UNIVERSIDADE CATÓLICA PORTUGUESA

THE COMMUNICATION CONTEXT OF THE MEASUREMENT OF HEALTH LITERACY LEVELS – PILOT STUDY IN A RURALIZED ELDERLY POPULATION

Dissertation presented to the Universidade Católica Portuguesa to obtain a Master's Degree in Communication Studies

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Under the guidance of Prof. Dr. Henrique Lopes and Prof. Dr. Fernando Ilharco

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Abstract

Background: Health literacy (HL) has a crucial role in one's global health state. The HL concept encompasses the ability in accessing, understanding and using the information to navigate the health system and for health-related decision making. Communication is a transversal concept in the HL operationalization, in the effective transmission, understanding and application of health information. The measurement of HL levels comprises an opportunity to study both dimensions. This study is particularly relevant for individuals over 65 years old, identified as a vulnerable group to low HL levels.

Objectives: The primary objective is to assess the behaviour of two commonly used HL measurement tools when applied in a ruralized elderly cohort. The secondary objective is to assess if there are relations between social determinants of health and HL levels.

Methods: This research is of quantitative and qualitative nature, being exploratory and descriptive. The sample comprises fifty participants. The used HL measurement tools were the European Health Literacy Survey (HLS-EU-PT) and the Newest Vital Sign (NVS). A questionnaire survey was produced to collect data regarding the social determinants of health.

Results: A total of 50 valid HLS-EU-PT and 41 NVS surveys were collected, along with 50 valid questionnaire surveys. Low HL levels were verified in both tools, with aggravated Limited HL in the NVS. Possible relations between social determinants of health and HL levels were identified.

Conclusion: Results do not suggest a concordance of results between tools. The NVS may not be a viable tool for samples with a significant proportion of illiterate participants, an obstacle that may be surpassed by using the HLS-EU-PT. Application protocols of HL measurement tools must encompass criteria and methods suited for limitations in this population segment. The identified low HL levels support the identified need for tailoring measures that strengthen HL in the elderly to maintain and improve their life and health quality.

Keywords: *Communication, Health Literacy, Elderly*

Resumo

Introdução: A Literacia em Saúde (LS) tem um papel crucial no estado global de saúde de cada pessoa. O conceito de LS abrange a capacidade de aceder, compreender e utilizar a informação para navegar no sistema de saúde e na tomada de decisões relacionadas com saúde. A Comunicação é um conceito transversal na operacionalização da LS, na transmissão eficaz, compreensão e aplicação da informação de saúde. A medição de níveis de LS representa uma oportunidade para o estudo de ambas as dimensões. Este estudo é particularmente relevante para pessoas com idade superior a 65 anos, identificados como grupo vulnerável a baixos níveis de LS.

Objetivos: O objetivo principal é avaliar o comportamento de duas ferramentas de medição de LS comummente utilizadas, quando aplicadas a uma amostra de idosos ruralizados. O objetivo secundário é verificar se existem relações entre determinantes sociais de saúde e níveis de LS.

Métodos: O presente estudo é de natureza quantitativa e qualitativa, seguindo uma abordagem descritivo-exploratória. A amostra foi composta por cinquenta participantes. As ferramentas utilizadas para a medição dos níveis de LS foram o HLS-EU-PT e o NVS. Foi também desenvolvido um inquérito por questionário para a recolha de dados sobre determinantes sociais de saúde.

Resultados: Foram recolhidos 50 inquéritos válidos pelo HLS-EU-PT e 41 pelo NVS, bem como 50 inquéritos por questionário válidos. Verificaram-se baixos níveis de LS em ambas as ferramentas, com níveis agravados de LS Limitada no NVS. Foram identificadas possíveis relações entre determinantes sociais de saúde e níveis de LS.

Conclusão: Os resultados não sugerem uma validade concorrente entre as duas ferramentas. O NVS pode não ser uma ferramenta viável para amostras com uma proporção significativa de participantes com iliteracia, um obstáculo que pode ser ultrapassado ao utilizar o HLS-EU-PT. Os protocolos de aplicação das ferramentas de LS devem acomodar critérios e métodos adequados às limitações deste segmento da população. Os baixos níveis de LS identificados suportam a necessidade identificada de personalizar medidas que fortaleçam a LS nos idosos para a manutenção e melhoria da sua saúde e qualidade de vida.

Palavras-Chave: *Comunicação, Literacia em Saúde, Idosos*

Dedicated to

To my dear grandparents,
António, Carlos, Maria, Perpétua

Dedicatória

Aos meus queridos avós,
António, Carlos, Maria, Perpétua

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Glossary of acronyms and acronyms

CD-ASFC – *Centro de Dia da Associação de Socorros da Freguesia da Carvoeira* (Carvoeira Parish Aid Association Day Care Center)

CD-ASFT – *Centro de Dia da Associação de Socorros da Freguesia do Turcifal* (Turcifal Parish Aid Association Day Care Center)

CD-FDP – *Centro de Dia da Freguesia de Dois Portos* (Turcifal Parish Day Care Center)

DGS – *Direção-Geral da Saúde* (Directorate-General of Health)

DP-HL – Disease Prevention Health Literacy

EU – European Union

FT - *Freguesia de Turcifal* (Turcifal Parish)

HC-HL – Health Care Health Literacy

HL – Health Literacy

HLS-EU – European Health Literacy Survey

HP-HL – Health Promotion Health Literacy

ICT - Information and Communication Technologies

INE – *Instituto Nacional de Estatística* (National Statistical Institute)

IPDJ – *Instituto Português do Desporto e Juventude* (Portuguese Institute of Sport and Youth)

IPSS - *Instituição Particular de Solidariedade Social* (Social Solidarity Private Institution)

ISCED – International Standard Classification of Education

K – Kurtosis

LS – *Literacia em Saúde* (Health Literacy)

METER – Medical Term Recognition Test

MUA – Moderately Urban Area

NCD - Non-Communicable Diseases

NHP – National Health Plan

NPM – Non-Pharmaceutical Measures

NS/NR – *Não Sabe/Não Responde* (Does not know / Does not answer)

NVS – Newest Vital Sign

OECD – Organisation for Economic Co-operation and Development

PRA – Predominantly Rural Area

PUA – Predominantly Urban Area

SD – Standard Deviation

SK – Skewness

SNS – *Serviço Nacional de Saúde* (National Health Service)

TOFHLA – Test of Functional Health Literacy in Adults

UFCC - *União das Freguesias de Carvoeira e Carmões* (Parishes Union of Carvoeira and Carmões)

UFDPR - *União das Freguesias de Dois Portos e Runa* (Parishes Union of Dois Portos and Runa)

UN – United Nations

US – United States

USA – United States of America

WHO – World Health Organization

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Introduction

Health literacy (HL) has a crucial role in providing individuals with tools to access, manage and understand information (Okan, Bauer, Levin-Zamir, Pinheiro, & Sørensen, 2019). Therefore, measuring HL levels is a necessary element for a better understanding of the global health status of populations. This process has great importance in knowing to which extent individuals in a community are active agents that can adequately manage decisions for the benefit of their health and well-being, and that of people for whom they are responsible (Lopes, 2019). This subject is particularly relevant considering that the effects of low HL levels have been associated with more negative outcomes in Health, such as in Non-Communicable Diseases (NCD) and, consequently, in the remaining spheres of people's lives, especially aggravated by health inequalities (Drapkina et al., 2019; Pedro, Amaral, & Escoval, 2016). On the other hand, adequate HL levels are associated with more positive outcomes and gains in health and well-being (Espanha & Ávila, 2016).

As social beings, people are born in pre-existent social structures that exert a continuous influence on one's experiences (Lopes, 2015). Each individual lives in a specific social, economic and cultural context which is in constant change. Structures such as Family and School are fundamental for the construction of personal structures that comprise individualities (Bourdieu, 1998). These provide opportunities, tools and experiences that exert influence on how individuals interact with the world. It is important to note that, in all the interactions, Communication functions as a catalyzer for the co-creation of social worlds, selves and relationships (Griffin, Ledbetter, & Sparks, 2019). The field of Communication, as a core dimension of the human nature, is essential to determine all activities that require the conveying of meaning. Therefore, this dimension is vital in the success, or failure, of initiatives focused on health promotion, prevention of illness, fostering of health literacy, among others (Golinowska et al., 2017). The particular interdependence between Health Literacy and Communication was identified as a major axis for action in promoting actions towards increasing gains in Health (DGS, 2020b). For this dissertation, it was considered of the utmost importance to study the context of Communication in Health literacy, particularly in the measurement of health literacy levels.

To better perceive the present and foster stronger, knowledgeable foundations for the future, it is vital to understand the cultural background of the past (Guilherme D'Oliveira Martins, 2018). With a significant part of the Portuguese elderly having lived their youth through periods of war, famine and poverty in a highly ruralized country with high illiteracy rates, it is important to understand how they were influenced by these contexts. For example, Portugal has a high prevalence of NCD and chronic conditions, especially among the elderly, which could be prevented if not existent, by changes in behaviour and lifestyle (A. Rodrigues et al., 2017). These health conditions are generally associated with low HL levels, which in turn are associated with low education levels (Okan et al., 2019). It must also be noted that despite Portugal's great progress in raising the average life expectancy, it also has the worst results of healthy life years when compared to the remaining European Union (EU) countries (Eurostat, 2020a; PORDATA, Eurostat, & INE, 2020).

In the COVID-19 pandemic context, health literacy was attributed to a primary role in the prevention of respiratory infection by the new SARS-CoV-2 virus and better response in case of suspect/confirmed infection (Lopes & McKay, 2020). Major discussion topics in the COVID-19 pandemic highlight health inequalities, vulnerable populations, misinformation, among other subjects. This due to individuals with pre-existent health conditions, low income, ethnic minorities and the elderly being more prone to suffer from aggravated conditions from COVID-19 due to specific social determinants of health (Akbulut et al., 2020). With estimates suggesting that the COVID-19 pandemic effects will be present for the next decade, the assessment and fostering of health literacy represents a strengthening of society by means of preventing and managing illness during this period (Lopes, 2019).

According to several studies conducted at a national level, focusing on the general population, it was identified that the Portuguese population has low HL levels (Espanha, Ávila, & Mendes, 2016; Pedro et al., 2016; L. Saboga-Nunes et al., 2014). From these studies, assessment of populations for general HL levels led to the identification of risk groups more vulnerable to having low HL levels, such as people with low levels of education, low income, elderly individuals (65 years old and over), among others. Few scientific works were found regarding the HL levels assessment from the latter population group (Chesser, Keene Woods, Smothers, & Rogers, 2016; Serrão, Veiga, & Vieira, 2015; Sousa, 2016) and even fewer concerning the segment of the elderly with highly ruralized

backgrounds. No study was found at a national level regarding this second approach, being identified as a gap in the literature.

The framework of the present dissertation was aligned with the work being developed in the Public Health Unit of the Institute of Health Sciences of the Catholic University of Portugal, in which the author of this dissertation is also collaborating in research projects since 2018. The resulting insights from this pilot study will be used for application in a broader international project focused on health literacy among vulnerable groups. From this work, the production of at least one scientific article is expected for publication.

This study addressed the importance of Health Literacy and contributes of Communication centred in inequality and vulnerable groups, being aligned with the Public Health Unit's Line of Research on Health Literacy.

