Cardiac Patients' Knowledge of Foreign Languages: Implications for Seeking Information on Covid-19 and General Health

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STATEMENT OF ORIGINALITY

This is to certify that, to the best of my knowledge, the content of this thesis is my own work. This thesis has not been submitted for any degree or other purposes. I certify that the intellectual content of this thesis is the product of my own work and that all the assistance received in preparing this thesis and sources have been acknowledged.

Name and surname: Dorotea Jerčinović

Date:

Signature: _____

Abstract

In recent years, the Internet and the media have become important sources of information about health and COVID-19. Consequently, throughout the COVID-19 pandemic, people have increasingly turned to various traditional media and the Internet to access information about COVID-19 and general health.

This master's thesis aims to investigate the relationship between cardiovascular patients' perceived understanding of foreign languages, their preferred media and Internet sources, and the time spent gathering COVID-19 and general health-related information. The study was conducted as a part of the University of Rijeka multidisciplinary scientific research project "Psychological changes in patients with acute heart failure during the COVID-19 epidemic". The participants in the study were 148 cardiovascular patients at the Clinic for Cardiovascular Diseases of the Clinical Hospital Center in Rijeka.

The data for this study were obtained by means of a custom-built questionnaire which elicited information about the patients' native languages, the foreign languages learned through formal and informal education, and their ability to understand foreign languages (English, German, Italian, French and Russian) in spoken and written form. Finally, it investigated their preferred sources of information on COVID-19 and general health, the time spent searching for such information, and the topics they sought.

The results indicate a negative correlation between the age of the participants and the use of the Internet to gather COVID-19 and health-related information. However, they show a positive correlation between age and traditional media. The oldest age group (born before 1953), reported the worst comprehension of the English language, spent the most time gathering information, and used mainly traditional media. The middle group (born between 1953 and 1967) spent an average amount of time information-seeking, while the youngest group (born after 1967) reported the best understanding of English, spent the least time seeking information and used the Internet the most.

This study aims to fill the knowledge gap in the field by providing insights into cardiovascular patients' seeking for health-related information and information of COVID-19 in traditional media and on the Internet.

Keywords: cardiovascular patients, COVID-19, English, health-related information, information-seeking, the Internet, traditional media

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1. Introduction

In the fast-changing world where information of all sorts is readily available via various media, including social media and the Internet, it is safe to assume that many people seek medical information through these channels, and no longer rely strictly on the information provided by the medical professionals. The COVID-19 pandemic further exacerbated this phenomenon with hospitals and private practices alike overwhelmed with the influx of COVID-19 patients. The lockdown and the hardships of seeking immediate medical attention have also contributed to the importance of different sources of health-related information (HRI).

This research paper aims to investigate the relationship between cardiovascular patients' perceived understanding of foreign languages and their preferred sources of HRI, and the time they spent seeking COVID-19 and general health-related information. It also looks into the relationship between age and the time spent seeking COVID-19 and general HRI, as well as the sources used to gather this information. Finally, it examines the relationship between the participants' age and their understanding of the English language. This study was conducted as part of a larger University of Rijeka multidisciplinary scientific research project entitled "Psychological changes in patients with acute heart failure during the COVID-19 epidemic". The research was conducted on a sample of 148 cardiovascular patients at the Clinic for Cardiovascular Diseases of the Clinical Hospital Center of the University of Rijeka, in the period between January 1 and April 1, 2021.

Given that the COVID-19 epidemic has restricted access to health care and the lockdowns have limited socializing, it is expected that a large number of people had to turn to traditional media, such as television, radio and newspapers, and the Internet to obtain information on COVID-19 and general health. In recent years, an increasing amount of literature has been published on the topic of health information-seeking behaviour (HISB) (Zhang et al., 2021; Rains, 2007), especially on the Internet (O'Connor & Johanson 2000, Diaz et al. 2002). However, all of these studies had a narrow scope and focused on specific aspects of the HISB of their participants. A study by Kyriacou and Sherratt (2019) that compared the patients' satisfaction with online health information in English and Greek and found that the information in Greek was often considered to be poorly explained and insufficient. The few research papers that have addressed the issue of bilingualism (or multilingualism) and the quality of health-related information on the internet in various languages mostly dealt with the major western languages (English, Spanish, German and French) (Berland et al., 2001; Lawrenschuk et al., 2009), and no studies

were conducted regarding the quality of Croatian health-related sources. To my knowledge, only two studies have investigated online health information seeking in the Croatian context thus far (Delić et al., 2006; Martinović et al., 2021) and neither of them addressed the different languages available on the Internet, nor did their participants have a specific health condition that they wanted to research. The studies primarily concentrated on…. Therefore, the topic of health information seeking and gathering information on COVID-19 in Croatia has not been considered before. In the context of the ongoing pandemic that has not yet been brought under control, the available health information, and the limited access to healthcare, it is important to find out what sources of information on COVID-19 and general health Croatians use, and how their ability to understand foreign languages affects this.

In order to shed light on these issues, a custom-built questionnaire that consisted of 10 questions was designed. The rather limited number of questions was due to the fact that a joint questionnaire was developed to elicit information in all three fields, language, psychology and biomedicine. The current study attempts to investigate the native language of the participants, as well as the languages they have studied in formal and outside of their formal education. Furthermore, the study considers the participants' ability to understand the spoken and written form of several languages (namely, English, German, Russian, French and Italian). Finally, the details on the preferred sources of information, time spent researching and preferred topics related to general health and COVID-19 were examined. The information obtained was analysed using IBM SPSS Statistics 26 software.

This research paper is divided into 7 sections. The second section reviews the research conducted on health-related information seeking, the COVID-19 pandemic and the importance of English language learning, which is relevant to this paper. The chapter is thematically subdivided into 8 sections and begins by dealing with health-related information on the Internet and in the media, health-related seeking and age, both in general and specifically in the Croatia context, as well as with the COVID-19 epidemic and the media. Furthermore, it deals with the English language, specifically English as a global language of international communication, the media and the Internet, English and health information, and the importance of learning English that addresses English-learning practices in Croatia.

The third section details the methodology used in this research. This includes: defining the research question, detailed descriptions of the participants, the instrument, research method, and data collection procedure. The fourth section gives detailed information about the results we have obtained and is illustrated with graphs and tables for better understanding. This chapter

is also thematically subdivided. In the first part of the chapter, descriptive results are presented. The second part shows the results obtained by Pearson's correlation coefficients that were calculated for the participants' age, comprehension of English and the number of languages the participants understand, gathering information about COVID-19, and the time spent seeking and researching COVID-19 and general health-related information. In the next part, the details on four different t-tests for independent samples were calculated to examine the difference between the group of participants who understand English well and the group of those who do not were presented. And finally, the results obtained by four different one-way analyses of variances in regard to the participants' age groups were explained. The fifth section discusses the results and the implications. The penultimate section summarizes the important findings and gives propositions for future research. The final section provides the full list of references cited in this study.

In view of the fact that the literature review has indicated that, so far, no research has been found that surveyed the relationship between the comprehension of the English language and HRI seeking in Croatia, it is hoped that the findings in this study will contribute to our knowledge by addressing important issues related to HISB of Croatians and how age and comprehension of foreign languages (especially English) affect it.

2. Health and health information

Finding a definition of health, especially in medical research is challenging. Medical professionals mostly focus on various diseases and hardly ever define health in any manner other than the „absence of disease“ (Brüssow, 2013). However, World Health Organization (1946) defines health as total mental, physical and social well-being, and not simply the absence of illness.

2.1. HRI on the Internet

Health information-seeking behaviour, often abbreviated as HISB, can be described as the manners in which people search for information about their health in general, as well as health-protective behaviours, illnesses and risks (Lambert & Loiselle, 2007; Mills & Todorova, 2016). Information seeking happens when a variety of different sources are available (Brashers et al., 2002; Johnson & Meischke, 1993). It should be noted, however, that HISB has changed in the digital age (Jacobs, Amuta & Jeon, 2017) and health information is among the most searched information on the Internet (McMullan 2005). It appears that online health information (OHI) seeking is practised globally (Zhang et al., 2021) and research has shown that many patients who use more traditional sources of information on various health questions, such as their chosen family doctor, books, magazines, and leaflets also utilize the Internet to get another perspective or to confirm information previously obtained (Rains, 2007). Various studies report the Internet having a major prevalence among HRI sources (e.g. Hay et al. 2008; O'Connor & Johanson 2000, Diaz et al. 2002; Mandl, et al. 2000).

Although in recent years, access to health information has been changed by new information technologies (Nangsangna & Vroom, 2019), online health information has thus far not been systematically researched (Kyriacou and Sherratt 2019). Internet access has been linked to improvements in patients' knowledge of their condition and enhancement in their participation in their health (Jadad et al 2000, Eng et al 1998). Estimates as to how many patients employ the Internet to search for HRI range from 30-80% (Hay et al 2008; Renahy et al. 2010; Diaz et al. 2002; Weaver et al 2010). An American survey has shown that 91% of the persons searching for OHI looked into information on a specific condition (Fox & Rainie 2000) and a British study confirmed this with 97% of patients looking up information on a specific health condition (Nicholas et al 2003). As a result, OHI appears to influence the patients' cognition, emotions, behaviour and clinical outcome (Renahy et al. 2010).

Among the reasons for seeking OHI are the patients' convenience of usage and easy access to OHI (Kyriacou and Sherratt 2019),. In addition, the majority regard the Internet as a reliable source of medical information (Kyriacou and Sherratt 2019). Other reasons for consulting the Internet are its wide availability, convenience and anonymity (Williams et al. 2003). However, oncology patients in an American survey reported that the OHI can also be conflicting (76%), overwhelming (31%) and confusing (27%) (Eysenbach, 2003). A 2011 study has shown that 15.1% of patients who sought OHI claim that they changed their decision to go to the emergency department based on the information they found online (Pourmand and Sikka 2011). Persons with poor access to medical care, chronic conditions without health insurance are more likely to turn to the Internet for HRI (Bundorf et al. 2006). Turning to the Internet for OHI can be considered from two perspectives. On the one hand, it can reduce unnecessary visits to the doctor, and thus reduce waiting time. On the other, however, it can lead to incorrect interpretations, self- and misdiagnosis, and self-treatment, which can be extremely hazardous (Ryan & Wilson, 2008).

2.2. HRI-seeking and age

As far as age and the use of the Internet for seeking OHI is concerned, the percentage of older adults who use the Internet has been steadily increasing. The estimated data from 2016 show that 99% of people aged 18-29 reported going online, 96% of those aged 30-49, 87% of people 50-64 years old and 64% of people over 65 (Berkowsky & Czaja, 2018). An American survey from 2018 estimated that 67.5% of people use electronic means to search for health information. The majority of them (58.8%) is between 35 and 64 years old. On the other hand, the majority of those who do not use electronic means to gather health-related information (64.2%) are 50 years old or older (Alhusseini et al., 2020). Research by Sharitt et al. (2016) indicates that older patients are able to use Internet sources to obtain health information with success similar to younger patients. This research is particularly relevant because it included participants whose ages ranged from 18 to 80. Another study suggests that older information seekers take more time to locate information relevant to the topic they are searching for than younger people (Mead et al., 1997). However, it appears that although older adults seem to recognize the importance and value of the Internet as a source of health information, they tend to utilize it much less than younger adults (Czaja et al., 2006; Fox, 2004; Ayers & Kronenfeld, 2007). Some studies suggest that older adults trust the credibility of the Internet sources less than medical professionals (Hesse et al., 2005; Donohue et al. 2009; Zulman et al. 2011). Other studies

suggest that factors such as declining health literacy (Gazmararian et al., 1999; Paasche-Orlow et al., 2005; Benson & Forman, 2002; Rudd et al., 2004) and the formatting of medical websites (font size, colour-scheme, distracting images and flashing or moving information) make it difficult for older adults to navigate (Fisk et al., 2009).

2.3. HRI-seeking and age in Croatia

A study conducted by Martinović et al. (2021) in Osijek (Croatia) on a sample of 469 participants aged 14-19 found that, amongst adolescents, the most sought HRI were nutrition, diseases, relationships, sexual intercourse, depression and alcohol. The participants reported using the Internet and their personal sources, such as their parents and friends as their most frequent sources of information, and traditional media as the least preferred ones. The study also revealed that there were significant differences between genders regarding the most frequently searched topics, the importance of HRI and the sources of information. The female participants were more interested in obtaining HRI and searched for them more often than the male participants. Another study conducted in Croatia (Delić et al., 2006), which lasted for two years, showed that the mean age of the OHI-seekers increased over the two-year period. Namely, in 2004, the majority of the OHI-seekers were between 19 and 30 years old, whereas the year after the majority of those interested in OHI were between the ages of 31 and 55. Similarly to the research by Martinović et al. (2021), gender differences were found, with female participants searching for OHI significantly more frequently than males. To my knowledge, research that compares the participants' age and their search for health-related information from various sources has not been conducted to date in Croatia. Thus, we have to take into account more general information about the usage of the Internet in the European Union and Croatia. According to Eurostat, in 2018, 85% of people 16-74 in the European Union reported using the Internet, and 52% reported using it to obtain health information (Eurostat, 2019b). In 2020, 88% of people between 16-74 years old use the Internet in the EU, 61% of those aged 65-74 (Eurostat, 2021). In Croatia, it is estimated that 79% of people use the Internet; however, no data is available on how many use it to seek health information on the Internet.

