackard and Neumark-Sztainer, 2001; Klein and Wilson, 2002; Marcell and Halpern-Felsher, 2007; Leavey, et al., 2011; St. Jean, et al., 2018; Abdoh, 2020). Nearly all students mentioned the expertise and knowledge of professionals, which derives from education. Health professionals can thus be regarded as cognitive authorities, i.e., as people who have an influence on one's thoughts, which in this sphere of interest are health matters for adolescents. Professionals' cognitive authority relies on their competence, which seems to relate more to the reputation of the whole profession than to individuals. Wilson (1983, p. 83) states that 'We may feel that although individual members of the medical profession may be incompetent, dishonest, and downright dangerous to health, the profession itself is basically competent'.

In Finland, the public healthcare system is based on laws, and although citizens criticise the availability of health services, they commonly appreciate the competence of health professionals (Finnish Medical Association, 2019). Trust in the healthcare system is based on institutional authority, which is established early in life (Wilson, 1983). In Finland, mothers are invited to maternity clinics during their pregnancy, and children go to child clinics for regular check-ups until they start school, where they go to school clinics. Parents' confidence in health professionals and their competence transfers to children and adolescents. On the other hand, parents' mistrust in clinical medicine is likely to affect the adolescents' understanding of health professionals' cognitive authority. However, in this study, the students did not express these alternative opinions. Six of the students mentioned that their parents were either doctors or nurses; confidence in Western medicine prevails in these families.

Likewise, teachers were mentioned a few times as credible health information sources because of their expertise and education. However, teachers' role as health information providers was related more to performing school tasks than to personal health information needs. Printed sources such as the health education textbook were perceived as credible based on the writers' presumed knowledge and expertise (Wilson, 1983; Sundin and Francke, 2009; St. Jean, et al., 2018).

The health information needs related to a healthy lifestyle are indications of both a disease-oriented perception of health to prevent diseases and of a wider perception of health and well-being with social and mental aspects. Some students had a general interest in medicine and biology, which can be related to both the narrower and the wider understanding of health. Information sources varied, and credibility assessments depended on the subject (Hilligoss and Rieh, 2008).

All students mentioned that the Internet and especially social media were not credible health information sources, which is in line with the findings of Hillingoss and Rieh (2008) and Sundin and Francke (2009). Nobody mentioned social media as a health information source, although some students had encountered lifestyle blogs and Instagram posts related to nutrition and exercise. Likewise, Aillerie and McNicol's (2018) study of high-school students' use of social networking sites as information sources showed that the sites were mainly used for social activities and information related to health was sought rarely. This current study was performed at school, in a formal environment, which has probably guided the students' thoughts and answers about proper information sources. It seems that the teachers had reminded them about the critical assessment of Web resources so that nearly all the students mentioned Wikipedia as an unreliable information source (Sundin and Francke, 2009; St. Jean, et al., 2018). However, websites of medical authorities and institutions were perceived as credible (St. Jean, et al., 2018). This is in line with Wilson's (1983) suggestion that cognitive authority is evaluated by the authorities associated with the document. Furthermore, the students frequently mentioned that information on the Internet is trustworthy if the same information exists in multiple sources (Sundin and Francke, 2009; St. Jean, et al., 2018).

The findings indicate that the students in secondary school still depend on their parents for many matters, including health-related issues. However, shifting to upper secondary schools or vocational education is likely to increase students' independence, and they begin to make their own lifestyle choices regarding, for example, diet, exercise, use of alcohol, tobacco and drugs. Their understanding of health, well-being and credible health information sources can change, and their parents' position as cognitive authorities diminishes. It is thus necessary to study how schools can help students develop health information literacy

skills and widen their narrow understanding of health to take responsibility for all lifestyle-related issues and behaviour.

This study has limitations in terms of sample size and generalisability. First, the study included a convenience sample of students from a health class in a formal school environment. However, health education is a mandatory subject in secondary schools in Finland (grades seven to nine), and the students had varying backgrounds (Finnish National Board of Education, 2016). The participants were polite and anxious to answer the questions in the right way. This led to short answers and short discussions. The interview themes were not restricted to performing the current school project, but obviously some students' answers followed the school's norms, values and expectations (Sundin and Francke, 2009). Secondly, pair interviews compared to individual interviews had benefits and disadvantages. The more active and talkative students often led the discussion, and the timid interviewee followed the other's opinions. Thus, not all the students answered all the questions, which may have biased the findings. Certain issues can be taboo in a group discussion, and therefore are not being discussed honestly. For example, previous literature discusses adolescents' information needs on sexuality (Ackard and Neumark-Sztainer, 2001; Klein and Wilson, 2002; Leavey, et al., 2011; Buzi, et al., 2013; Katavić, et al., 2020; Hirvonen, et al. 2019). In this study, these issues and those concerning drugs, alcohol and tobacco were not discussed. It is obvious that the pair interviews at school were not the best place to bring out these themes. Moreover, these themes do not fit into the narrow disease-oriented understanding of health. Furthermore, the interviews concerned self-reported information sources and their assessment. Additionally, understanding how perspectives change over time was not possible as this was not a longitudinal study.

The school as a study environment most likely restricted the students' thoughts about health information seeking. Further studies in a more informal environment with deeper interviews or focus groups could bring new aspects to the research problems. Meeting young people several times so that they feel more at ease in the situation could provide insights that are more thorough. Social media is an important part of young people's everyday lives, and future research should inspect its impact on young people's health attitudes, behaviour and perhaps new cognitive authorities.

Conclusions

This study reveals new insights into adolescents' understanding of health and well-being and their relationship to their health information needs. The findings indicate that adolescents consult and compare multiple health information sources. The two identified perspectives of understanding health and well-being seemed to direct the adolescents' health information needs, preferred health information sources and were related to the credibility assessment of information. Family and health professionals were perceived as most credible in health problems. Following Wilson's (1983) ideas, family and health professionals can thus be regarded as cognitive authorities. They are people who have an influence on adolescents' thoughts in illness related health matters.

In more general information needs and in lifestyle issues with aspects of well-being, the spectrum of information sources was wider. Credibility assessments depended on the subject and were based in some respect on competence and in other respects on trustworthiness. The findings did not give a direct answer on how the possible cognitive authorities are constructed in the changing information environment and in the developmental period of adolescence. It is evident though that health information literacy is needed to access, understand, evaluate and apply health information to health decisions. This is especially important in lifestyle-related health choices, including nutrition, exercise, use of alcohol and drugs, tobacco and other intoxicants and sexual behaviour because information on these issues can often be misleading and contradictory.

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