A wide range of tools for measuring HL levels is available, with two of the most used tools for this purpose being the European Health Literacy Survey (HLS-EU) (Sørensen et al., 2013) and the Newest Vital Sign (NVS) (Barry D. Weiss et al., 2005). These were initially designed for the general population, being translated and validated for application in other population segments and different languages, including the Portuguese population[1]. Despite the tools being diverse, it does not mean that there is a sufficient number of versions for the HL measurement of different population segments that encompass different characteristics. Moreover, it is essential to assess the application viability of HL measurement tools in diverse populations with different features than the ones considered in the original version of the tool. It is paramount to proceed with this assessment in the elderly with high ruralized backgrounds, a specific segment of the general population. Identifying social determinants of Health that may be associated with HL is also important for the study of this population. For this purpose, a structured survey was based on exploratory data and applied in a cohort of individuals that met inclusion and exclusion criteria.

The main research question that served as a guideline for the different research proceedings was a result of different reflections on the developed work - "What is the measurement

[1] For this research, the versions of the health literacy measurement tools were the following: HLS-EU-PT (L. Saboga-Nunes et al., 2014; Luís Saboga-Nunes & Sørensen, 2013; Luís Saboga-Nunes et al., 2014); NVS (Paiva et al., 2017).

behaviour of the HLS-EU-PT and NVS tools in the assessment of HL levels in a ruralized elderly population?". Also, a complementary question was considered to substantiate the former: "What relations do social determinants of health have with the HL levels in a ruralized elderly population".

The research was structured in a social sciences' sequential method and organized into two parts. The first part comprises the exploratory scientific literature review of existing knowledge, featuring the following dimensions: Health Literacy; General communication theories in the context of the study; Sociodemographic aspects of the elderly in Portugal. It also encompasses the research methodology and the implemented strategy for the empirical work, being structured according to the following features: research context, empirical research strategy and exploratory/primary data collection. The second part comprises the results and its descriptive reading, along with data analysis to answer the identified issues in the main question and complementary question.

Considering the results, data analysis and discussion, a conclusion is also presented with the answer to the main research question and complementary question. It identifies the most relevant insights found in the study and presents the contributions to the field of knowledge while identifying future possibilities of research.

Part I – Theoretical Framework

Chapter 1 – The Health Literacy Dimension

1. Health Literacy

To address the concept of Health Literacy, it is important to clarify both constituent terms – Health and Literacy. The former had its definition coined by sixty-one States, in the Preamble to the Constitution of the World Health Organization (WHO), in 1946 – "Health is a state of complete physical and social well-being and not merely the absence of disease or infirmity." (WHO, 2020d). The latter had its definition changed over the last decades, to encompass the different needs for people living in fast-changing societies. Since 1946, UNESCO has been on the frontline of worldwide literacy initiatives, with its most recent definition for the concept being as follows:

> "Beyond its conventional concept as a set of reading, writing and counting skills, literacy is now understood as a means of identification, understanding, interpretation, creation, and communication in an increasingly digital, text-mediated, information-rich and fast-changing world." (UNESCO, 2020)

The concept genesis regarding Health Literacy dates back to the 1970s, resulting from the discussion on the influence that health education could have on the global health status promotion of each individual (Osborne, Beauchamp, & Batterham, 2016). Since then, several authors have presented different proposals for the definition of HL (Sørensen, 2019). However, a consensual definition capable of encompassing all the dimensions of the concept has not yet been established.

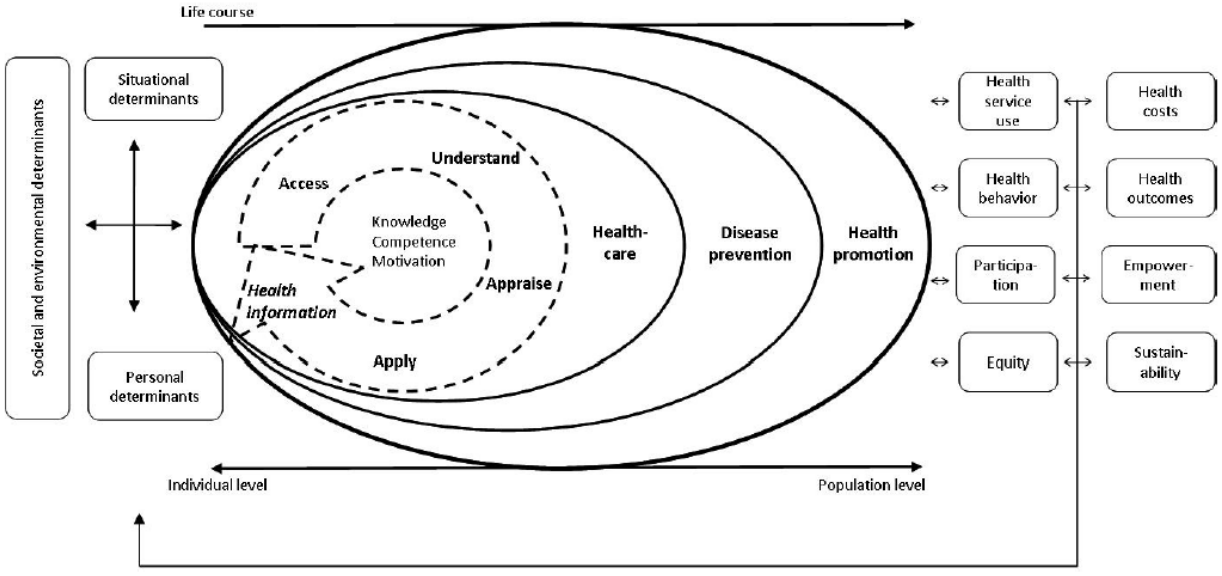
In an initial phase, health literacy comprised the individual responsibility to use their basic skills (literacy and numeracy) in making health decisions (Serrão, Veiga, Vieira, Almeida, & Marques, 2015). Recently, the definitions include a more holistic perspective of the concept by addressing the social component that comprises the experiences of the individual as a member of society (Pedro, 2018). As a result of all the definitions, health literacy has been shaped around a multidimensional construct (Okan et al., 2019).

The WHO has used a health literacy definition based on the Health Promotion Glossary, from 1998, which due to the institutional inertia and being a concept in evolution, is taking longer to be reviewed (WHO, 2016c). Considering the aforementioned aspects and having been verified that there are different definitions for Health Literacy, it was considered for this research to use the most consensual definition of the concept in the scientific community. In a study by Sørensen et al., the authors gathered a set of definitions on the concept of health literacy, intending to formulate an integrated perspective of all the identified elements in each definition (Sørensen et al., 2012). As a result, the authors presented the following definition:

> "Health literacy is linked to literacy and entails people's knowledge, motivation and competences to access, understand, appraise, and apply health information in order to make judgments and take decisions in everyday life concerning healthcare, disease prevention and health promotion to maintain or improve quality of life during the life course." (Sørensen et al., 2012, pp. 13)

Considering the distinct components of this definition, it is possible to understand that health literacy encompasses many other dimensions other than merely possessing health knowledge. To synthesize the constituents of health literacy, the same authors proposed an integrated model of the concept (Figure 1).

Figure 1 – Integrated Health Literacy Model



Source: Original Figure from the article "Health literacy and public health: A systematic review and integration of definitions and models" (Sørensen et al., 2012).

In addition to the knowledge of health information, it is necessary to recognize the motivations and skills that induce people in wanting to seek new information. Sørensen et al. proposed that individual skills combined with social determinants of health throughout the life cycle have a significant impact on the ability to access, understand, evaluate and use health information (Sørensen, Karuranga, Denysiuk, & Mclernon, 2018). This last aspect is fundamental for the communication process to be successful, thus changing the receiver's behaviour according to the sender's intention.

Knowing how to use knowledge in daily decisions adequately is crucial to improving the overall state of one's health and well-being, and that of the people one is responsible for (Lopes, 2019). These decisions can be perceived in terms of behaviours such as the management and prevention of diseases, in health and well-being promotion, and the easiness in navigating the health system (Carneiro, Silva, & Jólluskin, 2018). As a result of the dynamics between these dimensions, health literacy has been showing evidence of exerting a significant influence on: the knowledge and use of health services, which also determines associated costs; the impact of health-related behaviours in one's overall health status; the citizen's participation degree in managing their health, which is related to their empowerment; the system's sustainability for more significant equity in the provision of health care (Sørensen, 2019).

In parallel, it is also necessary to empower people so that they can contribute to health advocacy. Based on this concept, knowledge of one's rights and responsibilities is a fundamental aspect of active citizenship exercise, as it allows for the contribution to the implementation of policies that guarantee equity in access and opportunities in healthcare (UNA-UK, 2017). The promotion of health literacy reveals the potential to foster positive effects between different sectors, thus being aligned with at least eight of the seventeen Sustainable Development Goals: No Poverty; Zero Hunger; Good Health and Well-Being; Quality Education; Decent Work and Economic Growth; Industry, Innovation and Infrastructure; Reduce Inequalities; Peace, Justice and Strong Institutions (WHO, 2016a).

There is evidence of relations between low HL levels and the practice of lifestyles that are harmful to health, as well as an inefficient use of health services (e.g., frequent use of emergency services) (Veiga & Serrão, 2016). Issues associated with challenges in understanding transmitted information by health professionals, either written or oral, were also identified, which can hinder the correct therapy follow-up (Pedro et al., 2016). The consequences may lead to worse health conditions and additional expenses for the individual and the health system (Costa, Saboga-Nunes, & Costa, 2016). Social factors commonly associated with low levels of health literacy were also identified, such as low income, old age and low education levels (Aljassim & Ostini, 2020; DSPDPS, 2019). The latter had been identified as a primary dimension related to the prediction of health literacy levels in the Portuguese context (Espanha & Ávila, 2016).

The strengthening of Health Literacy requires the measuring and assessment of HL levels for the general population and group segments, their characteristics and the identification of population groups more vulnerable to low HL levels. It is solely through this process that it is possible to identify different HL patterns among population groups who may share common traits. For example, age groups (young people, the elderly, people of working age), groups distributed by geographic areas (urban/rural), by gender, profession, among others. The study of concrete characteristics of each population segment (e.g., social determinants of health) is also necessary to better address identified needs while tailoring adequate measures and initiatives for this purpose, thus promoting Health in today's society and generations to come. Therefore, this process is paramount in managing measures, initiatives and policies whose main objective is to increase health literacy levels and to contribute to healthy ageing, being aligned with Portugal’s National Strategy for Active and Healthy Ageing (DGS, 2017).

For this purpose, the assessment of these indicators should consider and verify the adequacy of HL measurement tools and similar, along with used criteria and methodology for the populations in study, as a way to guarantee the quality and validity of collected data.

With the HL concept evolving from an individual perspective to a perspective of life in society, many HL measurement tools have also accompanied this process.

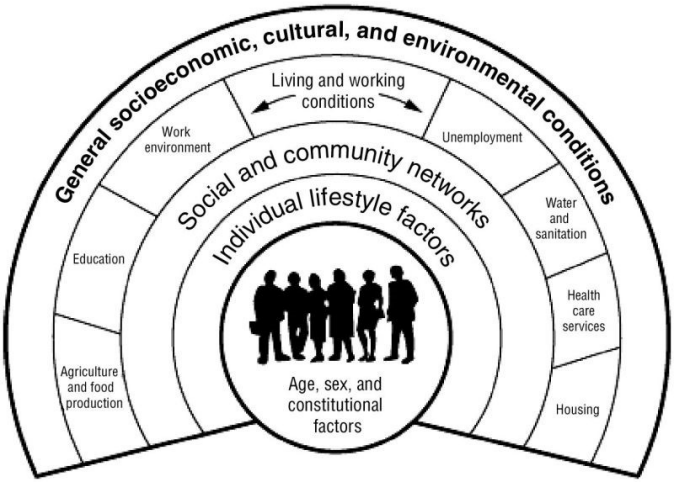
Many HL measurement tools enable the assessment of cognitive skills (literacy and numeracy), such as the Newest Vital Sign (NVS)(Barry D. Weiss et al., 2005); the Test of Functional Health Literacy in Adults (TOFHLA) is a tool that allows for a similar assessment focused on the participant's reading ability (Parker, Baker, Willia, & Nurss, 1995); the Medical Term Recognition Test (METER), which in addition to assessing the reading ability, also includes information processing through the recognition of existing medicine terms (Rawson et al., 2010).