2.4. HRI and the media

Another important source for health-related information is mass media (Atkin & Wallack, 1990). Traditional mass media such as television and newspaper (Johnson et al. 1999) are cited as very frequently used sources for health-related information (Brodie et al. 1999). Rains (2007)

differentiates two types of media: information-oriented (newspaper and magazines) and entertainment-oriented (television and radio). According to them, the latter usually contains less credible information than the former. The research has shown that patients often turn to sources other than health professionals to supplement the information obtained from them.

In their search for information, the patients often use traditional media, such as television, magazines and newspapers (Mills & Davidson, 2002; Leydon et al, 2000). Borzekowski et al. (2009) conducted a study that found television to be the most popular source of health information, as nearly three-quarters of their participants reported sometimes or often gathering information via television. A study by Dutta (2007) has shown that the individuals who learn health information from television are more health-oriented than the persons who do not. The latest study to my knowledge, conducted by Ipsos (2015) has shown that 87.9% of Croatian citizens watch TV, 53.2% use the Internet, 58.2% listen to the radio and 23.6% read newspapers every day. However, it should be borne in mind that all of these studies have been conducted before the major rise in the use of the Internet and the lockdown put in force to contain the COVID-19 pandemic.

To my knowledge, the only available piece of research that compares traditional media and the Internet sources for health information is a small study in Turkey that has shown that women tend to look to the Internet as their most preferred source of information, and TV/radio as the most reliable source of health information (Yilmazel et al., 2013). However, it was published in what appears to be a faculty magazine and the results they have obtained should thus be considered with caution.

2.5. COVID-19 epidemic and the media

In view of the fact that the COVID-19 pandemic has impacted both the use of the Internet (Nimrod, 2020), the search for health information (Singh et al., 2020), and health care systems (Iyengar et al, 2020), it would be useful to provide some background information on the pandemic. The outbreak of the COVID-19 virus began in December 2019 in China and reached Europe in February 2020. Polls related to this have shown increased fear and worries when compared to the same time the year before (Asmundson & Taylor, 2020; Trougakos et al., 2020). Studies have shown that elderly people and people with chronic illnesses are at higher risk of developing severe health consequences should they contract COVID-19 (World Health Organization, 2020; V.I., 2020, Coronavirus disease (COVID-19): Risks and safety for older people, 2020). The effects of COVID-19 on the elderly received wide coverage in the media,

which had a far-reaching impact on people's levels of anxiety (cf. Fabio & Suriano, 2021). This is hardly surprising as exposure to information about an impending threat through media is known to elevate levels of fear (Mertens et al., 2018, Muris & Field, 2010, Cauberghe et al., 2009). Media exposure has been shown to be related to increased fear in previous virus' outbreaks (e.g. H5N1) (Van den Bulck and Custers., 2009), and a study that among other factors addressed the influence of mass media on the levels of fear of the COVID-19 has shown a strong correlation between the two (Mertens et al., 2020), this can cause the viewers to overestimate the threat of the new virus in comparison to illnesses they may already be aware they had (Garfin et al., 2020). A study by Hwang et al. (2021) has found that watching television news about COVID-19 heightened the levels of emotional distress in comparison to reading newspapers. A study conducted in the United Arab Emirates has found that the most frequently used sources of information on COVID-19 among their participants were health information websites, government announcements, social media and friends and family. However, the more professional sources, such as family doctors, health care professionals and government announcements, were rated as the most trustworthy. The younger participants obtained more information from government announcements, family and friends and social media and less information from the traditional media compared to the older participants (Figueiras et al. 2021).

World Health Organization (WHO) is charged with coordinating the global response to COVID-19, and as an international body makes information available in 6 official languages of the United Nations (Chinese, Arabic, Spanish, Russian, French, English) and three additional ones (German, Portuguese and Hindi). However, in practice and for practical reasons, English is of predominant importance since it is the language used in press conferences as it has immediate distribution across the media as soon as the information is released (Piller et al., 2020).

2.6. English as the global language of international communication, the Internet and the media

The world has become interconnected in ways unprecedented in known history. The quick exchange of information, the expansion of trade, the political interdependence of countries, the increase in travel both for pleasure and business have all increased the demand for a common global language that can be used in all of these circumstances (Knapp, 2015). The predominance of the English language on the Internet and in the media cannot be disputed. The underlying

reason for this is that English is the global lingua franca (Xue & Zuo, 2013). With 1.35 billion speakers of the language (Statista, 2021) information on communications, science, business, information technology, diplomacy and entertainment (The British Council, 2013) is widely accessible to nearly every fifth person in the world. Even though Mandarin and Spanish have more native speakers (1 billion and 400 million, respectively) than English, they are mainly constricted to use amongst native speakers, whereas English is used as a lingua franca among speakers of different languages (Rao, 2019).

The Internet has become a necessity in recent years. It has facilitated communication and information exchange between people and continues to do so as its influence and wide usage spreads across the globe. In terms of Internet usage, the English language has had an important role as a common language used between speakers of different native languages on various websites, especially with the rise of social media (Olsson, 2011). This is not surprising, given that English is the most commonly studied language in the world (Phillipson, 2009). In November 2021, 63.5% of all content on websites was written in the English language, whereas only 0.1% were in Croatian (W3Techs, 2021).

The average household at the beginning of the 21st century watched television for approximately 7 hours per day (Gerbner et al., 2002). Since the outbreak of the COVID-19 pandemic, there was a surge in television watching as well as watching films, TV series and other content on Youtube, Netflix, HBO-go and similar streaming platforms (Media Marketing, 2021). The penetration of English words into Croatian media space cannot be disputed. One only has to look at the ever-growing number of research papers dealing with this issue (e.g. Josić, 2014; Šetka Čilić, 2016; Balenović & Grahovac-Pražić, 2016), however, this is hardly surprising when one observes the actual amount of content in English available in Croatia. A look into the number of programmes in English that are available to Croatian television viewers paints an interesting picture of how much exposure to the English language is available to Croatians. For example, 44.9% of television networks offered in a basic package of programmes on Max TV are in English (the majority has Croatian subtitles) (MAX Tv Osnovni paket, n.d.), 45.6% of televisions offered on EVO TV are in English (HT Produkcija d.o.o., 2020), and Iskon TV offers 57.7% of television programmes in English (Iskon.TV Fun – osnovna lista TV programa, 2022). However, it is important to note that 48% of Croatian households in 2020 only had a standard package of 10 national televisions that mainly broadcast in the Croatian language (they do, however, offer news, films, TV series and other kinds of entertainment in the English language) (Hrvatska regulatorna agencija za mrežne djelatnosti, n.d.).

Since the beginning of the pandemic, there has also been an increase in listening to radio programmes (Media Marketing, 2021). Croatia currently has 153 radio stations (Agencija za elektroničke medije, 2022) and all of them, with the exception of Narodni radio, provide music in both Croatian and English language (occasionally in some other languages as well). Some regional radios as well as nation-wide broadcasted ones offer news in foreign languages including English during the tourism season (Buric, n.d.). The use of the Internet has significantly changed the availability of radio stations and today's listeners can access nearly any radio station in the world online (Hodgson, 2021), which along with global music streaming platforms (Spotify, Youtube, etc.) allows the listeners more choice in music and other audio content (e.g.podcasts) they wish to listen to more than ever before.

Given that Croatia is a tourism-oriented country, it is unsurprising to find many foreign newspapers and magazines available. The second-largest chain of newspapers stands in Croatia Inovine d.d. offers hundreds of foreign newspapers and magazines in their shops. It must, however, be noted that not all of them are available during the entire year, nor in all parts of Croatia. Some newspapers are only available during the summer in coastal towns and other popular tourist sites of Croatia to cater to the needs of foreign tourists. They offer one daily newspaper (The New York Times), 13 weekly magazines (e.g. The Economist, Elle, Hello…), 6 bi-monthly magazines (e.g. The Rolling Stone, Time…) and numerous monthly magazines in English. (K. Miloš, personal communication, January 19, 2022).

2.7. English and health information

A study conducted among endocrinology patients in Cyprus suggested that OHI in languages other than English may produce unsatisfactory results. This study has shown that patients who seek HRI often face issues when attempting to find information in Greek (usually because their level of English is not proficient enough to easily understand all the complex terminology), they have found that the information provided in their native language is insufficient and poorly explained (Kyriacou and Sherratt 2019). An older study that compared the OHI available in English and Spanish has found that only 45% of English and 22% of Spanish websites provided full and completely accurate health information (Berland et al., 2001). A research paper by Lawrentschuk et al. (2012) examined over 10,000 oncology-related web pages in English, French, German and Spanish. They have found that, although there were far more oncology-related websites in English, the quality of information (accredited by WHO) was the highest in pages written in the French language. An earlier longitudinal study (Lawrenschuk et al., 2009)

has found that although the quality of OHI on oncology varies across websites, there has been improvement in the quality of the content across all four languages. Another study that evaluated the quality of health-related web pages about female urinary incontinence has concluded that French (18%) and English (16%) websites had the highest number of pages certified by WHO (Saraswat et al., 2016). On the other hand, a more recent piece of research has suggested that the Internet information on benign prostatic hyperplasia in English had the most accredited websites (Chen et al., 2014). A study by Chu et al. (2021) has found that persons who do not speak English (in this particular study, speakers of Chinese and Spanish) commonly have negative health information-seeking experiences. A Turkish study has shown that Youtube was a highly important source of information on COVID-19, especially for children. They have also found that the videos in English had much more views than in other languages. However, half of the videos they examined contained misleading information about the epidemic (Azak et al., 2021). A study by Parabhoi et al. (2021) examined videos on COVID-19 that were uploaded on Youtube over a 4-months period. Fifteen videos were posted in Hindi and 334 in English. The videos in Hindi attracted 42,000,879 views, whereas the videos uploaded in English had 824,429,849 views.

Although hardly any information is available on the topic of the traditional media and the English language, we do know that newspapers and magazines in the English language are available on Croatian kiosks which allows Croatians to obtain health-related information as well (K. Miloš, personal communication, January 19, 2022). Furthermore, English news is available in some Croatian television and radio stations throughout the year, and more so during the summer when there are many foreign tourists in the country. The news in foreign languages are broadcasted regularly since 2013 (HRT: Raspored, 2020; HRT: Radio, 2020).

2.8. The importance of learning English

In view of the above, it is beyond any doubt that English is the most useful language in the modern world and indispensable in international communication. Therefore, learning English is a prerequisite for taking part in the fast-changing world, regarding travel, education, science and other important aspects of life, and especially the jobs market. Globalisation has caused the need for each country to upgrade the skills of their workforce. In the past decades, two major "skills" became indispensable in getting jobs in nearly every branch of business – information technology and the English language. This has majorly influenced how English is studied and perceived, and it explains the ever-growing number of people who speak English worldwide.

Globalisation has caused higher education to become heavily dependent on English as well. English became a tool for internationalizing both the student body as well as the teaching staff. It has increased the mobility of young researchers and students. It has also become a way to attract international students and teachers (Graddol, 2005). Nowadays, education in English is becoming more and more accessible in Croatia. Besides some branches of foreign universities that offer their programmes in the English language (e.g. Rochester Institute of Technology, Hrvatska), other universities also offer programmes in English media instruction. To exemplify, the University of Zagreb offers 2 undergraduate, 3 integrated, 6 graduate, 5 doctoral and 2 postgraduate specialist programmes in English (Studiji na engleskom jeziku, 2021), and other Universities seem to aspire in the same direction (Šestan Kučić, 2021). Furthermore, high schools are also implementing English as a means of instruction in their curricula (e.g. XVI. Gimnazija Zagreb – Dvojezična nastava (n.d.), EU Projekt – CLIL, 2021).

In Croatia, English is currently also the dominant foreign language learned at school. Studying English is mandatory in the majority of educational systems in the countries that prescribe a specific foreign language that all students must study in the European Union (13 countries), as well as in Switzerland, Iceland, Lichtenstein, North Macedonia and Norway. In Croatia, at least 99% of elementary school students study at least one foreign language (Eurydice, 2017). At the end of the 2019/2020 schoolyear, 298.254 (69.7%) of elementary school students (Državni zavod za statistiku Republike Hrvatske, 2021) and 92.4% of all high school students in Croatia studied English (Državni zavod za statistiku Republike Hrvatske, 2021b). Since 2010, the Croatian government has implemented the standardized exit exam called Državna matura for the high school students that intend to enrol on universities and for the students that are graduating from a general programme high school (gymnasium) (Ministarstvo znanosti i obrazovanja, n.d.). One of the mandatory subjects that the students need to pass on this exit exam is a foreign language, and the students can choose between several languages, with the most popular choice being the English language. In June 2021, 6,805 (40.1%) of vocational school students and 10,164 (59.9%) of gymnasium students in Croatia took a higher level of English language on the Matura exam. The basic level of the Matura exam was taken by 8,282 (79.6%) of vocational school students and 2,116 (20,4%) by gymnasium students (NCVVO, 2021). Taking this into account, it is not surprising that according to the report by EF Education First (2022), Croatia is in 10th place on the global ranking of countries and regions of English proficiency.