The existence of a substantial number of definitions for health literacy is inherent to a proportionate difficulty in developing a tool that can measure all the HL dimensions and social determinants of health. In response to the identified issue, Sørensen K. et al. developed an HL measurement tool, including aspects such as self-assessment (skills and knowledge) and functional literacy (literacy and numeracy) - the European Health Literacy Survey (HLS-EU) (Sørensen et al., 2013).

1.1. Social Determinants of Health

Social determinants of Health encompass the dynamics observed between the triad represented by the individual, his health state and his surrounding environment (Forouzanfar et al., 2016). Therefore, the health state of each individual is related to both intrinsic factors (e.g., age, sex, among others) and extrinsic factors (e.g., access to services, transportation, working conditions, housing quality, among others), as presented in Dahlgren and Whitehead's model (Dahlgren & Whitehead, 1991).

Figure 2 - Social Determinants of Health Model



Source: Dahlgren e Whitehead (1991)

Dahlgren and Whitehead's model (Figure 2) was developed as a theory that the health status of each individual is determined by interactions in a system whose structure is comprised of an extensive network of macro and micro socio-economic, cultural and environmental factors (Nyman, 2018). This model has been the basis for other Health maps that focus on explaining the different relations between the multiple environments and health and well-being (Barton & Grant, 2006). An important reading from the mapping of health and well-being is that all actions taken by international and national policymakers, local authorities and the community have a significant influence on the overall health status of each individual and society as a whole. The contribution of these entities in sectors such as Health,

Education, Economy, and others, is essential for maintaining environments of social systems aligned with the promotion of health and well-being for society (DGS, 2015).

Achieving the aforementioned goals requires efforts by all social agents to ensure equal access and opportunities for managing and maintaining quality in Health (UNA-UK, 2017). One of the significant contributions to achieving this purpose is the importance of fostering health in all policies' approaches. This concept involves holding all policymakers accountable for ensuring that all policies are aimed at the promotion and equity of individuals' health (Storm, 2016). The health in all places approach is also considered, in which the cooperation between the community, public and private entities should foster opportunities and advocacy for all people to build health and well-being, encompassing all the places in which people coexist, regardless of socio-demographic characteristics (Chen, Mahmood, & Reid, 2020; Lopes, 2020). Finally, HL in all health opportunities is also supported by the production of content and tailored tools that support guidelines regarding the implementation of best practices (DGS, 2020b).

In Portugal, the latter approach is considered as the starting axis in the promotion of health literacy, being complemented with other three axes (DGS, 2020b). It is followed by the importance of assessing which communication sources are consulted along with search patterns regarding specific needs, thus allowing the tailoring of content for a more effective, timely, clear and reliable communication. Communication comprises another axis, being a major transversal dimension in the HL in all health opportunities approach due to its interdependence with health literacy and the spectrum of social determinants of health. In this approach, it is also crucial to train people in communities to act as active agents in differentiating information with quality and making it communicated understandable at all levels of society.

For example, tobacco consumption represents one of many risk behaviours that are crucial for the overall health status of those who smoke and those around them (Cockerham, Hamby, & Oates, 2017). In Portugal, the prevalence of male daily smokers in 1987 was approximately 35.2%, in 2014 it decreased to 26.7% and in 2019 to 23,9% (INE, 2020d; Leite, Machado, Pinto, & Dias, 2017). For women, an inverse trend was observed with an estimated prevalence of 6% in 1987, 14.6% in 2014 and 10,9% in 2019 (INE, 2020d). The correct identification of this pattern is crucial for tailoring adequate preventive practices,

which allows for a more efficient counter to the perpetuation of risk behaviours. In Portugal, a campaign was designed by the Ministry of Health that illustrates the tailoring of preventive measures – "*Opte por amar mais"* (Choose to love more) (SNS, 2018b). By producing a short film, the campaign aimed at combating the high rate of tobacco use, with a more prominent focus on the female population, which aimed at changing behaviors with basis on known scientific evidence and health gains (SNS, 2018a).

As seen in the example above, governments have a crucial role in influencing citizens' behaviours and the predisposition of each individual to practice or avoid certain lifestyles. Risk behaviours can be diminished by exploiting outward actions to the individual, for example, with the implementation and supervision of measures such as anti-smoking policies, commissioning smoking cessation treatments, increased taxes on tobacco, awareness campaigns about the consequences of smoking, among others (WHO, 2019).

1.2. Public Health

A responding mechanism to changes in the social determinants of health is the role of the public health domain in daily life aspects. The WHO sought to gather consensus on the definition of the public health concept, from which the original definition of Winslow in 1920, adapted by Acheson in 1988, is highlighted: "(…) *the art and science of preventing disease, prolonging life and promoting health through the organized efforts of society*" (Jensen, Lukic, & Gulis, 2018, pp. 2).

According to this definition, through society's organized efforts, it will be possible to orchestrate conditions aiming at improving citizen's overall health status by preventing deteriorating health conditions. Such actions particularly concern lifestyles and behaviours that represent risk factors associated with the deterioration of healthy life years (e.g., inadequate diet, excessive alcohol consumption, smoking, among others) (OPSS, 2018).

It is important to note that the traditional model of clinical practice has tended to focus on treating diseases throughout medicine's history (Cesari et al., 2016). It has recently been recognized that in the Organisation for Economic Co-operation and Development (OECD) countries, about 3% of state budgets are allocated to Health (OECD, 2019). Much of this capital is mobilized for investments and expenses concomitant with a logic reactive to the appearance of diseases (OECD, 2019). This reading may lead to the perception that clinical practice continues to neglect the benefits of adopting a preventive logic, of investing in literacy and numeracy, on changing lifestyles and reducing risk behaviours. However, the development of new therapeutics and technologies is and will continue to be of great importance for the maintenance of society's global health status. The focus on developing preventive measures should continue to be implemented and intensified, as it has been practised over the past decades (Rheinberger, Herrera-Araujo, & Hammitt, 2016).

Changing behaviours and lifestyles towards healthier decisions have the potential of reducing the incidence of diseases and promoting health gains, which also reduces the need to provide health care and inherent costs to the health system. An example can be seen in the impact that inadequate water consumption has on the number of hospitalizations and costs for the health system. By adjusting the daily amount of water consumption, around one million days of hospitalization could be averted, with a cost reduction estimated at one

billion US dollars for the USA healthcare system (Luís Saboga-Nunes, Freitas, & Cunha, 2016), while also allowing for people to strengthen health gains related to adequate water intake.

As seen above, interventions that encourage the adoption of healthier behaviours represent a fundamental element in the maintenance and promotion of one's health and well-being, by reducing risks of illness (Golinowska et al., 2017). Health education emerges as a dimension that fosters knowledge and training basis for individuals in the adoption of lifestyles and behaviours, having the potential of preventing the appearance of certain diseases or evolution while maintaining and improving one's global health status and well-being (Lopes, 2018).

1.3. Health Education

At the end of 2019, Portugal was the EU country member with the highest population rate (between 15 and 64 years old) without a complete cycle of basic education (47.6%), which is around twice the rate of the EU average (25,7%) (Eurostat, 2020b). The low educational levels of the Portuguese population are an obstacle to the attainment of health literacy levels, compared to the remaining EU countries. Despite these challenges, the investment in interventions aimed at training and involving people in the management and promotion of their global health status is showing to be increasingly important.

Citizen training is essential for improving health literacy levels at each stage of one's life cycle, from birth to death, with the need to be adapted to each individual's socio-cultural context (Lopes, 2018). Promoting health education actions allows the empowerment of individuals towards improving their health status and well-being while encouraging changes in their behaviours and other social determinants of Health (Serrão, Veiga, Vieira, et al., 2015).

However, health education should not be restricted to communicating information focused on a specific area. Investing in education allows providing people with adequate communication skills, a key guiding element to better navigate and operate in a highly differentiated society. As a result, the higher an individual's complete education level, the higher the chances for their average life expectancy to increase (OECD, 2019).

Education emerges as a social determinant of Health due to its particularity of enabling individuals to acquire not only knowledge but also the differentiation of their thinking and to facilitate the acquisition of new skills. However, the opposite of low education levels has not been shown to be proportionally related to high levels of health literacy. For example, there are health professionals that smoke or do not practice healthy diets, despite knowing what is beneficial or harmful for their health, who continue to practice risk behaviours (Arriaga, 2019). The motivations and interests of each individual play a decisive role in the search and consumption of health and lifestyle information, as generally demonstrated in the Uses and Gratifications Theory (Katz, Blumler, & Gurevitch, 1973).

Therefore, the paradigm of education relies on increasing the probability of communication, by bridging a repertoire of common knowledge to the most significant possible number of social subsystems. Communication should not be an obstacle to the adequate management of one's global health status and well-being, and people around us. Education is fundamental so that we can take care of ourselves, of others and the world (Ilharco, 2014). Therefore, fostering health literacy through education and communication must be thought for every citizen, from all strata of society, while covering the different communication channels available by adapting content to an adequate format (Silva Costa et al., 2019).

Chapter 2 – The Communication Dimension

1. Communicational Context of the Study

Events all over the world are no longer geographically isolated and are now shared by the media in a matter of seconds. Distances seem to get shorter both in the physical and digital realms. A single click of a button or a touch on a screen is enough to become knowledgeable about what is happening in a different continent or to contact a family member that is abroad.

Globalization has imposed an accelerated pace that emerges from constant changes to reality. The trend in the most economically developed societies involves citizen participation in network societies, in which one thinks, communicates and acts globally (Ilharco, 2014).

Humankind has never been so connected. Every day, new roads are built, new flight connections are established, and information tends to reach more and more people. The process of creating infrastructures that allow the flow of people, capital, goods, ideas, and information is in constant development (Gygli, Haelg, Potrafke, & Sturm, 2019).

Televisions have been part of households' furniture, and it is unlikely for one to pass by someone on the street that does not have a smartphone in their possession. Currently, it is estimated that the Internet penetration rate covers more than half of the world population (Internet World Stats, 2020) and that the number of mobile phone subscriptions is higher than the world population (International Telecommunication Union, 2018).

In contemporary society, the Internet has revolutionized access to available information, which has reached an unprecedented dimension. Search engines allow the search for all kinds of information, instantly and from anywhere in the world. The diffusion of Information and Communication Technologies (ICT), the increasing transmission of information by the media and the phenomenon of networked societies contribute to a socio-cultural and digital transformation in the ways of thinking, communicating and acting (Ilharco, Hanenberg, & Lopes, 2018).

However, access to information made available through this medium is not yet democratized. In Portugal, the rate of citizens with basic knowledge of digital literacy was

estimated in 2019 to be around 50%, with around 70% of the population being Internet users and with 22% of people never having used this medium (European Comission, 2020). This phenomenon is part of the digital divide that encompass opportunities for different agents in society to access ICT and perform Internet-related activities, with elderly individuals being especially vulnerable to low levels of digital technology literacy (Udechukwu & Martín-Moreno, 2020).