Although the full history of language education in Croatian schools goes beyond the scope of this paper, it is nevertheless important to provide some insights about learning foreign languages throughout history to better understand the results obtained in the research. Specifically, it will help understand the participants' background, their language skills and competencies and their ability to seek health information in the media and online.

Foreign languages were taught in Croatian schools since the first days of organised formal education (Vilke, 2007). However, the people who were supposed to begin their education in the early 1940s, were mostly unable to attend any schools due to World War Two since most were shut down during this period. The schools that remained open were severely damaged, lacked teachers, books and an overall national curriculum (Ogrizović, 1981.). Foreign languages were mostly not taught, besides teaching Croato-Serbian to Italian and dialect-speaking children in Istria (Dukovski, 2001). After the war, most of the younger students in schools were taught Russian, whereas older (high-school-level) students were offered German, French and English. In 1949, after The Resolution of the Third Plenum by the Central Committee of the Yugoslavian Communist Party, Russian, German, English and French were supposed to become equally widespread throughout Yugoslavia (Muhvić, 1979). This attempt to introduce foreign languages in school curricula by the Yugoslav government was the basis for the languages selected in this research, as shall be further explained in the Methodology section. After 1960, more and more students were taught English in schools and were allowed to continue studying in high school the same language they had studied in primary school and a second foreign language was offered as an elective course. Finally, a major educational reform in 1974, allowed the students to study foreign languages 2 years longer than prior generations, made the learning of a second foreign language mandatory, and even gave students the option to learn the first foreign language in a more intensified elective course[1] (Muhvić, 1979). The well-known "Šuvar's school reform" was not considered relevant for this research because there is no evidence that it influenced foreign language teaching or learning in any way that seemed significant to the participants of this research (cf. Šuvar, 1982).

Most of the information above was written in Yugoslavia, and should thus be taken with caution, especially since we now have not only anecdotal but also firm evidence that schools

[1] The students could choose to attend a more advanced course on a language they were already studying along with the regularly taught foreign language they were already studying

were largely unable to follow all the guidelines and instructions given by the government (Dukovski, 2001).

When it comes to learning foreign languages, two other aspects that should be considered are teachers' language and methodological competencies, and the teaching methods used to teach foreign languages at the time. Although there is little evidence regarding these two aspects in Croatian schools, mostly because English was rarely taught in Croatia before 1945 (Vilke, 2007), studies on foreign language teaching have shown that the prevalent method in foreign language classrooms from the mid 19th century to the mid 20th century was the Grammar-Translation Method. Furthermore, insights into teaching English in Croatia show that little attention was devoted to language teaching methodology, which was not considered an important factor in language teaching and learning (Mihaljević Djigunović, 2004). In view of the fact that the Grammar-Translation Method focused on the literature and grammar of the target language and the translation of languages from and into the mother tongue, students were not able to communicate in the language (Chang, 2011).

The situation improved after the Second World War when English became one of the languages offered in a greater number of schools. It must, however, be borne in mind that the quality of education regarding methodology and the teachers' competencies was very low immediately after the war (Dukovski, 2001). According to Vilke (2007), there were efforts made from the 1960s to the 1990s by the British Council, the Ministry of Education and the Department of English of the University of Zagreb to improve the quality of teaching English that resulted in astonishing up-to-dateness in the methodology of TEFL. The future teachers were taught about disciplines relevant to language teaching, such as sociolinguistics, applied linguistics and psycholinguistics. However, the author does criticize the government for not allowing the implementation of all of the new techniques into schools. This information should also be taken into account when interpreting the findings of this study.

3. Methodology

The research was conducted as part of the University of Rijeka multidisciplinary COVID-19 scientific research project in the fields of biomedicine, social sciences and humanities entitled "Psychological changes in patients with acute heart failure during the COVID-19 epidemic". The project leader is the Faculty of Medicine, while the Faculty of Humanities and Social Sciences Psychology Department and the English Studies Department are partners on the project. This paper focuses on the part of the project dealing with the humanities.

3.1. Aim and research questions

The study aimed to examine cardiovascular patients' health information-seeking behaviour in the time of the COVID-19 global pandemic. Specifically, the study was guided by the following research questions:

RQ1 What is the relationship between the age of the participants and their seeking for COVID-19 and general health-related information in the media and on the Internet?

RQ2 What is the relationship between the participants' age and their comprehension of English?

RQ3 Which age groups of participants spend more time gathering health-related information and information on COVID, and which sources do they use?

RQ4 How does the participants' comprehension of English impact their seeking for COVID-19 and general health-related information in the media and on the Internet?

RQ5 What is the relationship between the comprehension of several languages and the sources of health information sought by the participants?

3.2. Participants

The participants in this study were 148 cardiovascular patients at the Clinic for Cardiovascular Diseases of the Clinical Hospital Center of the University of Rijeka. Seventy-four were hospitalised cardiovascular patients, while seventy-four were cardiovascular outpatients. The age of the participants ranged between 27 and 89 (M = 63.35, SD = 13.30). Ninety-two patients were male (62.2%) and fifty-six were female (37.8%).

In total, 145 (98%) completed the survey. Three participants did not answer all the questions but the responses they did provide were included in the statistics analysis. Table 1. Presents the general characteristics of the study population.

Table 1. General characteristics of the participants

General characteristics		N	percentage
Gender	Male	92	62.2
	Female	56	37.8
Mean age in years ± SD		63.35	±13.30

Note: N – number of participants

3.3. Research method

The collected data were processed using IBM SPSS Statistics 26 software. The mean score and the standard deviation were calculated for all the results. Pearson's correlation coefficients were calculated for the participants' age, comprehension of English, number of languages they know, time spent gathering the types of media used to obtain COVID-19 and general health-related information. Four different t-tests for independent samples were calculated to examine the difference between the group of participants who do not understand English well and the group of participants who do. To examine the differences between the three age groups the participants were divided into, four different one-way analyses of variances were calculated.

3.3.1. Data collection procedure

The results were obtained via a custom-built questionnaire in Croatian, which was administered to cardiovascular patients at the Clinical Hospital Center of the University of Rijeka from January 1 to April 1, 2021. Consent was obtained from all the participants, and the research was approved by the Research Ethics Committee of the Faculty of Medicine.

The cardiovascular outpatients completed the questionnaire during their cardiac examination at the Clinic, while the hospitalized patients either completed the questionnaire themselves or, in the case of severe cardiac patients, it was filled in by a sixth-year medical student who was also a member of the project team.

3.3.2. Instrument

Given the interdisciplinary nature of the broader study, the questionnaire comprised three distinct sections which elicited information related to a) the psychological influence of COVID-19, b) the patients' medical condition, and c) the patients' knowledge of foreign languages and their search for health-related information. A detailed description of all the sections of the questionnaire is beyond the scope of this paper and here we focus only on the sections which are relevant for this study.

The first part of the questionnaire elicited demographic information such as age and gender. The language-related section consisted of 11 questions, 5 of which focused on language, and 6 on the search for information on COVID-19 and general health.

Simple sentences and expressions were used to ensure the participants' understanding of what was being asked of them since we anticipated that some of the participants might not have had prior experience with surveys and, given their health conditions, would not be willing or able to spend much time answering questions. For this reason, the questionnaire did not contain open-ended questions but rather 2 Likert-type questions and 9 multiple-choice questions. The questionnaire was piloted on a small group of senior citizens prior to administration

The first part of the language section elicited information about the participants' native language, the languages they studied during their formal education and the languages learned outside of formal education. The participants could add any other language that they had studied or mark that none of the responses applied to them. The list of native languages (besides Croatian) was made in line with the 2011 Census for three Croatian counties (Primorje-Gorski Kotar County, Lika-Senj County and Istria County) and offered the following languages: Croatian, Serbian, Bosnian, Slovenian, Macedonian and Italian. Currently, this is the most reliable data on minorities in the region, and, according to available information, the majority of patients referred to the hospital in Rijeka are from these three counties. The participants could also add any other language or mark more than one language.

The Likert-type questions in the second part of the questionnaire asked the participants to rate, on a scale from 1 to 5, their perceived level of reading comprehension and listening comprehension in five languages, namely, English, German, Italian, Russian and French. They could also add and rate any foreign language they had studied or had learned outside the classroom, which was not on the list. The scale from 1 to 5 was chosen because the Croatian

grading system uses it and we assumed it might be easier to use than any other. Furthermore, given their age and medical condition, the six CEFR levels of language proficiency (A1 -C2) could not be used for the cohort. Considering the expected age group of the participants, the list of foreign languages (English, German, Italian, Russian, French) was based on the former Yugoslav Policy on Foreign Language Education which stipulated that 25% of the population would learn English, German, French or Russian which were considered to be the most prestigious world languages (Muhvić, 1979). Italian was added due to the proximity of Italy and the presence of a significant Italian minority in Rijeka and Istria. The scale ranging from 1 to 5 was used because it is aligned with the Croatian grading system and we believed it would facilitate the participants' self-assessment of their listening and reading.

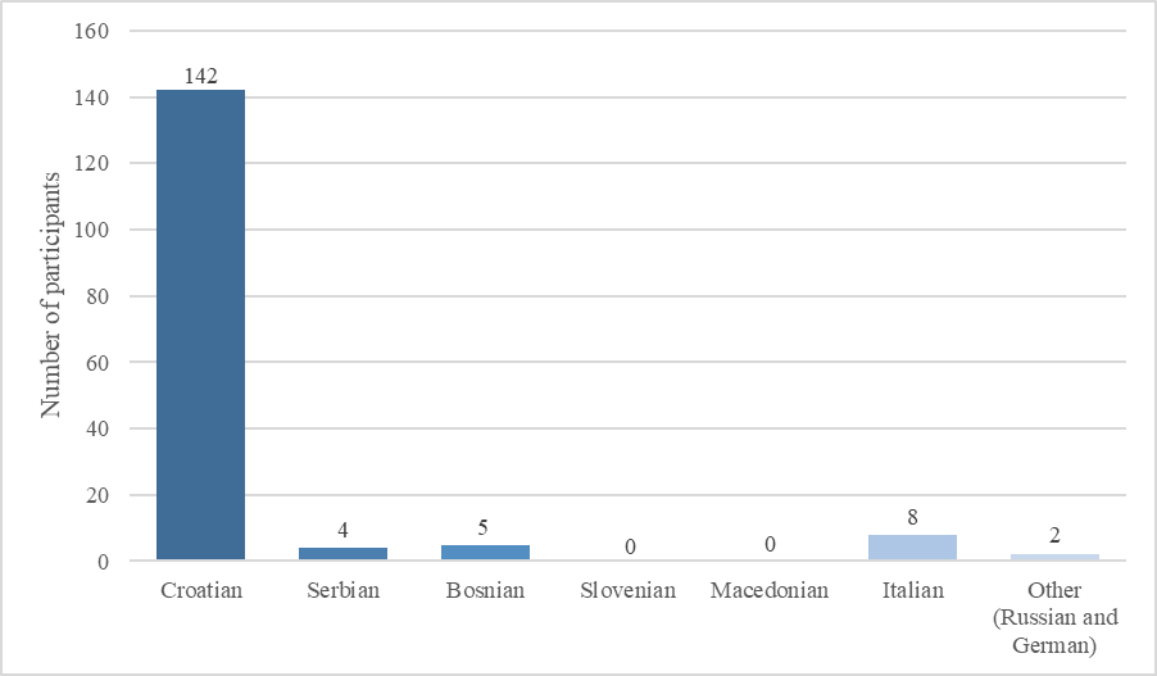
The third section consisted of multiple-choice questions eliciting which sources of information about COVID-19 the participants consulted. The first question listed the following traditional sources of information about t COVID-19 related information: a: television news, TV programmes, radio/radio programmes, newspaper/newspaper articles, as well as the option none of the answers applies to me. The second question investigated the average time that the participants spent gathering information on COVID-19 during the pandemic. In the third question, the participants were asked whether they used the Internet to seek information about the impact of COVID-19 on general health. If the answer was affirmative, the fourth question elicited the average time spent every day researching COVID-19 on the Internet. The fifth question asked how much time on average the participants spent researching general health information on the Internet. The final question asked the participants to identify the type of information they searched for on the Internet: the number of COVID-19 related deaths in Croatia, the number of new COVID-19 cases in other countries, the number of COVID-19 related deaths in other countries, COVID-19 risks for cardiac patients, COVID-19 symptoms, heart problems and general health. The options 'other', and 'none of the above applies to me' were also provided.

4. Results

4.1. The native language of the participants

The first language of the majority of the participants (96%) is Croatian. Eleven participants (7%) are bilingual and one participant (1%) is trilingual. The results are presented in Figure 1.

Figure 1: Native language

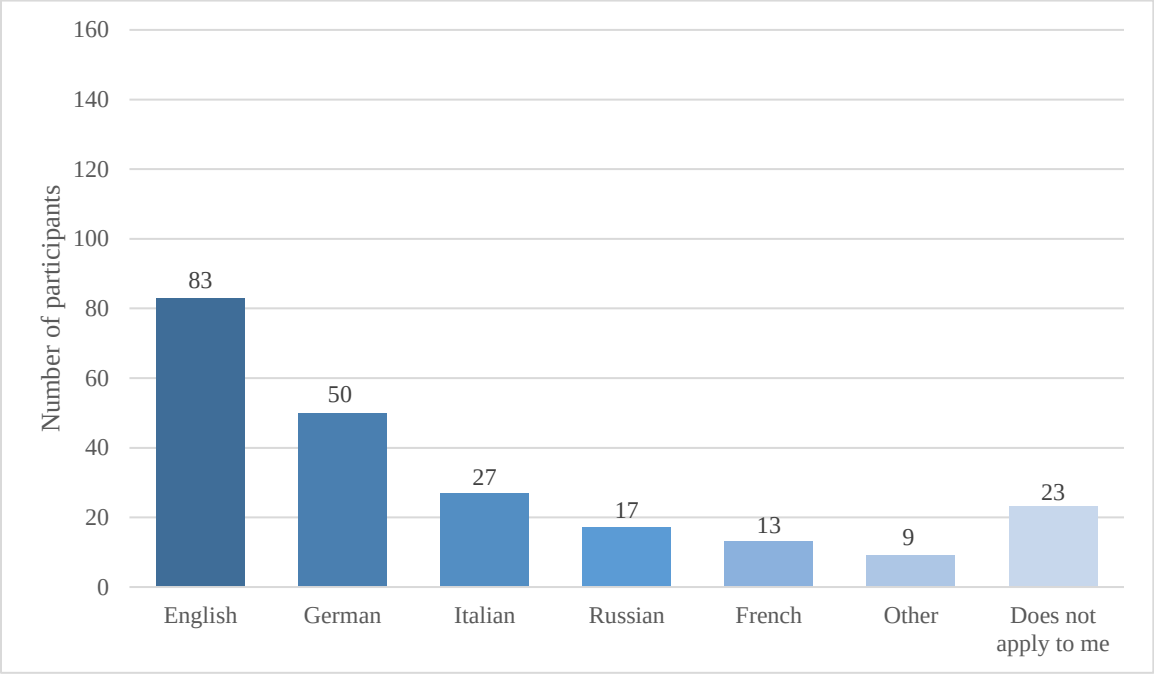


4.2. The participants' perceived knowledge of foreign languages

Regarding the foreign languages they learned as part of their formal education, (48%) studied at least one foreign language during their formal education and (37%) studied two or more languages. However, (15%) of the participants did not study any foreign language during their formal education.

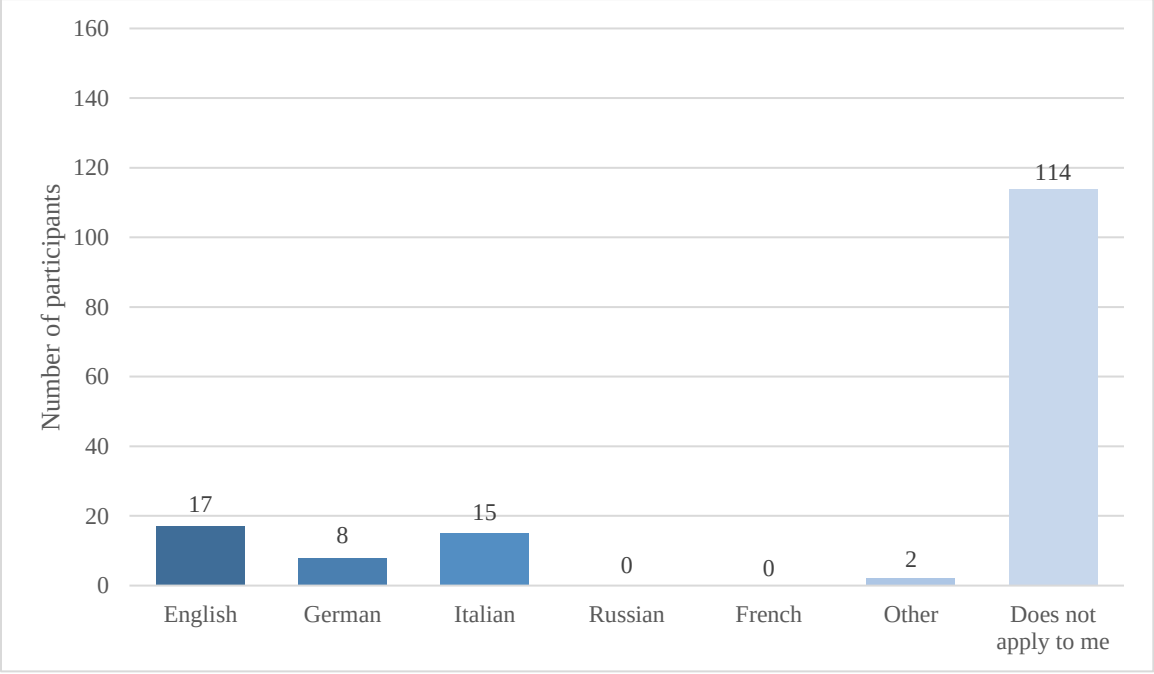
The majority, eighty-three stated that they studied English, fifty studied German, twenty-seven Italian, seventeen Russian, and thirteen French. Twenty-three participants reported that they did not study any foreign language during their formal education, and nine participants studied other languages, namely, studied Slovenian, Latin and Croatian (this participant's native language is Italian). Refer to Figure 2 for details.

Figure 2: Foreign languages



As Figure 3 indicates, the vast majority, 114 out of 148 participants stated that they did not study any languages outside of formal education. Out of those who did, seventeen reported studying English, fifteen studied Italian and eight studied German.

Figure 3: Languages studied outside of formal education



4.3. Understanding foreign language texts and speech

In the second part of the questionnaire, the participants were asked to mark on a Likert scale from 1 – 5 their perceived level of understanding of spoken and written language. As for understanding written language, English was rated the highest text (*M* = 2.8, *SD* = 1.41), followed by Italian (*M* = 1.75, *SD* = 1.27), German (*M* = 1.55, *SD* = 1.08), Russian (*M* = 1.13, *SD* = 0.47) and French (*M* = 1.10, *SD* = 0.38). Other languages that the participants added included Slovenian and Spanish. See Table 2 for details.

Table 2. The participants' perceived level of understanding written text in foreign languages

Language		***M***	***SD***
English		2.18	1.41
Italian		1.75	1.27
German		1.55	1.08
Russian		1.13	0.47
French		1.10	0.38
Other	Slovenian (N=1)	5	-
	Spanish (N=1)	3	-

Note: M – mean, SD – standard deviation

The participants' perception of their level of understanding spoken foreign languages is shown in Table 3. As in the previous question, English scored the highest (*M* = 2.21, *SD* = 1.46), followed by Italian (*M* = 1.93, *SD* = 1.33), German (*M* = 1.61, *SD* = 1.06), Russian (*M* = 1.26, *SD* = 0.68), and French (*M* = 1.1, *SD* = 0.38). Similarly to the previous question other languages included Slovenian and Spanish.

Table 3. The participants' perceived level of understanding of spoken foreign languages

Language		***M***	***SD***
English		2.21	1.46
Italian		1.93	1.33
German		1.61	1.06
Russian		1.26	0.68
French		1.1	0.38
Other	Slovenian (N=2)	5	0
	Spanish (N=1)	3	-

Note: M – mean, SD – standard deviation

A variable that showed how well the participants understood the languages in the questionnaire was created by merging the variables that show how well a person understands written text and speech for every single language. This new variable was named comprehension of languages (e.g. English).

After collecting the information above, we decided to divide the participants into two categories (dichotomous categories) for all the languages. For example, concerning the English language, the first category comprises all the participants who do not understand English well, and the second all the participants who do understand it well. All participants who rated their English language skills 3 or higher were put in the category of those who understand English well, while those who rated them 1 or 2 were in the category of those who do not understand English well. See Table 4 for details on the results obtained. However, due to a small pool of participants who reported understanding other languages well, we decided to further analyse only the English language.

We also created a variable that shows how many languages a person knows well by summing all the languages which were rated 3 or higher by the participants These results were later divided into dichotomous categories. The first category consists of the participants who do not understand any foreign language well and the second consists of those who understand at least

one foreign language well. As many as 64 participants (43%) do not understand any foreign language well, while 80 (54%) understand one or more foreign languages well.[2]

Table 4.

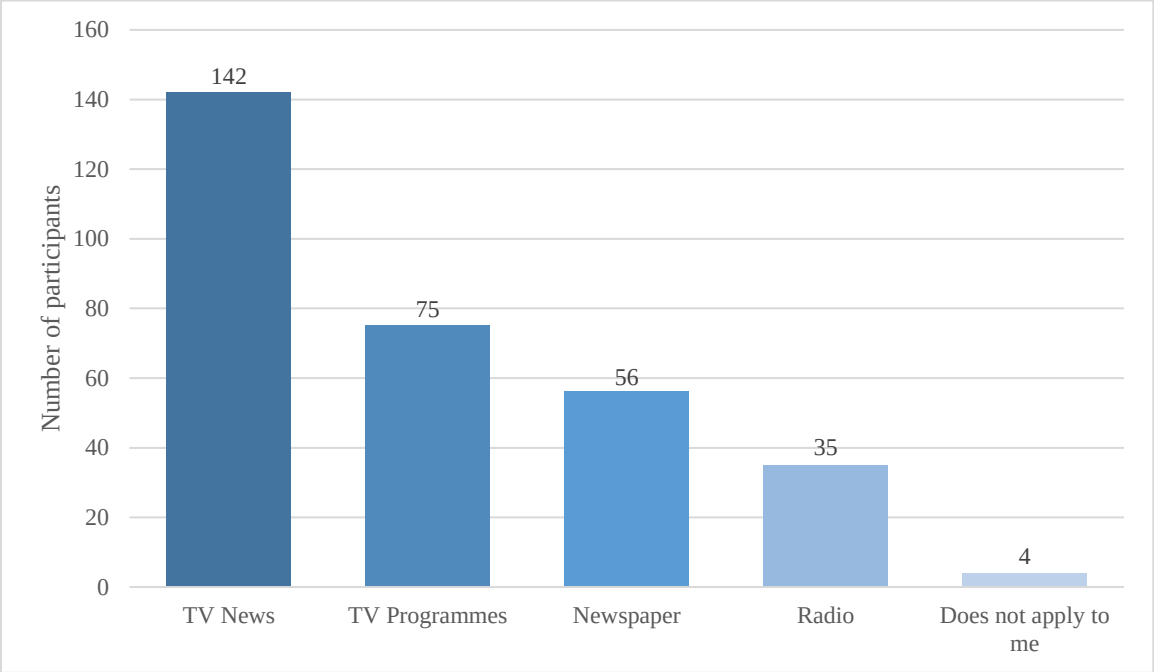
	ENG			NJEM			IT			RUS			FR		
	N	*M*	*SD*	N	*M*	*SD*	N	*M*	*SD*	N	*M*	*SD*	N	*M*	*SD*
0 – the participant does not understand the language well	95	1.31	.49	124	1.22	.42	110	1.24	.41	136	1.04	.24	140	1.06	.25
1 – the person understands the language well	50	4	.75	20	3.83	.89	35	3.97	.86	8	3.06	.18	4	3.25	.50

4.4. Gathering information about COVID-19

As for the sources of information used by the participants used to retrieve information on COVID-19, (31%) collect information about COVID-19 from only one source, (35%) from two sources, (22%) from 3 sources, (11%) from all 4 sources, and (1%) do not collect information from any of these sources. The results indicate that the overwhelming majority of the participants collect information through television news. The second most frequent source of information was television programmes with (75) participants reporting watching it, followed by the newspaper (56), and the radio (35). Some participants reported not searching for news about COVID-19 (4). The details can be observed in Figure 4.

[2] 4 persons (3%) were not included into this analysis because they did not fill in this part of the questionnaire

Figure 4: Gathering information about COVID-19



When asked about the time spent searching for information related to COVID-19, the majority (58%) (N = 67). of the participants reported spending less than 1 hour a day seeking COVID-19-related information The majority of 67 participants who do search the Internet for COVID-19 and general health information spend less than 1 hour searching for COVID information (78%) and general health (70%) as indicated in Table 5.