Internet usage rate tends to be close to 100% in younger layers of society, while for age groups of 45 years or older this rate tends to decrease (PORDATA & INE, 2019). Moreover, it is estimated that around 33% of people aged 65 years old and over use the Internet, representing the lowest ratio of internet users by age cohorts (PORDATA & INE, 2019). On the other hand, it was found that the higher the level of complete education, the higher the Internet usage rates tend to be (Obercom, 2015).

Considering that the younger generations are the most familiar with new technologies, naturally, they will have more privileged access to information in the mass media, which is mainly available on the Internet. This could mean that the renovation of generations has the potential for future elderly generations to have more access to information, including health and lifestyle contents, and thus have a more democratized access to HL than the current elderly generation. Nonetheless, the understanding of the dynamics in the communication processes is increasingly relevant to understand how the populations access information, with a particular focus on the elderly.

1.1. Communicational Basis of Social Systems

In the literature, several theories support the idea of social constructionism. This concept is based on how communication between people catalyzes the creation of one's social reality which, in turn, is influenced by different social systems that are generated (Griffin et al., 2019). An example of this is the Coordinated Management of Meaning theory, with the authors' characterization of communication as not just information that is communicated but something that shapes and is shaped by episodes, relationships and selves that ergo form social worlds (Pearce, 2007, pp. xiv).

According to the System's Theory of Niklas Luhmann, society constitutes a social system organized exclusively by communications and is differentiated into other subsystems and whose environment is represented as everything that is not society itself (Luhmann, 1982). As a result, the environment of each subsystem comprises all the other subsystems of society. Therefore, the social system has been identified as being based on the dichotomy between system and environment. The system cannot exist without an environment, hence the former is constituted by the remnant differences from the latter (Luhmann, 2006).

The first contact that we, as species, have with a social system is established at the moment of our birth. Through this phenomenon, we are placed in a world with pre-existent structured structures in social spaces, such as the Family. The latter is a fundamental entity for the construction of social spaces by promoting the development of each member (especially the youngest) according to similar habitus (Lopes, 2015). Therefore, Family constitutes structures that are structuring, as they guide the development of specific patterns of thought and behaviour according to the socialization features of each social system (Bourdieu, 1998). This view is aligned with the work of Anthony Giddens, Structuring theory, in which it is described that social structures frame people's actions through communication, available resources and specific rules within one's social system, which consequently frame social structures (Giddens, 1984).

According to Bourdieu, an inherent characteristic of the Family is the tendency to perpetuate knowledge and other forms of dominant social class through the accumulation of capital from generation to generation. For example, this pattern is demonstrated by the success,

ambitions and attained educational levels achieved by children when compared to their parents' educational levels (Lopes, 2015).

In line with the social constructionism theories, Bourdieu has also focused on the dimension of the social structure, in his Field Theory, with the argument that it is possible to differentiate systems by comparison with other systems (Bourdieu, 1984). The difference between its constituent parts is mediated by the habitus, a set of predispositions that guides the preference of individuals for certain lifestyles, goods, or relationships (Bourdieu, 1984). For example, the preference for consuming certain types of cultural content can be a distinguishing factor between systems, such as watching a movie or assisting to a theatre piece (Gerador & Qmetrics, 2019). From a broader perspective, the consumption of given types of goods contributes to the distribution of cultural capital, which, like economic capital, social capital and symbolic capital, supports the formation of social spaces (Bourdieu, 1989).

The aforementioned specificities regarding social differences were further described in Luhmann's work, in which three types of societal differentiation were identified: segmentation, stratification and functional differentiation (Luhmann, 1977).

Through segmentation, it is possible to differentiate society in subsystems and environments identical to each other, such as villages or families (Luhmann, 1982).

Stratification differentiates society into unequal subsystems, according to a hierarchy, but maintains equality within each subsystem, according to the class or social strata of the constituent elements (Luhmann, 2006). In the Middle Age, social classes followed this type of differentiation, distinguishing between the Clergy, the Nobility and the People, similar to the contemporary upper, middle and lower classes. In a social subsystem, equality is made possible through the inequality demarcated by different classes and social strata (Luhmann, 2006).

In modern society, functional differentiation has become increasingly important. It also has its basis on the principles of equality and inequality but adds the attribute of functionality when more considerable importance is attached to functions performed by specific subsystems (e.g., politics, economics, education, Health, etc.) (Luhmann, 1995).

School, according to Pierre Bourdieu, is a fundamental institution that significantly contributes to the distribution of cultural capital, and as such, influences the structure of each social space (Bourdieu, 1998). In modern society, it significantly contributes to social mobility through the promotion of functional differentiation (e.g., awarding academic degrees). This last aspect is crucial in understanding the formation of subsystems in society. In this perspective, people adapt to a given subsystem according to their education and socialization with other people (Luhmann, 1995).

1.2. The Improbability of Communication

It was considered that the work of Luhmann in the Communication field was of great relevance for establishing a bridge with the Health Literacy dimension, by providing insights on the functioning of social systems, in how people interact with the other and with information, and how communication functions as a mediator for co-creation of reality (Meyer, Gibson, & Ward, 2015). A similar approach was also found in the application of Luhmann's works to Public Health, a field in which Health Literacy is considered a key concept (Van den Broucke, 2014).

The correct decoding of what is communicated is conditioned by the fact that communication is improbable, a theory supported by Niklas Luhmann (Luhmann, 2006). According to the author, there are three improbabilities of communication. The first improbability is that it is improbable that "one person can understand what another means" (Luhmann, 1981, pp. 123) due to agents of communication not sharing a collective conscience. The experiences of each individual encompass a unique set of expertise and knowledge, which makes each consciousness distinct and isolated from the others. Even if communication is set between individuals of a social system, who share a repertoire of common experiences within that system (e.g. through stratification or functional differentiation), the exchange of information might not result in the desired outcome (Berger & Calabrese, 1975).

The second improbability of communication relates to the conditioned access to the receivers, a consequence of the spatial and temporal dimension - "It is improbable that a communication should reach more persons than are present in a given situation" (Luhmann, 1981, pp. 123). With the digital revolution, information networks were further amplified by the Internet and mass dissemination of communication devices. Information became available to a more significant number of people without them being necessarily present in the same physical space. Also, since the invention of written language to the most recent media, information has found a way of not being exhausted from the moment it is transmitted, thus being available to be consulted later.

On the other hand, the immense universe of available information still does not guarantee that communication reaches the target audience, thus not guaranteeing the success of communication. This situation might be due to individuals having "different interests in

different situations"[2] (Luhmann, 2006, pp.42), with the possibility of not paying attention to what is being communicated. Considering that a great portion of communication is transmitted instantly, by radio, television, newspapers, mobile phones, Internet, among others, attention has become an increasingly disputed capital (Franck, 2019). To understand how media was consumed, the Uses and Gratifications theory was formulated by hypothesizing that information was consumed based on specific needs of each individual, having as basis one's need for gratifying their interests, motivations and needs (Katz et al., 1973). This gratification was suggested by the authors to be greatly influenced by one's experiences throughout their lifetime, with needs for consuming specific information being shaped according to the environment (Katz et al., 1973). Even if one specific message reaches a set of individuals, the produced effects would probably be different, similarly to the reasons that lead to the consumption of that type of information (Griffin et al., 2019). This process is aligned with Luhmann's third improbability of communication, as even if the message is received and understood by individuals, it is improbable that they will change their behaviour according to the transmitted information (Luhmann, 1992). That is, even if the previous improbabilities are overcome, with communication being accessed and understood, there are still no guarantees that it will be accepted or lead to behavioural change.

1.3. Communication in Health

Considering the improbabilities of communication, it is essential to understand the processes that make communication more probable. The specific application of Communication processes in Health has been gaining greater importance since its first discussion in the ’60-’70s, being identified as a sub-discipline of Communication Studies (Salmon & Poorisat, 2019). The role of Communication in Health has been discussed around the possibility of improving populations’ global health states through the understanding of how to improve communications efficiency and effectiveness (Thomas, 2006). Conjoint work to fulfil the aforementioned objective has been identified to be crucial between Health Communication, Health Education and Health Literacy due to the importance of informing and influencing individual decision-making to improve health and well-being (Allen, Auld, Logan, Montes, & Rosen., 2017).

For communication to be established there is a key medium that functions as a message decoder in specific sign systems that simultaneously creates and maintains social realities across systems – Language (Deetz, 2019). A typical example can be seen in the use of technical terms or jargon, corresponding to a given work field. In the case of the courts, the use of a specific language by legal professionals in communications with the general public can make it difficult for the transmitted content to be understood. For example, Portuguese courts have recently implemented the use of clear and straightforward language that could be understood by the general population, thus reducing the improbability of communication (Público, 2019). Similar to the courts' example in simplifying transmitted information, a doctor who communicates health information to another doctor will have a higher probability of communication than if he transmitted the same information on to an accountant. In the particular case of health professionals, this situation has already been identified as one of the issues in their relationship with patients (Paiva, Abreu, Azevedo, & Silva, 2019).

The use of technical language can result in inefficient communication, especially with people with low health literacy levels who experience difficulties in understanding and using health information (Nouri & Rudd, 2015). These difficulties may assume the form of failure in compliance with the treatment prescribed by the doctor or inaccuracies to understand the

information contained in information leaflets (Pedro et al., 2016). The adoption of an approach based on clear and simple language can be a facilitator for the understanding of what is communicated by all individuals in society. The optimal implementation of this measure could be essential for how people seek health information, either being the contact with health professionals or sources such as the mass media (television, internet, radio, press, etc.), leaflets, family members, friends, among others (Espanha et al., 2016).

A possibility to answer the obstacles mentioned above regarding the communication of health information is the training of health professionals in communicational skills (Paiva et al., 2019). A recent handbook illustrating best practices in health literacy advocates communication as a central factor in promoting the overall health status and well-being of individuals (DGS, 2019b). Towards this goal, the document presents guidelines such as the provision of relevant, reliable and trustworthy information; adoption of "accessible, assertive, clear and positive language"[2] (DGS, 2019b, pp. 29); inclusion of the individual in the therapeutic process by establishing a dynamic communication with their health care provider. However, in a health care model that aims to "invest in the ability of each citizen to carry out informed decisions about their health, throughout their life path"[3] (SNS, 2017b, pp. 8), it is necessary to consider that five out of ten Portuguese citizens present low health literacy levels (DSPDPS, 2019).

Low health literacy levels difficult access and understanding of health information, while making navigation in health services a more demanding exercise. Therefore, a challenge is posed to maintaining the principle of equity in healthcare provision (Sørensen et al., 2018). This aspect is of important relevance if one considers that some population groups have been identified as being more vulnerable to low health literacy levels, including individuals with financial difficulties, low social status, low levels of education and older age (Pedro et al., 2016; Sørensen et al., 2015). Nonetheless, regardless of the group to which information is directed, its transmission must be clear and perceptible to individuals of all ages.