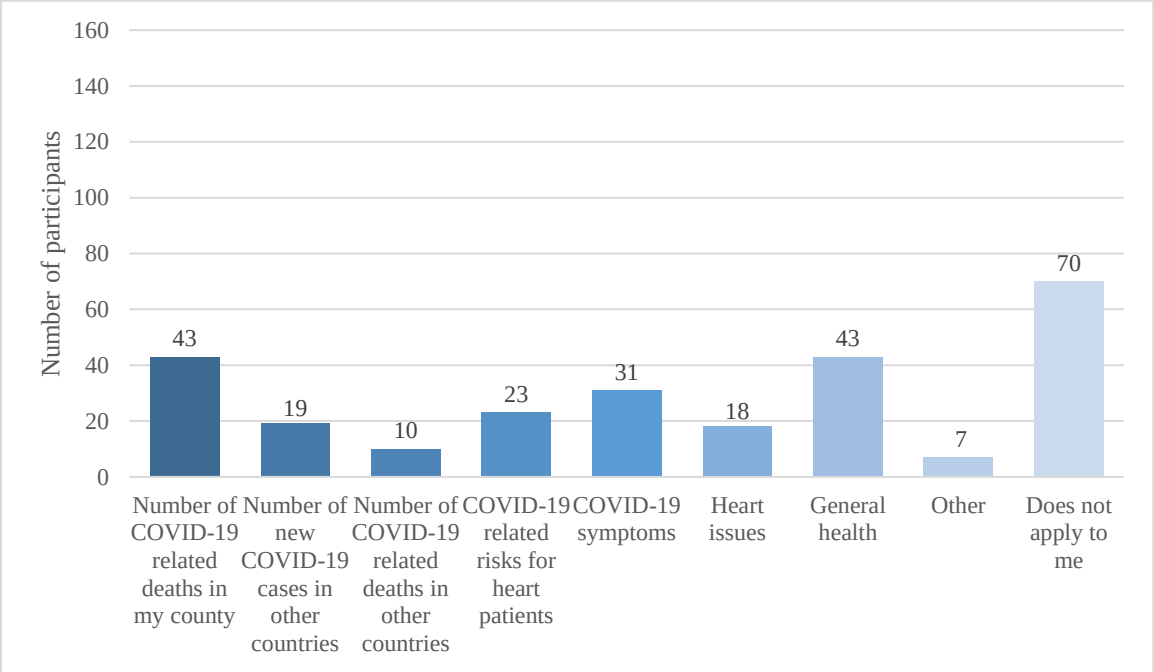
Table 5: Time spent gathering COVID-19 related information, time spent searching for COVID-19-related information on the Internet, time spent searching general health-related information on the Internet

	Time spent gathering COVID-19 related information	*Time spent researching COVID-19-related information on the Internet*	*Time spent searching general health-related information on the Internet*
More than 6h / day	9	0	0
3 – 6h / day	3	0	0
1 - 3h / day	40	6	11
Less than 1h / day	85	52	63
Does not apply to me	9	89	73

4.5. Researching COVID-19 and general health information on the Internet

The final question asked the participants to mark the medical information related to COVID-19 and general health that they searched for on the Internet. The results showed great variation in their search for health information online. A large number (47%) of the participants reported that they did not search the Internet for health information. However, when asked to specify the topics they searched on the Internet, the majority (43) reported being interested in the number of COVID-19 related deaths in their county and seeking general health information. These were followed by the search for the symptoms of COVID-19 (31), the risks of COVID-19 for heart participants (23), the number of new cases in other countries (19), heart-related problems (18), the number of COVID-19 related deaths in other countries (10) and 7 reported something else, as shown in Figure 5.

Figure 5. Most searched topics on the Internet



4.6. Correlations

During further data processing Pearson's correlation coefficients were calculated for gathering information about COVID-19, time spent seeking and researching COVID-19 and general health-related information, the participants' age, comprehension of English and the number of languages the participants know. The correlations are presented in Table 6.

Table 6. *Pearson's correlation coefficients between different sources for gathering information about COVID-19, time spent seeking and researching COVID-19 and general health-related information, the participants' age, comprehension of English and number of languages the participants know.*

		Age	Comprehension of English	Number of languages a person knows
Gathering information about COVID-19	TV News	.08	-.19*	-.17*
	TV programmes	.22**	-.13	-.02
	Newspaper	.05	-.04	.03
	Radio	.13	.06	.07
Time spent gathering COVID-19 related information		.37**	-.31**	-.20*
Seeking COVID-19 related information on the internet		-.35**	.35**	.17*
Time spent researching COVID-19 related information on the internet		-.24**	.23**	.09
Time spent researching general health-related information on the internet		-.29**	.21*	.13

*Note: *p < .05, **p < .01*

Older participants watch television news for information on COVID-19 more (r = .22, p < .01) and spend more time seeking COVID-19 related information on daily basis (r = .37, p < .01). They also spend less time researching COVID-19 (r = -.24, p < .01) and general health (r = -.29, p < .01) on the Internet and search information related to COVID-19 less (r = -.35, p < .01).

Furthermore, Participants who understand English better gather less information about COVID-19 via television news (r = -.19, p <.05) and spend less time following information about COVID-19 (r = -.31, p < .01) per day. Also, they search more websites to find out information about COVID-19 (r = .35, p <.01), spend more time finding information on the Internet about COVID-19 (r = .23, p <.01) and general health (r = .21, p <.05) daily.

Finally, the participants who understand several languages well follow less information about COVID-19 via television news (r = -.17, p <.05) and spend less time daily seeking information

about COVID-19 (r = -.20, p < .05). Also, they search more websites to find out information about COVID-19 (r = .17, p <.05).

4.7. Understanding languages and gathering COVID-19 and general health-related information

To examine the difference between the group of participants who understand English well and the group of those who do not, we calculated four different t-tests for independent samples.

There are statistically significant differences between participants who do not understand English well and those who do in the time spent searching for information on COVID-19 (t = 4.51, df = 138.77, p <.01). Participants who do not understand English well (*M* = 1.65, *SD* = .96) spend significantly more time seeking information about COVID-19 than participants who understand English well (*M* = 1.06, *SD* = .59). See Fig 6.

Figure 6. Time spent gathering general health and COVID-19-related information and comprehension of spoken and written English

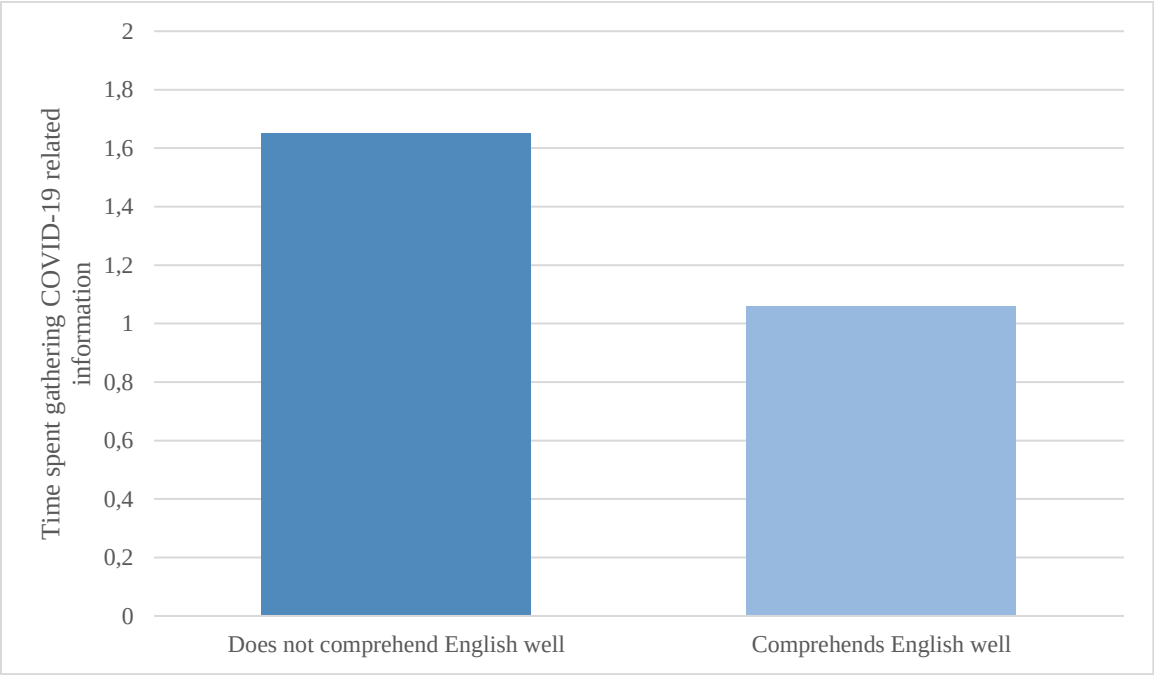


Figure 6 illustrates how the group of participants who do not understand English well spends more time gathering COVID-19-related information than the group that understands English well.

Statistically significant differences can also be observed between groups in whether they search the Internet for information on the health effects of COVID-19 (t = -4.41, df = 143, p <.01).

Participants who do not understand English well (*M* = .34, *SD* = .48) search the Internet significantly less to find information on the health effects of COVID-19 than participants who understand English well (*M* = .70, *SD* =. 46). See Fig 7.

Figure 7. Seeking COVID-19-related information on the Internet and comprehension of English

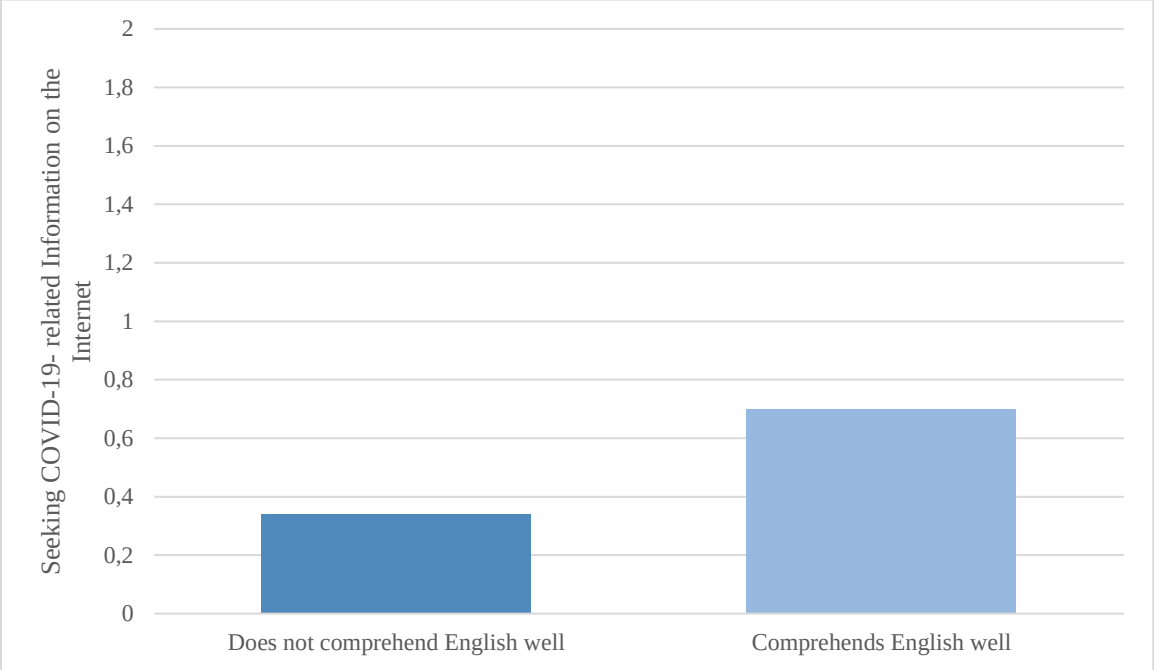


Figure 7 shows how the participants who understand English well search more COVID-19-related information on the Internet than the participants who do not comprehend English well.

There is a statistically significant difference between groups in the time spent searching COVID-19-related information on the Internet (t = -2.40, df = 142, p <.05). Participants who do not understand English well (*M* = .36, *SD* = .58) spend significantly less time searching COVID-19 info on the Internet than participants who understand English well (*M* = .60, *SD* = .54). See Figure 8.

Figure 8. Time spent researching COVID-19-related information on the Internet and comprehension of English

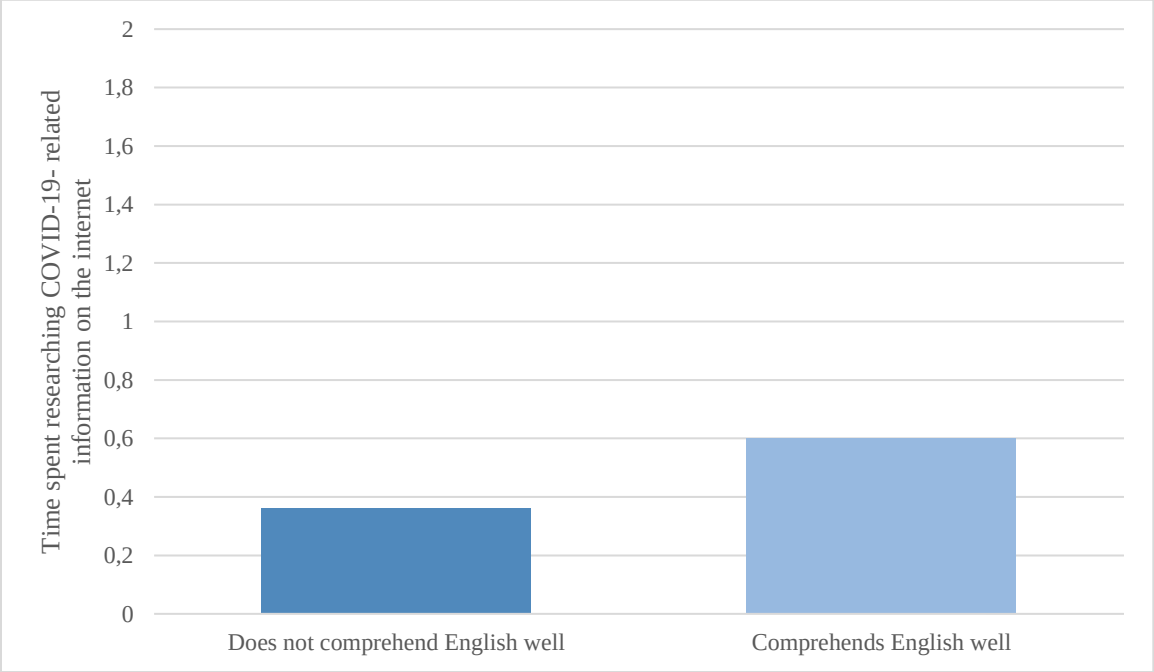
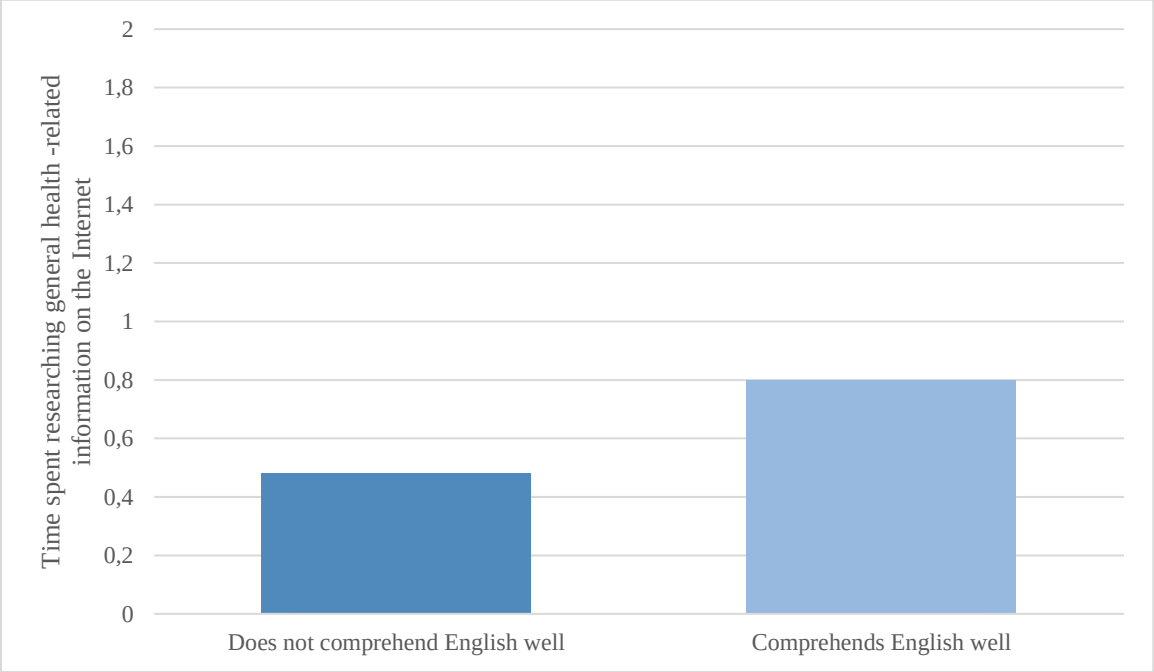


Figure 8 illustrates that the participants who understand English well spend more time researching COVID-19-related information on the Internet than the participants who do not understand English well.

The time spent searching general health information on websites also shows statistically significant differences between the groups ($t = -3.09$, $df = 109.55$, $p < .01$). Participants who do not understand English well ($M = .48$, $SD = .64$) spend significantly less time searching for general health information on the Internet than those who do ($M = .80$, $SD = .57$). See Fig 9.

Figure 9. Time spent researching general health-related information on the internet and comprehension of English



In figure 9 it can be observed that the participants who comprehend English well spent more time researching general health-related information on the Internet than the participants who do not comprehend English well.

4.8. The number of languages the person understands and sources of information

There are statistically significant differences between groups in the time spent gathering information about COVID-19 ($t = 2.51$, $df = 140$, $p < .05$). Participants who do not understand any language well ($M = 1.65$, $SD = .95$) spend significantly more time gathering COVID-19-related information than participants who understand 1 or more languages well ($M = 1.28$, $SD = .82$). See Fig 10.

Figure 10. Time spent gathering COVID-19 related information and the number of languages a person knows

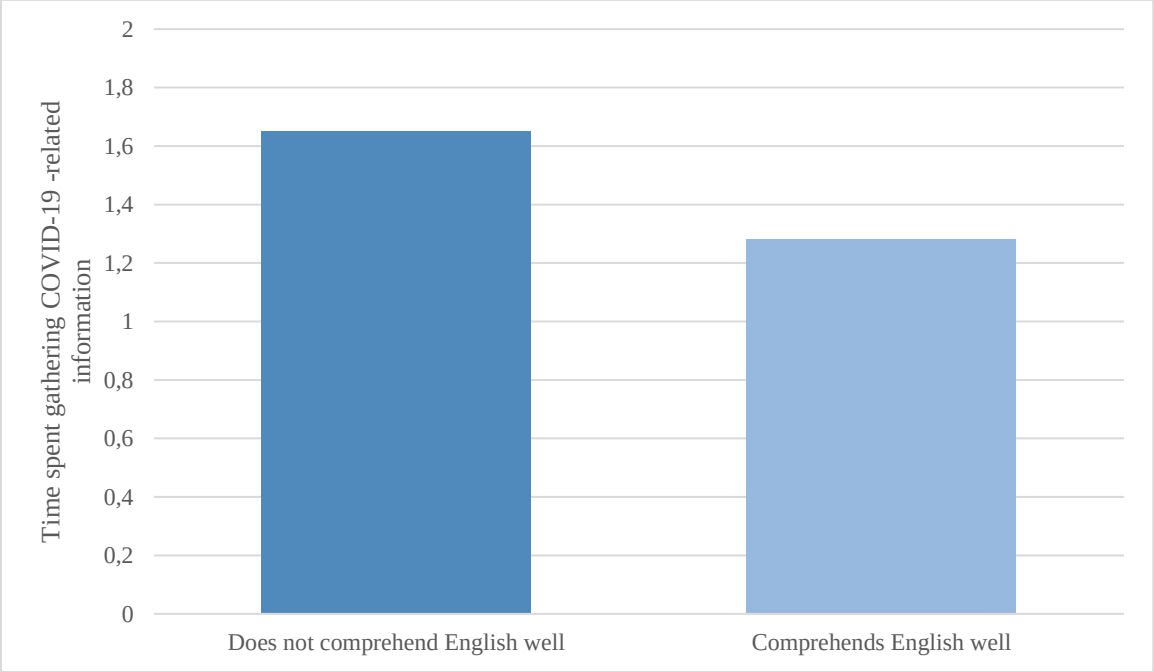


Figure 10 shows that the participants who do not understand English well spent more time gathering COVID-19-related information than the participants who understand English well.

4.9. Age and gathering COVID-19 and general health-related information

4.9.1. Age groups

The participants were divided into three groups based on the year they were born (and subsequently their school generation) as follows: born before 1953 (N=56), born between 1953 and 1967 (N=53), and born after 1967 (N=39). To examine the difference between these groups we calculated four different one-way analyses of variances. The result showed that there is a statistically significant difference between these groups in the time spent searching for COVID-19-related information ($F_{2,143}$ = 13.48, p <.01). The participants born before 1953 (*M* = 1.84, *SD* = 1.03) spend significantly more time daily seeking information about COVID-19 than participants born between 1953 and 1967 (*M* = 1.38, *SD* = .77) and participants born after 1967 (*M* = .95, *SD* = .46). Also, participants born between 1953 and 1967 (*M* = 1.38, *SD* = .77) spend significantly more time daily searching for information about COVID-19 than participants born in 1967 (*M* = .95, *SD* = .46). These results are visible in Figure 11.

Figure 11. Time spent seeking COVID-19-related information and age groups

Figure 11 illustrates that the group of participants born before 1953 spent more time gathering COVID-19-related information than the other two groups. The group that consists of the participants born between 1953 and 1967 spent more time gathering COVID-19-related information than the group of those born after 1967.

There is a statistically significant difference between the groups in whether they search the Internet for information on the health effects of COVID-19 ($F_{2,145} = 9.52$, $p < .01$). The oldest group, consisting of participants born before 1953 ($M = .25$, $SD = .44$), searched the Internet significantly less to find information on the health effects of COVID-19 than participants born between 1953 and 1967 ($M = .51$, $SD = .51$) and especially the youngest group, born after 1967 ($M = .67$, $SD = .48$). The results can be observed in Figure 12.

Figure 12. Seeking COVID-1- related information on the Internet and age groups

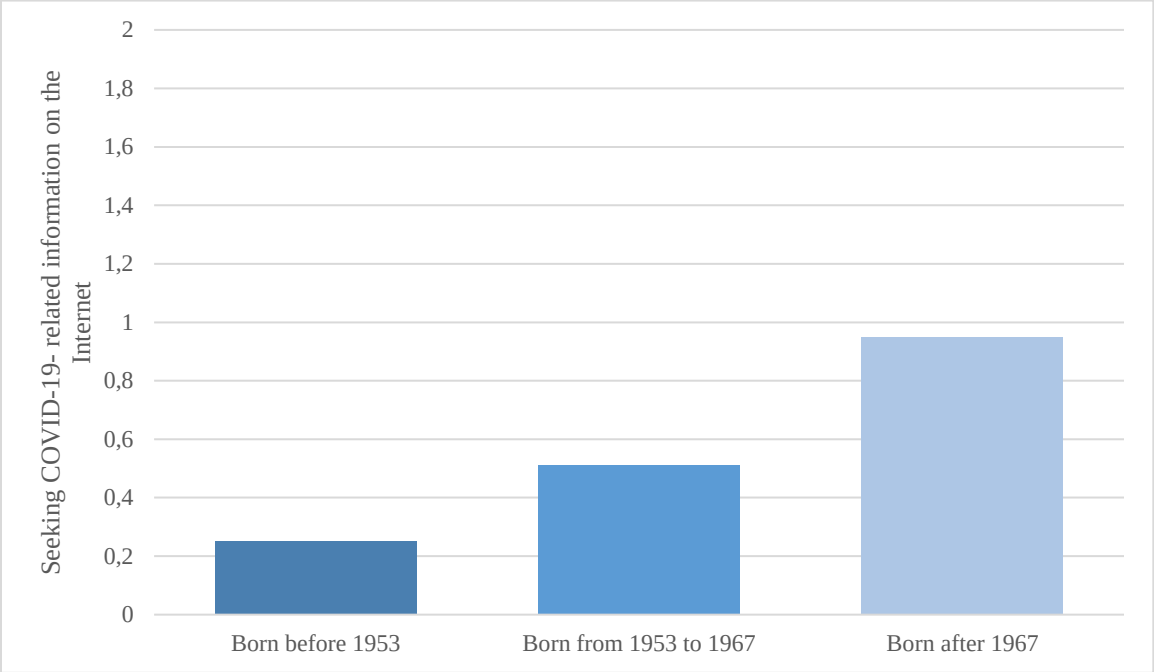


Figure 12 shows that the group of the participants born after 1967 sought more COVID-19-related information on the Internet than the group born between 1953 and 1967, and especially more than the group consisting of those born before 1953.