In the literature, the most consulted sources in the search for health information were identified as the media (e.g., internet, social media, radio/television, etc.) and interpersonal

[2] Translation of the author's responsibility.
[3] Translation of the author's responsibility.

relations (e.g., doctors, family, friends, etc.) (Alduraywish et al., 2020). The broader options besides consulting health professionals have allowed people to participate in decision-making regarding their health and that of those they are responsible for by having access to more information, instantly (Oliveira & Espanha, 2018). This context has led to some health systems changing their approach to patient-centred, including patients in the discussion of options along the clinical process (e.g., diagnosis, linkage-to-care, treatment, etc.). Despite the benefits of individuals being able to access more health information, it must be noted that there is a risk in finding high-quality sources or understanding available information, including those from simplified nature (Wong & Cheung, 2019). There is also the danger of accessing misinformation or fake news regarding useless remedies to cure illness, conspiracy theories and propaganda that leads to risk behaviours that may harm one's health and those around him (Pennycook, McPhetres, Zhang, Lu, & Rand, 2020). The aforementioned risks regarding the tailoring of information were discussed to be as ancient as the Roman period, and possibly in the period before (Posetti & Matthews, 2019). These effects have been especially visible during the COVID-19 pandemic, caused by a new SARS-CoV-2 virus of which there was no previous scientific knowledge. From the early stages of the pandemic, the spread of false or misleading information has been a key factor that often led to anxiety, discrimination, the hoarding of goods, intake of harmful substances to cure or eliminate the virus (e.g. lye, chloroquine, etc.), conspiracy theories that foment abstaining from following health organizations' guidelines, among others (Barua, Barua, Aktar, Kabir, & Li, 2020; Pennycook et al., 2020). The large-scale dissemination of misinformation continues to urge governments and health entities to provide reliable, high-quality information to fight the spread of information that could undermine efforts in the fight against the disease (WHO, 2020b). An example of this could be verified in Portugal, with the conjoint effort between the national Directorate-General for Health (DGS) and Polígrafo (a fact-checking journal) to transmit media content previously verified by the health entity to fight misinformation and provide reliable information (DGS, 2020a).

The media comprise a strategic means for providing people with access to reliable information and thus empowering individuals by fostering health literacy (Oliveira & Espanha, 2018). One of the most recent campaigns in Portugal, launched by the Portuguese Directorate-General of Health (DGS) and the Portuguese Institute of Sport and Youth (IPDJ) - "Siga o Assobio" (Follow the Whistle) - aimed at increasing physical activity in the

Portuguese adult population. Content sharing was made possible, in large part, through the mass media (DGS, 2019a). However, this initiative was not limited to transmitting information. A formal impact assessment protocol was included to understand whether the message was adequately received and what were the effects on the recipients (DGS & IPDJ, 2020). It is not enough to know if people started to practice more physical activity. It is interesting to understand their attitudes and beliefs, motivations and intentions, recognition and affinity with what was transmitted to them (DGS, 2019a). Developing a cause-effect framework allows the tailoring of messages to be transmitted, thus allowing to increase the probability of people adopting behaviours according to the transmitted information. In this specific dimension, there is the potential to improve health gains for the population if the content is adapted to a target audience.

Initiatives such as the mentioned above are of the utmost importance in communicating health messages to inform and influence individuals to make decisions to improve their health, and that of those one is responsible for. Furthermore, these initiatives ought to consider the assessment of the diverse HL patterns in society to tailor what is communicated according to the specific population segments while providing a greater emphasis on the most vulnerable groups regarding low HL rates (Marques, 2015). This process comprises an important step in reducing the uncertainty of communication regarding the willingness to seek information about the other to try and establish a more common ground to effectively transmit information (Berger & Calabrese, 1975). Furthermore, it also allows for the adaption of the transmitted information according to the characteristics of the targeted population group (V. Rodrigues, 2018).

Several communication theories focus on describing how the type of media that people consume influence their agenda and ideas (McCombs & Shaw, 1972), and how the interactions with media and consumed information shapes action and creates reality (Playboy Magazine, 1969). In a health promotion perspective aligned with the fostering of health literacy, the media may greatly influence outcomes of one’s actions in its health and well-being, and ultimately in the global health state of those who share the same environment.

Chapter 3 – The Elderly Population Segment

1. The Elderly in Portugal

The global trend of ageing that has been in discussion for the past decades, gaining more relevance over time as societies' structures transition to a crescent elderly proportion. While projections indicate that, in 2019, people aged 65 years old represented around 9% of the total population, it is estimated that by 2050 the ratio will increase to 16% (United Nations, 2020). In Portugal, this is no exception, as data estimates (UN, 2019) for the year 2020 appoint Portugal as the 3rd country in the world with the highest percentage of people aged 65 years old or more (22.8%) and for 2050 in 7th place on the list, with 34.8%. This situation has become more accentuated in the past decades, much due to low birth rates and the increase in longevity (Golinowska et al., 2017).

In 2019, the average age of the resident population in Portugal was estimated at around 45.2 years, exceeding the average of 43.7 years by the European Union (PORDATA, Eurostat, & UN, 2020). The presented values are a result of the increase in average life expectancy at birth, which reaches 81.5 years in Portugal, thus surpassing the 81 years by the EU (PORDATA, Eurostat, & INE, 2020).

The population distribution in Portugal, by major age groups, presents two particularities according to the country's history. In 2019, the population segment between 0 and 14 years old had the lowest rate ever registered (13.6%), while the population between 65 years old or over had the highest expression (22.1%) (INE, 2020a). According to the demographic distribution between age groups, in 2019, there were 163.2 elderly individuals for every 100 young people. If corrective measures are not taken, a differential increase is expected by 2080, with estimates appointing for 300,3 elderly individuals for every 100 young people (INE, 2020a).

Demographic changes in society have reached unprecedented rates, which requires a higher capacity from each individual as part of a system to adapt to the surrounding environment. This shift also implies a change in societies for the empowering of this population segment in all its life spheres, from active citizenship, to economic sustainability, health maintenance, among others. The ageing process naturally leads to a gradual decline in the cognitive abilities of each individual. However, it is possible to mitigate this decline through

adaptation processes to the surrounding environment and healthier lifestyles, with health literacy having a pivotal role in this process (SNS, 2017a). Therefore, society must contribute to the adoption of measures that allow for an active and healthy ageing process, including the fostering of health literacy (Fonseca, 2018). By improving one's ability to adequately navigate the health system, providing access to essential health information and guidance on the best practices to follow, there is much to gain in populations' Health and maintenance of healthy life years in the future (Liotta et al., 2018).

1.1. Education Levels

In similarity with Family, School is also a fundamental entity in the construction of social spaces, as it contributes to a great extent for the cultural capital of each person. Therefore, it is important to briefly contextualize Portugal's recent history, from the past century to the present, to better understand events that influenced education patterns of the population, with a specific focus on the elderly.

Around a century ago, the national history was marked by the transition of a monarchy regime to the First Republic of Portugal. During sixteen years, the country had great social and political turmoil, having forty-six governments, eight presidents and many other political changes (Lúcio & Marques, 2010). Amidst this instability, Portugal's participation in the First World War led to the death of 1.341 Portuguese soldiers, with an additional 4.626 who were injured and 7.440 held as war prisoners (Público, 2018). The country suffered from the Spanish flu, with estimates appointing for around 195.7 deaths related to the pandemic for every 100.000 inhabitants (Nunes et al., 2018). By the end of this period, the cost of living was thirty times higher than in its early stages, which led to hunger and food scarcity (Lúcio & Marques, 2010). Illiteracy rates were reduced from 78,6% in 1900 to 67,8% much due to the efforts allocated to education during the regime period, with around 1.500 primary schools being created (Lúcio & Marques, 2010).

Between 1926 and 1933, Portugal was governed in a Military Dictatorship followed by a National Dictatorship marked by strong censorship. With the beginning of the *Estado Novo*, the country closed in on itself by adopting a nationalist policy. The country's resources were allocated to a great extent to expenses associated with the Colonial War, a conflict that lasted over a decade and led to the military deployment of 7% to 10% of the Portuguese population, comprising over 90% of young men in the ranks (Público, 2017). The funds that sustained the conflict fostered poverty in Portugal, comprising as much as 37% of the state budget (Público, 2017). The investment in economic development was directed to the primary sector, which set agriculture as the main source of sustenance for families who lived on the continent and for those who were assigned to fight in the colonies. Among other authoritarian and conservative policies, it is important to note that the immediate consequences of this period were experienced by today's elderly, with repercussions still being noted.

As at the beginning of the century, by the end of the regime, the population was mostly rural, families were often large and their subsistence was mainly based on agriculture and other natural resources collection activities (Magalhães, 2018).

According to the ISCED 2011, the primary education comprises the teaching of "basic education in reading, writing and mathematics and a basic understanding of some other subjects" (OECD, 2020, pp.20) for the typical duration of six years. Also, according to the classification system mentioned above, the secondary education levels comprise a more specialized subject-oriented teaching and higher education levels comprise a vocational preparation with professional knowledge (OECD, 2020). For this study the considered education levels are defined according to those currently implemented in Portugal: as basic education (1st Cycle (duration of four years), 2nd Cycle (duration of two years) and 3rd Cycle (duration of three years), secondary education (duration of three years) and higher education (European Comission, 2019).

There was significant progress in education, as illiteracy rates registered values down to 25,7% in 1970 (INE, 2015). These gains were much due to substantial investment in all levels of education, especially in elementary levels, with compulsory education, and later on the regime on the secondary and higher education. It has been registered that the focus on diminishing illiteracy was focused on providing enough culture for children to learn how to read, write and count, with no specific habilitations required for teachers to lecture (Magalhães, 2018; Martins, 2018).

Despite there were gains in reducing illiteracy rates, a significant part of the Portuguese population, especially in rural areas, was largely deprived of benefits that could have been provided in School, such as the development of cultural capital. The economic and social conditions experienced in the rural context did not allow for it to be otherwise. As such, the consequences of absenteeism and school drop-out (Magalhães, 2018) are still visible in contemporary society.

Studies carried out in Portugal indicate that the higher the level of complete education, the better positioned the individual will be in the societal structure (Diogo, 2015). Higher education levels are also related to increased wage-based income, the adoption of healthier

behaviours and better global health status (Brunello, Fort, Schneeweis, & Winter-ebmer, 2015; Yamashita et al., 2018). Also, considering the low education levels associated with the early twentieth century, conditions for social inequality were met. This framework was not due to a lack of people's motivation, interest or skills, but partly due to the socio-cultural context that the country had provided. One of the consequences of inequality's manifestation, in a general perspective, is an aggravated exposure to risk behaviours and environments that are harmful to health, throughout the entire life cycle (Yamashita et al., 2018). This situation led to several inequalities of which repercussions are still possible to observe in today's society, especially amongst the elderly population.

At the turn of the millennium, around 56% of the elderly had no attained education level and approximately 34% had completed the first cycle (PORDATA & INE, 2020b). At the end of 2019, the percentage of elderly individuals with no attained education level dropped to 20% and that of those who completed basic education increased to around 53% (PORDATA & INE, 2020b). Although there was a clear improvement in education for over twenty years, it is important to contextualize the presented values.

It must be noted that there has never been a national school rehabilitation program focused on the elderly in Portugal. Therefore, it is reasonable that the increase in education levels is likely to be attributed to the natural generational renewal. Nevertheless, the elderly represent the population segment with the lowest rates of complete education levels. There is still a great room for improvement in this area. Interventions in education, particularly in the Health dimension, may be an important contribution to improving the overall health status and well-being of Portuguese citizens.

1.2. Health Patterns

Considering the social determinants of health model, if the Portuguese population can have greater longevity than the average of other countries, it is mainly due to advances in Medicine, Education, and other areas that contribute to better well-being and quality of life. However, living longer is not the same as having a better or healthier living.

In comparison to other European countries, Portugal is highly ranked concerning the average life expectancy at birth and is ranked below the average regarding healthy life years expectancy at birth (PORDATA, Eurostat, & INE, 2020). For the latter, in 2018, it was estimated that the Portuguese population had less 5.4 healthy life years than the EU average (Eurostat, 2020a). Therefore, it is important to identify possible causes that may be at the root of the reduced healthy life years expectancy when compared to the European average.