Similarly to the previous results, a statistically significant difference was found between the groups in the time spent searching information on COVID-19 on the Internet ($F_{2,144} = 3.81$, $p < .05$). The oldest participants ($M = .29$, $SD = .56$) spend significantly less time searching information on COVID-19 on the Internet than the youngest ($M = .61$, $SD = .60$). See Fig. 13

Figure 13. Time spent researching COVID-19-related information on the internet and age groups

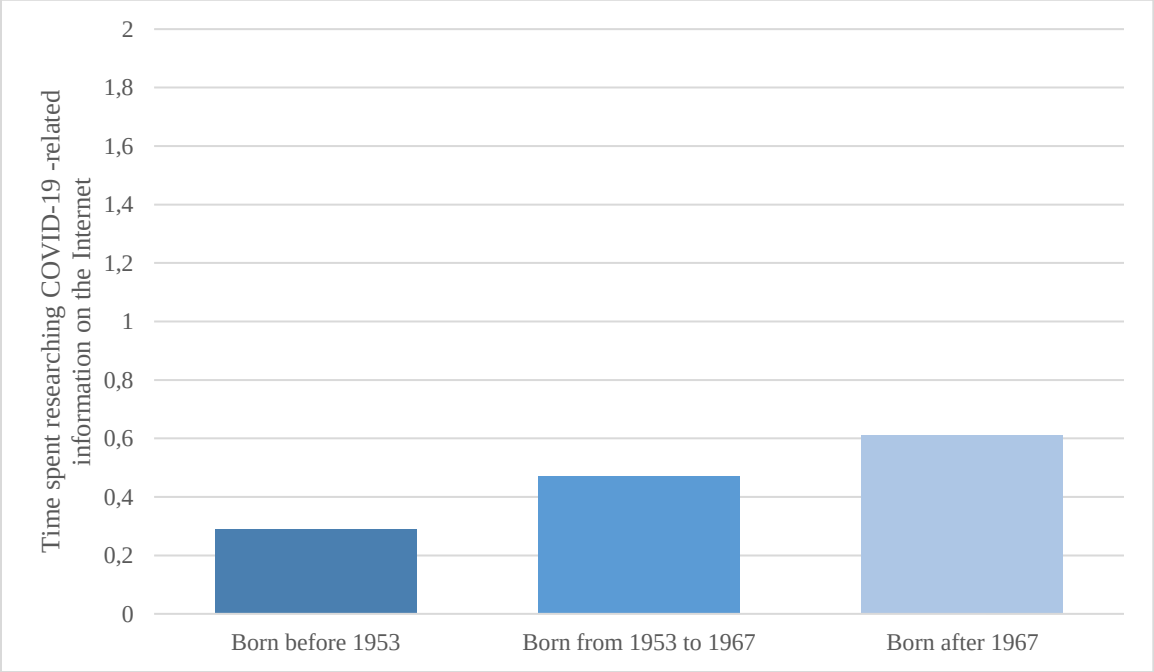


Figure 13 illustrates that the group consisting of the participants born after 1967 spent the most, the group consisting of those born between 1953 and 1967 spent average time, and the group born before 1953 spent the least time researching COVID-19-related information on the Internet.

There is a statistically significant difference between the groups in the time spent searching for general health information online ($F_{2,144}$ = 5.80, p <.01). Participants born before 1953 (*M* = .36, *SD* = .65) spend significantly less time searching for general health information online than participants born between 1953 and 1967 (*M* = .66, *SD* = .62) and participants born after 1967 (*M* = .77, *SD* = .54). The results are illustrated in Figure 14.

Figure 14. Time spent researching general health-related information on the internet and age groups

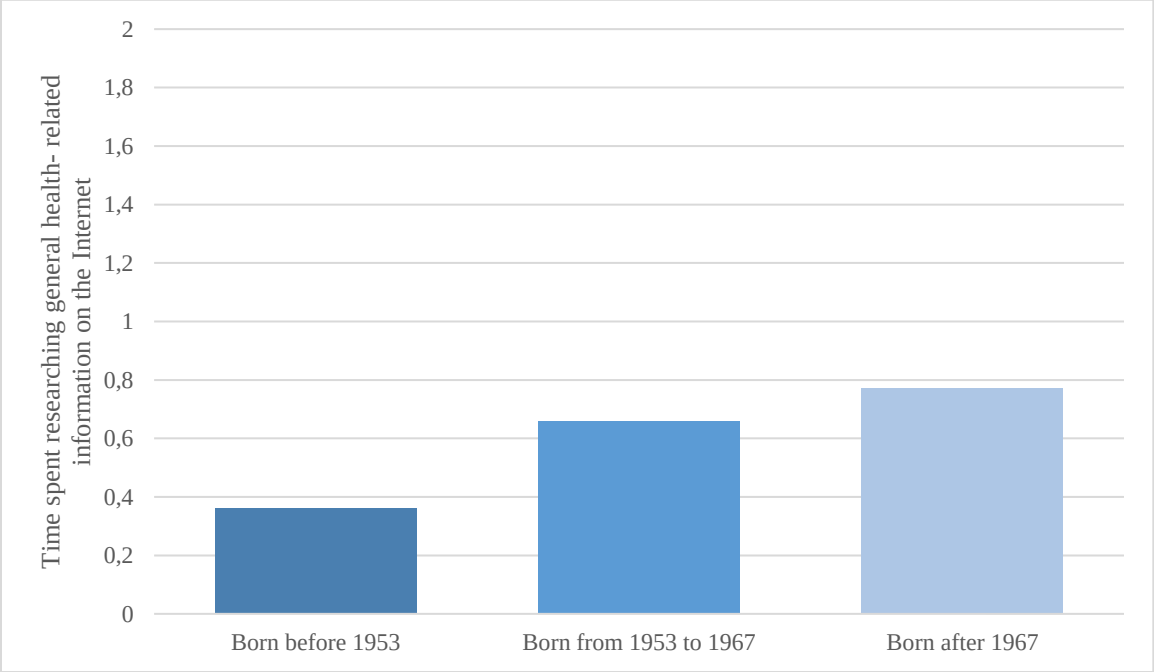


Figure 14 illustrates that the participants born after 1967 spent the most, the participants born between 1953 and 1967 spent average and the participants born before 1953 spent the least time researching general health-related information on the Internet.

4.9.2. Age groups and understanding English

Comparisons between the groups explained in the following section were tested by One - Way ANOVA analysis. There is a statistically significant difference between the groups in how well they understand English ($F_{2,142} = 36.92$, $p < .01$). As the age of the participants decreased, their level of understanding English increased. Participants born before 1953 ($M = 1.39$, $SD = .92$) understand English significantly less than participants born between 1953 and 1967 ($M = 2.18$, $SD = 1.27$) and participants born after 1967 ($M = 3.48$, $SD = 1.27$). Also, participants born between 1953 and 1967 ($M = 2.18$, $SD = 1.27$) have less understanding of English than participants born after 1967 ($M = 3.48$, $SD = 1.27$). See Fig 15.

Figure 15. Comprehension of English and age groups

Figure 15 shows that the group of the participants born after 1967 reported the best comprehension of English, the group of the participants born between 1953 and 1967 reported average, and the group born before 1953 reported the worst understanding of English.

5. Discussion

In this section, the results of the study shall be discussed concerning the general aim of this research, the research questions and the findings of other available studies where they can be applied. The limitations and possible directions for future research will also be considered.

5.1. Age and seeking for COVID-19 and health-related information

The first research question (RQ1) of this paper was to examine the relationship between the age of the participants and their seeking for COVID-19 and general health-related information on the Internet and in the media. The results obtained in this study contradict the findings of Rains (2007) that patients who use traditional media sources for gathering health information also consult the Internet. The results obtained indicate that age positively correlates with the time spent gathering COVID-19-related information in the traditional media. This particularly applies to watching television programmes. To my knowledge, the only available research that found television to be a relevant source of health information in comparison to other sources was conducted by Borzekowski et al. (2009) who found that nearly three-quarters of their participants gathered their health information from television. Similarly to this paper, the majority of their participants (79%) were 40 years of age or older. However, their study did not include a variety of media sources as wide as this study did but rather focused only on television. Furthermore, given that their research was conducted over a decade ago and their sample consisted of patients of mental health treatment centres, it seems plausible that these patients had less access to the Internet than the participants of our study. This finding may be further explained by the specific circumstances of the COVID-19 epidemic. The lockdown imposed at the onset of the pandemic, partial lockdowns that have continued to date, and the inability of health institutions to provide regular treatment for all health problems has limited patients' contacts with health professionals, thus forcing people to turn to other sources of health information. The Croatian Institute of Public Health was given the highest authority regarding COVID-19 during the duration of the pandemic by the Croatian government at the beginning of the pandemic and is the most reliable source for obtaining relevant information and guidelines for the citizens of Croatia. They are responsible for issuing statements to the traditional media that disseminate this information to the general public. Since the stress levels and general concern over health matters have been elevated since the onset of the pandemic, it seems that watching television news may seem the fastest route for finding out new information on COVID-19. Another factor that could influence this result is that the mean age of our

participants is 63, which may imply that reading newspapers or listening to radio news may be challenging due to a decline in their hearing or vision. Research by Yilmazel et al. (2013) suggests that television and radio are the most reliable sources of health information. However, this research was conducted on women only and they still preferred the Internet over traditional sources, so it is not in line with the results obtained in this research entirely.

In contrast, the younger participants spend less time researching COVID-19 and general health-related media. This is not surprising, as it is expected that younger patients, in general, would be less interested in health issues and the side effects of COVID-19. This could be partly explained by the fact that the media and the Croatian Institute of Public Health stated that elderly participants were more likely to be hospitalised or die from COVID-19 (V.I., 2020; Coronavirus disease, 2020; Older Adults Risks and Vaccine Information, 2021).

In line with previous research (Berkowski & Czaja, 2018; Eurostat, 2020), we anticipated a negative correlation between the age of the participants and the usage of the Internet, meaning that the younger participants probably spend more time gathering COVID-19 and general health-related information on the Internet, rather than from traditional sources. However, this result may have been influenced by the majority reporting having spent less than an hour gathering COVID-19 related information in general. As stated above, this could be due to the fact that throughout the pandemic, the general information stated that COVID-19 had much worse consequences for the elderly and chronically ill population (WHO, 2020a). Keeping in mind that the research was conducted in the early spring of 2021 before the new variants of COVID-19 appeared, the younger participants of our study perhaps did not feel they were at risk and subsequently did not find it necessary to search extensively for the information available. The available studies, to my knowledge, did not examine the general OHI-seeking behaviour in people of different age groups, which makes it difficult to draw a comparison between the results obtained in this research with those obtained by previous studies. This seems especially surprising given that previous research suggests widespread usage of the Internet among persons of all generations. As for the reasons why older participants on average seem to utilize the Internet much less than their counterparts in other European countries, where, according to the results of Eurostat (2020), 62% of those aged between 65 and 74 access the internet, it may be that they simply do not use the Internet in general, which may be a generational or regional trait, or that they are able to obtain enough information on COVID-19 via television news and thus do not feel the need to complement them with Internet sources. However, it is also likely that given the vast amount of information available on the Internet

(Hesse et al., 2005; Donohue et al., 2009; Zulman et al., 2011) the older participants in our study could have difficulties trusting the credibility of the Internet sources, as in Figueiras et al.'s (2021) study.

5.2. Age groups and English language

The second research question (RQ2) we sought to answer was what the relationship between the participants' age and their comprehension of English is. As mentioned earlier in the paper, for the purpose of exploring the effect education may have on the participants' ability to understand English, they were divided into three groups according to the comprehensive educational reforms in the school system in Yugoslavia. These changes affected both the curriculum and syllabus in terms of the methodology used by the teachers, the number of foreign language lessons per week, the years spent studying foreign languages, and the foreign languages offered at schools. Specifically, the groups comprised participants who were born before 1953, between 1953 and 1967, and after 1967. We did not anticipate, however, the number of participants who understand any language besides English well to be too small to draw any conclusions about them. Thus, it was decided to conduct the analysis with respect to their understanding of the English language since the pool of the participants who understand it was large enough to draw some valid conclusions. Furthermore, the English language is the dominant language of the Internet, and the medium of health information and COVID-19 (Azak et al., 2021; Parabhoi et al. 2021; Piller et al., 2020).

As mentioned before, English is a global language, and its popularity is ever-growing over time, taking roots and making swift progress in Croatia as well (Berns, 2005). Thus, it was no surprise when the results showed that the younger participants who were born after 1967 reported a better understanding of English, and as the age of the participants increased, their level of understanding decreased. Given that English has become more widespread in schools since the Second World War (Vilke,2007), and that in the coastal region and urban areas English should be more prevalent due to tourism, which significantly contributes to the Croatian economy (Šutalo et al. 2011; Lukić, 2002), especially in two out of the three counties, Istria and Primorje-Gorski Kotar County, which gravitate towards the Clinical Hospital Center of Rijeka, where the study was carried out, it was unsurprising to see that it had a significant number of speakers among our participants.

As for other foreign languages, it was assumed that the participants in the two counties would also be able to understand Italian and German, since Italian also has a long history in Rijeka

and the Istria County, where the majority of Italian bilingual speakers live, and since the majority of tourists in this part of Croatia come from countries where those two languages are spoken. What is surprising, however, is that only eight participants in our research were native speakers of Italian. Other non-South Slavic native languages reported were German and Russian (one speaker of each). A very small number of participants reported speaking any of these languages well. As a result, we were unable to draw conclusions about their information-seeking sources and habits. This may raise some important questions regarding the quality of foreign language education at the time since foreign languages have been taught at school since the beginning of the public educational system (Vilke, 2007). One possible shortcoming could be that the methods used to teach foreign languages did not develop the learners' ability to use them. Furthermore, if they have not used the languages, language attrition may have occurred However, these topics go beyond the scope of this paper. Other South Slavic languages (Serbian, Bosnian and Slovenian) were not considered relevant, since they are so similar to Croatian that the speakers of those languages probably have little issues understanding each other and subsequently, the health information issued in Croatian as well. Very few participants reported them as their native language.

5.2.1. Age groups, time spent gathering health-related information and sources of information

Our third research question (RQ3) wanted to find out which age groups of participants spent more time seeking COVID-19 and general health-related information and what their sources were.

In terms of the three age groups, we also wanted to investigate the differences between them in regard to their COVID-19 and general health-related seeking habits on both the Internet and other media. The three groups were compared with respect to the sources of information they used, and the time spent gathering information COVID-19 and general health-related information. Overall, it was expected that a statistical difference would be found among the groups in the time spent researching COVID-19-related information in the traditional media, and, as expected, the oldest group that consisted of those born before 1953 spent significantly more time researching this information than the middle group (participants born between 1953 and 1967) and the youngest group (those born after 1967). Their activity can be supported by the fact that at the beginning of the pandemics, it was believed that the older citizens, as well as those with severe illnesses, are at a higher risk of having serious health consequences should

they contract COVID-19 (WHO, 2020). For this reason, it appears likely that the oldest group of participants was the one most concerned about their own health, and thus spent more time gathering COVID-19-related information.

In line with previous research, we also anticipated that the group of participants born before 1953 would search the Internet for COVID-19-related information significantly less than the group born between 1953 and 1967 and especially the youngest group born after 1967, which was corroborated by our findings. As in research by Berkowsky & Czaja (2018), another significant difference was found between the youngest and the oldest group regarding the time spent seeking information on the Internet, with the youngest group spending much more time on the Internet, gathering both general and COVID-19 health-related information. This can be easily explained by the fact that the younger generation is well adapted to using the Internet both for work and leisure. A survey by Eysenbach (2003) suggests that OHI can be confusing, conflicting and overwhelming, which may explain why, despite an estimated 79% of Croatians that use the Internet (Eurostat, 2020), few persons over the age of 65 use it to seek health information. Especially given that reliable information is readily available via traditional media.

5.3. Language comprehension and the sources of health information

In our next research question (RQ4), we wanted to examine the relationship between the participants' comprehension of English and their seeking for COVID-19 and general health-related information in the media and on the internet. We examined the correlation between the participants' comprehension of the English language and their preferred sources of COVID-19 and general HRI. Assuming that the younger generations have a better general understanding of the English language, we anticipated that the participants who understood English better would spend significantly less time seeking COVID-19-related information in the traditional media. It was also assumed that the participants who understand English better would spend significantly more time gathering both COVID-19 and general health-related information online. Both of these assumptions were corroborated by the results. The poorer their understanding of the English language, the more time they spent seeking information on COVID-19 using traditional media (especially television news). Contrarily, the better their comprehension of English, the less they utilized traditional media to gather COVID-19-related information. These findings can be explained by the age difference of these participants since the age of the participants also correlates with their comprehension of English. Given that the older population was at greater risk from COVID-19 at the beginning of the pandemic, when

this research was conducted (WHO, 2020), it does not come as a surprise that the younger participants did not find seeking COVID-19-related information so relevant. On the other hand, the higher the level of English language comprehension the participants had, the more time they spent researching COVID-19 and general health-related information on the Internet. Based on Berkowsky & Czaja's (2018) findings on the estimated percentage of people between the ages 30 and 49 (96%) who use the Internet, and the percentage of websites in English (63.5%) (W3Techs, 2021) it is not surprising that our youngest group of participants sought OHI significantly more than the middle or the oldest group.

After analysing the correlation between the participants' understanding of the English language and sources of HRI, we divided the participants into two groups – one that consists of the participants whose comprehension of English was good and one whose comprehension of English was not good. These groups were based on their perceived understanding of the English language, and the threshold for being sorted into the group that understands English well was the mean estimation of understanding spoken and written language being 3 or higher. Next, we sought to examine the differences between these two groups regarding their HRI seeking behaviour.

It was assumed that the group consisting of the participants who do not understand English well would spend more time gathering COVID-19-related information in the traditional media than the other group. This was corroborated by the results. A significant difference was also found between the group that consists of the participants who understand English well, which spent more time seeking COVID-19 and general health-related information on the Internet than the group that does not understand English well, which spent less time on the Internet. The results may corroborate the findings of Kyriacou and Sherrattt (2019), which show that OHI in languages other than English may be of unsatisfactory quality. Thus, the participants who understand English better searched the Internet more than the participants who only speak Croatian, and could not understand the information in English. It is also possible that the information available online uses terminology that may be too complex for those with a lower reading comprehension level in English. A similar difference can be observed in the general time spent seeking OHI.

5.4. The number of languages the person understands

The final research question (RQ5) sought to examine the relationship between the comprehension of several languages affects the sources of health information the participants use. As for the correlation between comprehension of the different number of languages (i.e. native language and/or one or more foreign languages) and sources of information the participants use to obtain information about the COVID-19 epidemic and general health, we anticipated a negative correlation between the number of languages a person understands and the time spent gathering COVID-19-related information in the media. It was anticipated that the more languages a person understands, the more time they would spend searching for COVID-10 and general health-related information on the Internet. The study has confirmed the association between the patients' knowledge of languages and the time spent searching on the Internet.

Similarly to the previous section, the departing point was that the highest number of reliable sources on the Internet are written in English, and presumably satisfactory information is also available in other world languages. While devising the questionnaire, we took into consideration the possibility of, for example, Italian speakers listening to more radio or reading more newspapers because of the connections with Italian heritage in Rijeka and Istria County and the availability of those sources in the area. The research could have provided new insight into the relationship between comprehension of several languages and sources of information, however, as mentioned before, examining other languages and how their speakers may utilize the sources of information turned out not to be possible due to a too-small a pool of participants who spoke languages other than Croatian and English. This finding shows that in our sample, English is the most widely known foreign language in the sample of patients. Unfortunately, I have been unable to find any research that deals with health information in the traditional media and the Internet with respect to multilingualism in a form similar to this research, however, it would be interesting to conduct similar research in a more linguistically diverse setting, or on a wider sample. Research that does provide some insight into the links between bilingualism (specifically English and Greek) and OHI-seeking has been conducted on Cyprus with endocrinology patients. They have found that the participants who only spoke their native language were more likely to report finding unsatisfactory OHI. This may be the case in Croatia as well. Other research that deals with multiple languages and OHI to my knowledge only compared the quality of the content in various languages, but did not examine HISB by their

patients (Berland et al., 2001; Lawrenschuk et al., 2009). Although to my knowledge, no research that focuses on the satisfaction with the quality of OHI in Croatia has been conducted to date, it may be worth keeping in mind for future research, as it could provide additional insight into the behaviour of health-seekers. The two available studies that focus on health information-seeking behaviours in Croatia (Martinović et al., 2021; Delić et al. 2006), however, have a rather different focus than this one.

Finally, we wanted to examine the differences between the participants who do not speak any foreign language well and those who speak at least one foreign language well in regard to their health information-seeking behaviour in the traditional media and on the Internet. Based on the aforementioned report on OHI in a language other than English (Kyriacou & Sherratt, 2019), it was expected that the participants who do not understand any foreign language well would spend significantly more time gathering COVID-19 related information in the traditional media. which was corroborated by the data in this study. It is possible that if OHI in Croatian was also of poor quality, and the participants do not speak any foreign language well enough to understand the complex health-related webpages, they would probably be obliged to make do with the other sources available to them – specifically, traditional sources (television, radio and newspaper).

5.5. Limitations

The generalizability of the results is limited by the sample of the participants in this study. As mentioned in the Methodology section, 62.2% of our participants were male, which is not the case in the general population. Furthermore, no correlations between the participants' gender and the topics of interest were done, which further studies should take into account.

The methodological choices were constrained by this research being part of a larger multidisciplinary research project. The research was conducted at the Clinic for Cardiovascular Diseases of the Clinic Hospital Center of the University of Rijeka which meant that our participants were either outpatients who came for an appointment or were hospitalized for the severity of their condition. So while constructing our survey, we had to keep in mind that our participants would probably be experiencing stress over their illness and the situation with COVID-19 and would thus likely be distracted, overwhelmed or uninterested in filling in the questionnaire. Given that our participants were all cardiovascular patients, we assumed their age would likely be over 50, and it seemed highly unlikely that they would all have much experience with answering questionnaires. These were the reasons why the questions were

questions short, clear and simple. Another factor we had to keep in mind was that we had to limit ourselves to a small number of questions because only one joint questionnaire was constructed to elicit information related to psychology, medicine and language. Thus we all had to reduce the number of questions so that our participants would not lose focus. Furthermore, given that some of the hospitalized patients were in rather critical conditions, and that the outpatients had limited time to complete the questionnaire, no open-ended questions could be included. The task of filling in the questionnaire for the hospitalized patients was undertaken by a student of medicine who also took part in this research. However, we must bear in mind that if the participants had trouble with understanding some of the questions in our part of the questionnaire, he was unlikely to have been able to help them, which resulted in several of the participants not filling in all of the questions, or they could have provided answers without careful consideration of the questions.

Another limitation to this research is that the participants were not asked about their educational background. Although we have looked into the development of the educational system regarding foreign languages in Yugoslavia and Croatia for this research, it is not possible to draw any conclusive assumptions about this aspect, since we do not know what kind of schools our participants went to and what their highest degree of education is. Further research is needed to establish the connection between language education in Yugoslavia/Croatia and realistic comprehension of foreign languages in adults in Croatia. Finally, it was extremely difficult to find studies that are directly relevant to this piece of research and to conduct a comprehensive literature review.

6. Conclusion

Considering the ongoing COVID-19 pandemic that has influenced all aspects of people's lives, and has had an especially profound effect on their health and health information seeking, this research paper aimed to fill in the knowledge gap in the field by examining the health information-seeking behaviour of cardiovascular patients of the Clinic Hospital Center in Rijeka during the COVID-19 pandemic.

Based on the analysis of the answers given in the custom-built questionnaire, it can be concluded that the younger participants utilized the Internet much more than the older participants. This could imply that the older participants may have difficulties trusting the credibility of the information on the Internet, as previous research also suggests (Hesse et al., 2005; Donohue et al. 2009; Zulman et al. 2011). On the other hand, the older participants spent much more time gathering COVID-19-related information in the traditional media (especially television news and programmes).

The findings suggest that the oldest age group (consisting of those born before 1953) spent the most time gathering COVID-19 and general health-related information, utilizing mainly traditional media, specifically, television. Possibly they were the most concerned about their health. The youngest group (born after 1967) spent significantly less time gathering health-related information, but when they did seek it, they mainly utilized Internet sources. This is likely because at the beginning of the pandemic the WHO (2020a) suggested that contracting the COVID-19 virus is likely to affect the health of the elderly more seriously and fatally than the younger people.

Although the initial intention was to examine the relationship between the age groups and their knowledge of various foreign languages, unfortunately, this was not possible because of a too-small pool of participants who understand any foreign language besides English. The group of participants born after 1967 had the best comprehension of English, while the group born before 1953 had the worst. This probably attests to the changes in the educational system in Yugoslavia and Croatia and improvements in the methodological approach of the English teachers; however, it also raises the question of the quality of foreign language teaching methodology in the mid-20th century. Furthermore, it suggests that with the spread of English as a global language younger participants have probably received more input in English and have been more exposed to the language.

Similarly to the results of previous research (Kyriacou & Sharritt, 2019), we have found that persons with a better understanding of English spent more time seeking information on COVID-19 and general health on the Internet. This is not surprising, given the vast amount of information available in English. Furthermore, information in English allows for a comparison of the global and local contest, and access to high-quality information offered by leading medical centres, the WHO, and other renowned institutions. The results may imply that the quality of OHI in Croatian is poor and that there is a general lack of adequate OHI, but any decisive conclusions about this go beyond the scope of this research.

The participants who did not understand English well spent more time gathering COVID-19-related information in the traditional media. Similarly, we have found that the participants who understand more than just their native language sought more information on the Internet than the participants who only speak their native language. On the other hand, the monolingual participants gathered more information from the traditional media.

Given that this study was constrained by research issues in terms of access to the Clinic for Cardiovascular Diseases and contact with patients by nonmedical personnel and the researchers on this project, the implications of the COVID-19 pandemic, and the limited number of questions due to the multidisciplinary scope of the UNIRI project, it was not possible to examine other relevant issues and probe into the participants' educational background, gender, and their beliefs about the trustworthiness of the media and the credibility of the reports and health-related information, and their overall quality. Correlations between gender and health information seeking behaviour could also shed further light on seeking OHI, and on the time spent gathering information on COVID-19, while open-ended questions would provide better insights into the key issues and allow the patients to explain their experiences and beliefs, and substantiate their claims.

To gain a deeper understanding of the issue of how people gain information on COVID-19, further research on OHI in Croatia is required. Taken together, the results indicate the need to consider the quality and availability of OHI and information on COVID-19 and suggest that the Croatian Institute of Public Health and the Clinical Hospital Center in Rijeka should focus on including both the Internet and the traditional media to successfully disseminate relevant health-related information as well as consistent and appropriate guidelines regarding the COVID-19 pandemic to different age groups.

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