As age increases, the prevalence of chronic diseases also tends to increase, which is a significant drive in the lessening of the average of healthy life years expectancy (A. Rodrigues et al., 2017). Education also has a strong influence on this indicator and the average life expectancy (OECD, 2019). It is important to understand these causalities and to investigate other potential causes that may be in the genesis of lesser longevity and healthy life years.

Non-communicable diseases were identified as one of the main drivers for the loss of both healthy life years and average life expectancy. It is estimated that these diseases are responsible for 88% of years lived with disabilities (SNS, 2017a) and for 71% of all worldwide deaths (United Nations, 2018). In Portugal, the associated mortality rate is estimated to be higher (86%) (WHO, 2018), with the leading causes of mortality being cardiovascular diseases, oncological diseases, chronic respiratory diseases and diabetes (DGS & IHME, 2018). The identified causes of death are linked to some major risk factors, associated with lifestyles and behaviours as mentioned above, such as alcohol consumption, lack of physical activity, smoking, and poor diet, among others (OPSS, 2018; Silva Da Costa, Ribeiro Da Silva, Jakubowski, & Nogueira, 2018). Moreover, recent evidence suggests that there is a link between people diagnosed with at least one disease and lower levels of health

literacy (the longer the duration of the disease, the lower the health literacy levels) (Carneiro et al., 2018; Veiga & Serrão, 2016).

In a recent study on multimorbidity, health patterns in the Portuguese population aged 25-74 years old suggest a rate of 38,3% regarding this indicator (Quinaz Romana et al., 2019). The concept, advocated by WHO, encompasses people with multiple health problems, many of them of extended duration (WHO, 2016b).

One of the major drivers for tackling the loss of healthy life years is to allocate efforts in activating individuals, through guideline-oriented training and tailored contents to fit different contexts and sociodemographic features that allow decisions towards healthier lifestyles and behaviours (Lopes, 2018; Silva Da Costa et al., 2018).

1.3. Response to Illness

A growing worldwide interest has been verified towards reducing the incidence, prevalence and comorbidities associated with NCD. For example, there is evidence of a significant link between the onset of Diabetes and risk behaviours (e.g., insufficient physical activity, inappropriate feeding practices, among others), apart from other genetic or environmental factors (Ely et al., 2017).

In the particular case of Diabetes, one of the most critical milestones in its history was set in Portugal, with the first diabetic patients association in the world being funded by Ernesto Roma in 1926. The training focused on people's capacitation to monitoring and caring procedures directed to Diabetes started to be provided (APDP, 2019). As a result, in the 1970s, this practice gained new impetus with the National Programme for the Prevention and Control of Diabetes, which is still in force as one of the DGS's twelve Priority Health Programs. This program has been a response mechanism to the Diabetes issue in Portugal, with most recent estimates pointing to a national disease prevalence of around 9.9% (type 1 and type 2 Diabetes) for individuals between 18 and 99 years old (OECD, 2019). Being one of the countries in the EU with the highest prevalence rate of Diabetes, health care costs associated with the disease were estimated to be around 740 million euros (DGS, 2020c). The adopted strategy aims at decreasing prevalence rates by systematizing and proposing intervention strategies, training and information collection/analysis with the potential to cover preventive measures, training of the general population and health professionals, raising epidemiological knowledge along with other measures (DGS, 2008).

Considering the high prevalence of Diabetes and its associated costs, it is important to highlight that about 90% of this pathology's incidence can be reduced by raising the general population's awareness to adopt healthy behaviours (adequate eating habits, avoidance of sedentary lifestyles, among others) (Lopes, 2018). The adoption of a people-centred approach for individuals who live with diabetes is crucial for their empowerment, by enabling them to monitor their blood glucose levels, manage risk behaviours and comply with therapies recommended by health professionals (Santos Cruz, Leitão, & Lopes Ferreira, 2016). Therefore, the quality of life of people with Diabetes is intrinsically linked with the quality of self-monitoring, self-care and awareness of risk behaviours.

With the surge of the COVID-19 pandemic by early 2020, a new virus (SARS-CoV-2) posed a global threat as all individuals were susceptible to being infected and no vaccines being available (WHO, 2020c). Despite vaccines and drug therapeutics having also been subject to discussion on the public and political agenda, the focus shifted to prevention as a primary strategy to diminish the virus transmission and control the epidemic curve by using Non-Pharmaceutical Measures (NPM) (Lopes, Middleton, Martin-Moreno, et al., 2020). COVID-19 posed a challenge not only to countries but to society as a whole, as even one SARS-CoV-2 infected person can originate outbreaks or lead to subsequent pandemic waves (Middleton, Lopes, Michelson, & Reid, 2020). Therefore, it is defended that only by ensuring preventive measures to be adequately tailored and disseminated through all the strata of society will it be possible to control the COVID-19 epidemic with most gains in Health (Lopes & McKay, 2020). Emphasis must be fostered in the sense that it is not enough to implement measures such as washing hands, respiratory etiquette, physical distancing and use of masks without it being followed by strong training campaigns on raising awareness on its importance and adequate compliance (Lopes & Middleton, 2020; Lopes, Middleton, Guchtenaere, & Hadjipanayis, 2020). People needed and will continue to need to learn how to implement new habits in their daily lives, how to employ each preventive measure correctly, how to act in personal and collective protection against COVID-19, in what is addressed as " the new normal" (WHO, 2020a). Globally, major health entities, national health systems and governments are being challenged to provide answers when there are none or scarce scientific responses (Lopes, Middleton, Martin-Moreno, et al., 2020). The implementation and dissemination of NPM have been showing to be a primary key in preventing both deaths and new infections in the current pandemic (Flaxman et al., 2020). It has been estimated that adopting preventive behaviours and changing lifestyles through NPM has the potential to save thousands of lives (Davies et al., 2020), if not millions, as the worldwide COVID-19 cases continue to increase, reaching over 50 million infection cases (Johns Hopkins Coronavirus Resource Center, 2020).

The effective transmission of information regarding the prevention of illness and health promotion and protection is seen as a basilar tool for populations to maintain and maximize gains in health (DGS, 2020b). Governments and other entities should continue to foster the dissemination of this information to the highest possible number of individuals in society until the whole population is covered. In addition to the provided information, it is also

important to verify the intervention's efficacy in activating individuals throughout society in changing behaviours and lifestyles based on informed decisions (DGS, 2020b). It is necessary to ensure that the information transmitted is easy to understand for the target population, ensure its reception, encourage the activation of individuals to improve their overall health state health and well-being, among other aspects (DGS, 2019b; Silva Costa et al., 2019).

To address the identified issues, the National Health Plan is an essential element in the country's policy guidance towards achieving goals in Health, based on four transversal strategic axes[4]: Citizenship in Health; Equity and Adequate Access to Health Care; Quality in Health; Healthy Policies (DGS, 2015). By empowering the citizen in participating in health decisions, there is a growing responsibility of being an active agent of health.

[4] Translation of strategic axes of the author's responsibility.

1.4. Portugal's Rural Background

In the early 20th century, around 13% of the Portuguese population lived in urban areas (Lúcio & Marques, 2010). This situation has only seen a dramatic change with the rural exodus between the 1950s and 1970s, despite more than half of the Portuguese population still living in rural areas (Magalhães, 2018; Ministério do Ambiente, 2015). Since then, the internal population movement from rural areas to urban areas has been increasing exponentially, such as the regional and infrastructural growth of cities.

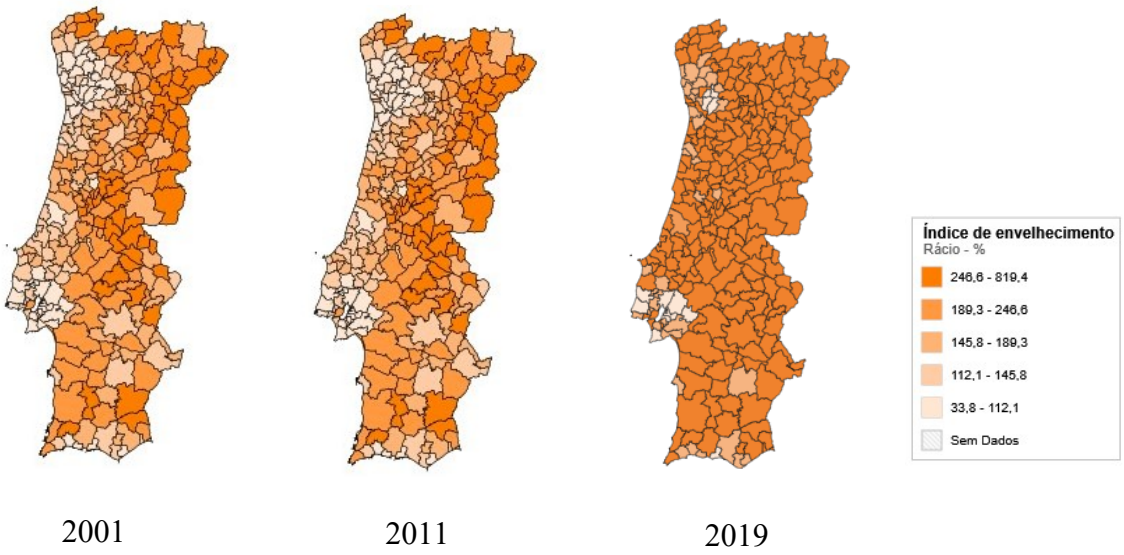
In a recent report on world cities, the United Nations (UN) estimates that in 2020 approximately 56% of the population lived in urban agglomerations (UN-Habitat, 2020). Furthermore, in 2017 it was estimated that the population density in urban areas was 19 times higher than in rural areas (INE, 2017).

Distinctions between urban and rural areas must be clarified, as defined by the Portuguese National Statistical Institute (INE) regarding the typology of urban areas (INE, 2019). According to the INE, territorial units are determined at the parish level by the following nomenclature[5]: predominantly urban area (PUA), moderately urban area (MUA), predominantly rural area (PRA).

The total resident population in Portugal was estimated to be of 10.295 million inhabitants in 2019 (INE, 2020e). Of these, estimates also appointed for 7.5 million people living in predominantly urban areas, of which 4 million lived in the cities of Lisbon and Porto (UN, 2018). Around 1.5 million people lived in moderately urban areas, and the remaining 1.3 million people lived in predominantly rural areas (INE, 2020e). The latter registered, in 2017, twice the ageing rate compared to predominantly urban areas and moderately urban areas, with 293 of 308 municipalities registering an increase in the ageing index (Figure 3) (INE, 2017).

[5] Translation of the author's responsibility.

Figure 3 - Ageing index: Map of Portugal municipalities for the years 2001, 2011 and 2019.



Source: (PORDATA & INE, 2020a)

For the current pilot study, individuals in the sample lived in three parishes in the municipality of Torres Vedras at the time of data collection, thus being important to know some socio-demographic characteristics of the following areas: *União das Freguesias de Carvoeira e Carmões* (UFCC), *União das Freguesias de Dois Portos e Runa* (UFDPR) and *Freguesia de Turcifal* (FT).

The ageing rate in the municipality of Torres Vedras (154,7%) is slightly higher than in Lisbon (139.8%), its corresponding district (INE, 2020b, 2020c). In the three parishes mentioned above, it is important to outline the evolution of this indicator. The most recent data were collected from censuses corresponding to the years of 1991, 2001 and 2011. Ageing rates for the municipality of Torres Vedras, per each of the years mentioned above, corresponded to 76.5%, 111.1% and 128%, respectively (CMTV, 2015). At the parish level, data for the UFCC (126.6%; 187.7%; 207.5%) and for the UFDPR (131.7%; 196.5%; 207.5%), present values that show an increasing demographic ageing rate (CMTV, 2015). The FT (97.5%; 130.1%; 126%) presented a lower demographic ageing rate, with values having stabilized in the last two censuses (CMTV, 2015).

Before the typology's revision of urban areas, in 2014, parish unions did not exist. Therefore, in the years before 2014, the existing parishes were known as: *Freguesia da Carvoeira*, *Freguesia de Carmões*, *Freguesia de Dois Portos*, *Freguesia de Runa*, *Freguesia de Turcifal*. It is important to verify the changes in the typology of urban areas in these parishes resulting from the 2014 INE revision (INE, 2009, 2014). The Parish of Turcifal was considered as PRA and is currently a PUA. The UFCC is presently considered as PUA and in the period before the review, it was composed of the Parish of Carvoeira and Parish of Carmões, both recognized as MUA. The UFDPR is currently considered as PRA and it was previously formed by the Parish of Dois Portos, considered as PRA, and by the Parish of Runa, as MUA.

The recognition of Torres Vedras as a city was officially declared in 1979, being the first town to obtain this classification after the 25th of April 1974 (CM-TVedras, 2019). The parishes in the municipality were mainly composed of population settlements in villages. Therefore, it is natural that the elderly population that is currently living in the Parishes mentioned above, especially the ones that have been living in these areas since the early twentieth century, are individuals with a rural background.

Part II – Empirical Data

Chapter 4 – Planification of Empirical Work

1. Methodology

1.1. Research Context

To understand the dynamics of overall health status and well-being it is necessary to assess how individuals access, understand, evaluate and use health-related information (Okan et al., 2019). In addition to one's motivations, interests, skills and knowledge, it is important to perceive how the environment in which people live influences health and well-being. For example, by analyzing dimensions regulated to a vast extent by governmental entities, such as Education, Politics, Economy, Justice, among others. Health literacy emerges as a concept that encompasses the multidimensionality of the aforementioned factors. However, research in this field of study was found to be still poorly documented in scientific work conducted in Portugal. Also, major national studies on the measurement of HL were made between 2014 and 2016, which poses frailty for data to correspond to the country's present reality (Espanha et al., 2016; Pedro et al., 2016; L. Saboga-Nunes et al., 2014). The situation is even less documented, at the national level (Serrão, Veiga, & Vieira, 2015; Sousa, 2016) and even an international level (Chesser et al., 2016), when focused on the elderly population, especially for individuals with strongly ruralized experiences. With strong evidence suggesting the elderly population as one of the most vulnerable groups to low HL levels, it is important to study the HL dynamics in this population. This way, it will be possible to tailor measures that strengthen overall health status and well-being in dimensions such as literacy, numeracy, health literacy, among others. Therefore, it is important to account for both the past and present of the elderly Portuguese population, to be able to improve health gains in the future.

Today's elderly population was once the young population who lived in a period when Portugal was a highly ruralized country with low education levels, two factors commonly associated with low levels of health literacy (Aljassim & Ostini, 2020). To better understand the health literacy dynamics of ruralized elderly populations, it is also important to assess and identify which social determinants of health have the most influence on this indicator. Therefore, the object of study is the assessment behaviour of two HL measurement tools in

a ruralized elderly population while also identifying relations between obtained HL levels and social determinants of health.

To guide the research towards contributing for both existing knowledge and the identified gaps regarding the subjects mentioned above, a leading question was defined as follows: “What is the measurement behaviour of the HLS-EU-PT and NVS tools in the assessment of HL levels in a ruralized elderly population”. To ensure its guidance component for the research, this question was thought and designed to be clear, feasible and relevant (Campenhoudt, Marquet, & Quivy, 2019).

1.2. Empirical Research Strategy

The current research focuses on studying a cohort of individuals who share similar characteristics, namely the elderly with strongly ruralized backgrounds. Considering the main features being studied in this research, measuring their HL levels and assessing social determinants of health, it was considered that the most suitable methodological strategy should be based on mixed methods. Several authors have supported this methodology in the last decades (Johnson, Onwuegbuzie, & Turner, 2007) for having a pivotal role in: optimizing the sample by recruiting and selecting participants according to adequate criteria; assessing tools and its behaviour and results fidelity; enriching the analysis and interpretation of results (Collins, Onwuegbuzie, & Sutton, 2006). By combining complementary approaches of quantitative and qualitative nature, it is possible to establish a validation process for the research (Campbell & Fiske, 1959). This design was achieved by following a descriptive-exploratory approach which consisted of information from participants through two HL measurement tools and a questionnaire survey that served as numerical data collection (Bryman, 2012). No hypotheses were defined due to the nature of this approach, which aimed to explore and describe possible patterns and cause-effect relationships that could provide insights for future research (Nilsen, Bowler, & Linnell, 2020).

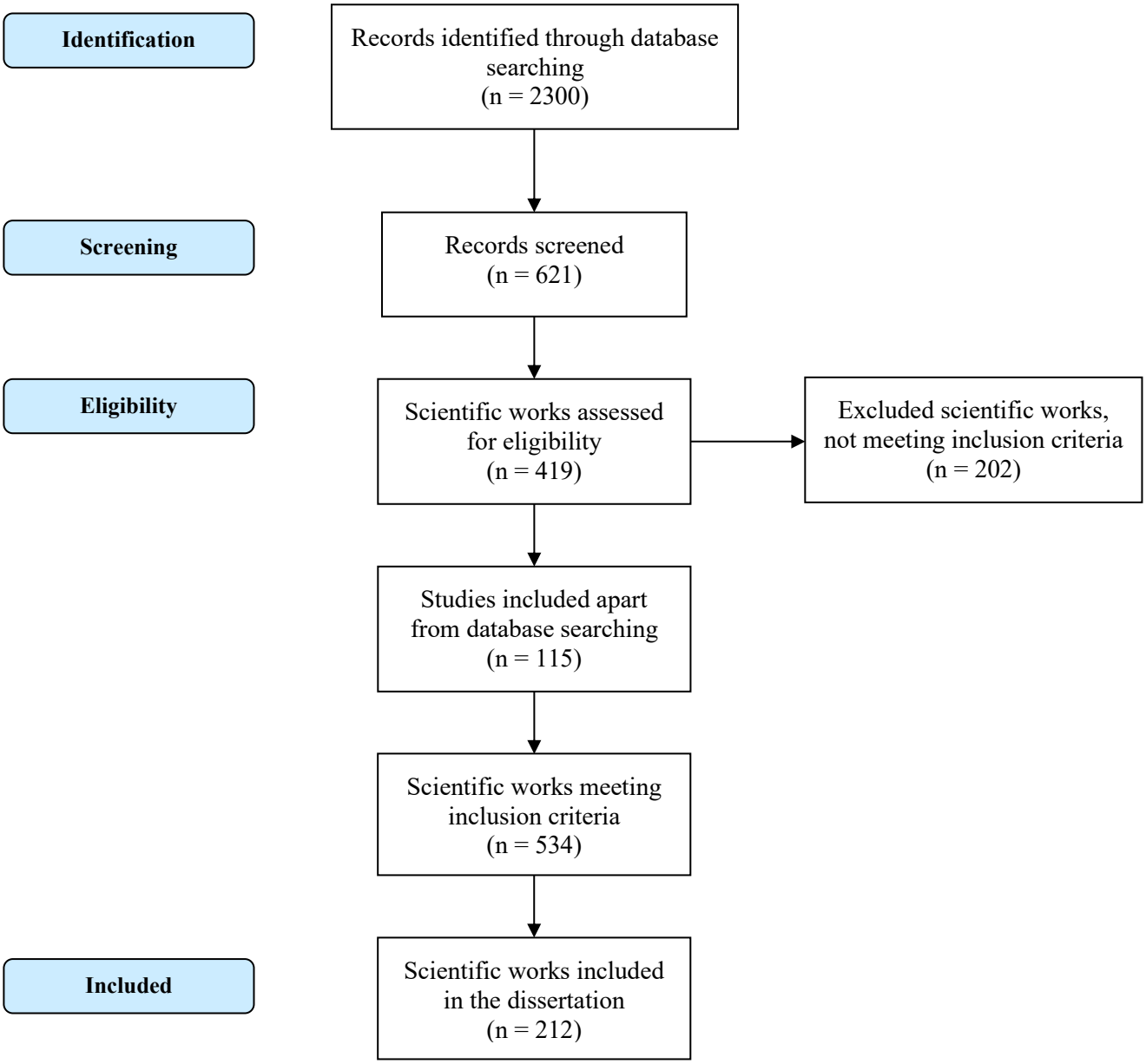
It was considered that, with the basis of literature and personal observations, the low digital literacy of the population in the study could represent a challenge in obtaining broad electronic responses. To surpass eventual digital barriers, presential data collection was chosen as an adequate method for the selected sample characteristics. Also, needed resources to collect secondary data (e.g., time, money, etc.) were weighed, with the decision of including a small sample size that could provide feasibility insights for future researches with similar methodology (Thabane et al., 2010). To achieve this purpose, the nature of the current pilot study aims at: assessing the feasibility of applied tools behaviour in the measurement of HL levels; understanding how used resources could fit a broader study; identifying issues in data collection and studied variables (Thabane et al., 2010).

1.3. Secondary Data

The first phase of the research strategy was based on an exploratory documentary search, collection and analysis to establish a general literature review on the studied domains (Bell, 2010). The documental analysis of scientific works (journal articles, technical reports, statements, thesis, etc.), official documents and others, allows establishing a knowledge basis apart from the researcher's interpretations (Campenhoudt et al., 2019). This process serves as guidance to define research questions, determine an adequate methodology to attempt to answer the questions and formulate findings from existent theory studied by other authors (Freixo, 2018).

Three major study fields were considered for the basis of the literature review, being reflected in the literature review chapters, focusing on the concept of Health Literacy, its relevance regarding communicational contexts and an understanding of the elderly population in Portugal. An online literature search was conducted using keywords relevant for this research: Communication, Health Literacy, Elderly. The following terms were also searched: Elderly Health Literacy, Health Communication, Elderly Health. The search for bibliographic elements was conducted both in Portuguese and English, in the following databases: Google Scholar, PubMed, B-On, Elsevier, Scielo. Institutional websites were also consulted at both national (e.g., DGS, SNS, INFARMED, INE, PORDATA, etc.) and international (e.g., WHO, UN, OECD, Eurostat, etc.) levels. In this research, according to inclusion and exclusion criteria (Table 1), 621 bibliographic elements were collected (Figure 4), of which only 534 were relevant to this investigation. Of the latter, only 212 were included in the dissertation. The construction of a theoretical framework based on these bibliographic elements allowed to establish relationships between identified data in the literature and empirical data (Bryman, 2012).

Figure 4 – Adapted selection process PRISMA[6] flowchart of scientific papers to be included in the research



[6] **Source:** http://www.prisma-statement.org/PRISMAStatement/FlowDiagram (Moher et al., 2009)

Table 1 - Inclusion and exclusion criteria for scientific papers in the present research

Inclusion Criteria: • Search results for terms related to "Health Literacy", "Health Promotion", “Communication”, "Health Communication", “Elderly”, " Elderly Health", “Elderly Health Literacy”. • Publications since 2015. **Exclusion Criteria:** • Publications prior to 2015, except for scientific work whose data are the most up to date in the literature.

1.4. Primary Data

Primary data comprises empirical information collected by the researcher, commonly obtained through measurement instruments as a quantitative method (Walliman, 2017). This process allows collecting data regarding determined questions, aiming at registering direct answers from participants that express their opinions, behaviours and other features (Prodanov & Freitas, 2013).

Data collection was achieved by using two HL measurement tools (Appendix A) previously tested and applied in international/national contexts – the HLS-EU-PT (Luís Saboga-Nunes & Sørensen, 2013) and NVS (Paiva et al., 2017). Both tools have been translated, validated and applied to samples that comprised individuals from the general population in Portugal. Authorizations were obtained for the use of both tools in this research (Appendix B and C).

Also, a complementary questionnaire survey with questions regarding social determinants of health was produced to establish a relationship between theory and empirical data from the HL measurement tools (Quivy & Campenhoudt, 2005).

Through the articulation of these three tools and its application in the sample, it was possible to collect and analyze data on the studied dimensions from the HLS-EU (HLS-EU Consortium, 2012): General Health Literacy (Gen-HL), Health Care Health Literacy (HC-HL), Disease Prevention Health Literacy (DP-HL) and Health Promotion Health Literacy (HP-HL).

Collected primary data from the three instruments were registered in physical copies, as raw material, being available for consultation by the jury. The treatment of this data was conducted by programming the results into Excel and SPSS V26 software. This method allowed to proceed with the qualitative and quantitative analysis of collected answers in the three instruments.

1.4.1. HLS-EU

According to a study based on the review of health literacy models that existed until 2012, by Sørensen K. et al., an integral model of the most relevant dimensions of HL was proposed (Sørensen et al., 2012). Also, an HL measurement tool was developed (HLS-EU-Q47), covering the General HL index and three other indices regarding major Health Dimensions such as Healthcare, Disease Prevention and Health Promotion. It is composed of forty-seven questions structured according to the dimensions mentioned above, featuring how the participants access, understand, evaluate and apply health information in the different HL dimensions in their daily life, resulting in twelve HL sub-dimensions (Figure 5).

Figure 5 - Dimensions and sub-dimensions of the Health Literacy model for the HLS-EU, according to the HLS-EU Consortium

	Access/obtain information relevant to health	Understand information relevant to health	Process/appraise information relevant to health	Apply/use information relevant to health
Healthcare	Ability to access information on medical and clinical issues	Ability to understand medical information and derive meaning	Ability to interpret and evaluate medical information	Ability to make informed decisions on medical issues
Disease prevention	Ability to access information on risk factors for health	Ability to understand information on risk factors and derive meaning	Ability to interpret and evaluate information on risk factors for health	Ability to make informed decisions on risk factors for health
Health promotion	Ability to update oneself on determinants of health in the social and physical environment	Ability to understand information on determinants of health in the social and physical environment and derive meaning	Ability to interpret and evaluate information on health determinants in the social and physical environment	Ability to make informed decisions on health determinants in the social and physical environment

Source: The original figure was retrieved from the article highlighting the design and development of the HLS-EU-Q (Sørensen et al., 2013).

Subsequently, the tool was updated to a new version – the HLS-EU-Q86 (HLS-EU Consortium, 2012; Sørensen et al., 2015) -, which included 39 additional questions and a complementary HL measurement tool - the NVS. The tool's evolution comprised the inclusion of topics such as the participants' use of health services, health behaviours, self-assessment of health status, sociodemographic and socioeconomic characteristics (Sørensen et al., 2015). Its first application was conducted in 2011, hence being denominated as HLS-EU survey, having been developed within the scope of "The European Health Literacy Project". It was initially applied in eight European Union countries (Austria, Bulgaria, Germany, Greece, Ireland, the Netherlands, Poland and Spain), with each national sample being composed of around 1000 respondents with 15 years old or over. Data collection was

conducted through indirect observation by using a questionnaire survey in a paper format to register the respondents' opinions. This register followed a Likert scale methodology, with the options being numbered from 1 to 5, where 1= “Very easy”, 2= “Easy”, 3= “Difficult”, 4= “Very difficult” and 5= “Don't know / Don't answer”.

The HLS-EU-PT results were distributed according to a scoring system with values between 0 and 50, that classifies the different levels of health literacy, as follows: “Inadequate” (0-25); “Problematic” (26-33); "Sufficient" (34-42); “Excellent” (43-50). For index calculation, the values used in the Likert scale were inverted, where 1= “Very difficult”, 2= “Difficult”, 3= “Easy”, 4= “Very Easy”. The option 5= “Don’t know / Don’t answer” represents a possibility for participants to register their opinion about questions that they do not know how to answer or do not want to answer. Moreover, this option was included in the survey as a validation criterion for the statistical analysis of HL index scores, as a minimum number of valid answers was required for the different indices to be calculated into scores.

The scores for the HL indices calculation must be determined by using the following formula (Figure 6):

Figure 6 - Formula for the HL indices calculation of the HLS-EU, according to the HLS-EU Consortium

$$Index = (mean - 1) * (\frac{50}{3})$$

Where:

Index..... is the specific index calculated

Mean.....is the mean of all participating items for each Individual

1 .....is the minimal possible value of the mean (leads to a minimum value of the index of 0)

3 .....is the range of the mean

50.....is the chosen maximum value of the new metric

Source: The original figure is from the Technical Report regarding the first application of the HLS-EU in eight EU countries (HLS-EU Consortium, 2012).

The limit of valid answers for HLS-EU-PT index calculation was defined as being at least 80% of valid answers in each HL dimension. For the HLS-EU-PT, the minimum recommended number of valid answers is as follows:

1. General HL - in a total of 47 questions, a minimum of 43 valid answers must be registered.
2. Healthcare HL - in a total of 16 questions, a minimum of 15 valid answers must be registered.
3. Disease Prevention HL - in a total of 15 questions, a minimum of 14 valid answers must be registered.
4. Health Promotion HL - in a total of 16 questions, a minimum of 14 valid answers must be registered.

However, it is noted in the tool's guidelines (FAQs) (L. Saboga-Nunes, 2019) that there are situations in which these criteria may need to be reviewed, for example, in homogenous samples. Considering that the studied sample in the research is comprised of a specific segment of the population, its homogeneity leads to the need to adopt the least conservative approach for HL index score calculations. Therefore, the criteria applied for the analysis of the obtained results in this tool was the same used in the original version of the tool (Figure 7):

1. General HL - in a total of 47 questions, a minimum of 38 valid answers must be registered.
2. Healthcare HL - in a total of 16 questions, a minimum of 13 valid answers must be registered.
3. Disease Prevention HL - in a total of 15 questions, a minimum of 12 valid answers must be registered.
4. Health Promotion HL - in a total of 16 questions, a minimum of 13 valid answers must be registered.

Figure 7 - Minimum number of valid answers to calculate scores in the four HL indices of HLS-EU, according to the HLS-EU Consortium

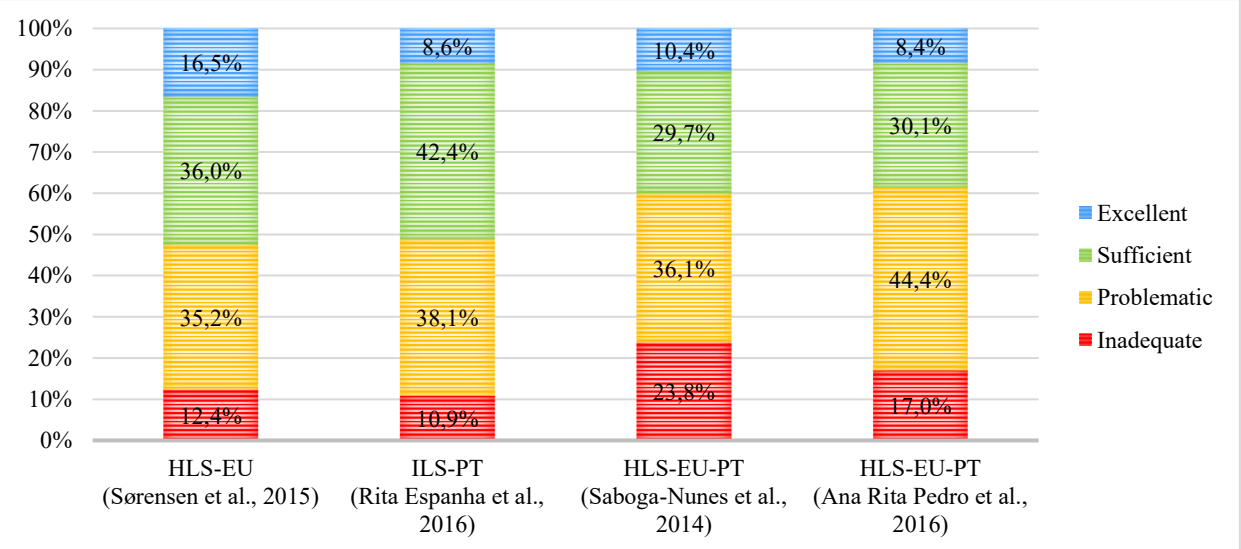
ITEM	General-HL	HC-HL	DP-HL	HP-HL
Q1.1	✓	✓		
Q1.2	✓	✓		
Q1.3	✓	✓		
Q1.4	✓	✓		
Q1.5	✓	✓		
Q1.6	✓	✓		
Q1.7	✓	✓		
Q1.8	✓	✓		
Q1.9	✓	✓		
Q1.10	✓	✓		
Q1.11	✓	✓		
Q1.12	✓	✓		
Q1.13	✓	✓		
Q1.14	✓	✓		
Q1.15	✓	✓		
Q1.16	✓	✓		
Q1.17	✓		✓	
Q1.18	✓		✓	
Q1.19	✓		✓	
Q1.20	✓		✓	
Q1.21	✓		✓	
Q1.22	✓		✓	
Q1.23	✓		✓	
Q1.24	✓		✓	
Q1.25	✓		✓	
Q1.26	✓		✓	
Q1.27	✓		✓	
Q1.28	✓		✓	
Q1.29	✓		✓	
Q1.30	✓		✓	
Q1.31	✓		✓	
Q1.32	✓			✓
Q1.33	✓			✓
Q1.34	✓			✓
Q1.35	✓			✓
Q1.36	✓			✓
Q1.37	✓			✓
Q1.38	✓			✓
Q1.39	✓			✓
Q1.40	✓			✓
Q1.41	✓			✓
Q1.42	✓			✓
Q1.43	✓			✓
Q1.44	✓			✓
Q1.45	✓			✓
Q1.46	✓			✓
Q1.47	✓			✓
Minimum number of valid answers for index calculation				
Item Number	38	13	12	13
Convenient metric of indices				
Minimum	0	0	0	0
Maximum	50	50	50	50

Source: The original figure is from the Technical Report regarding the first application of the HLS-EU in eight EU countries (HLS-EU Consortium, 2012).

This tool was developed to measure health literacy levels in the general population, with the possibility of it being adapted to a European context, as the structure of the items can be tailored to the needs of each country (Sørensen et al., 2015). The malleability of the HLS-EU-Q86 is closely related to its additional 39 complementary questions, aiming to collect data regarding social determinants of health. In the European context, these were selected and included in the tool through the analysis of scientific literature in the health literacy field of research. Some of the social determinants of health literacy in the HLS-EU-Q86 are: education level, monthly household income, age, self-assessment of health status, among others (HLS-EU Consortium, 2012). Due to the broad range of factors that can be considered social determinants of health, the tool can only capture a small frame in a given sample, depending on the studied determinants.

The HLS-EU survey has been translated and validated for several languages and different countries, including Portugal (Espanha et al., 2016; Pedro et al., 2016; L. Saboga-Nunes et al., 2014). To better understand the current situation in Portugal regarding health literacy levels in the general population, it is important to compare its index performance with international values.

Graphic 1 - General Health Literacy Levels: Comparison of results from the HLS-EU survey tool between international and national samples



Source: Data organization by the author.

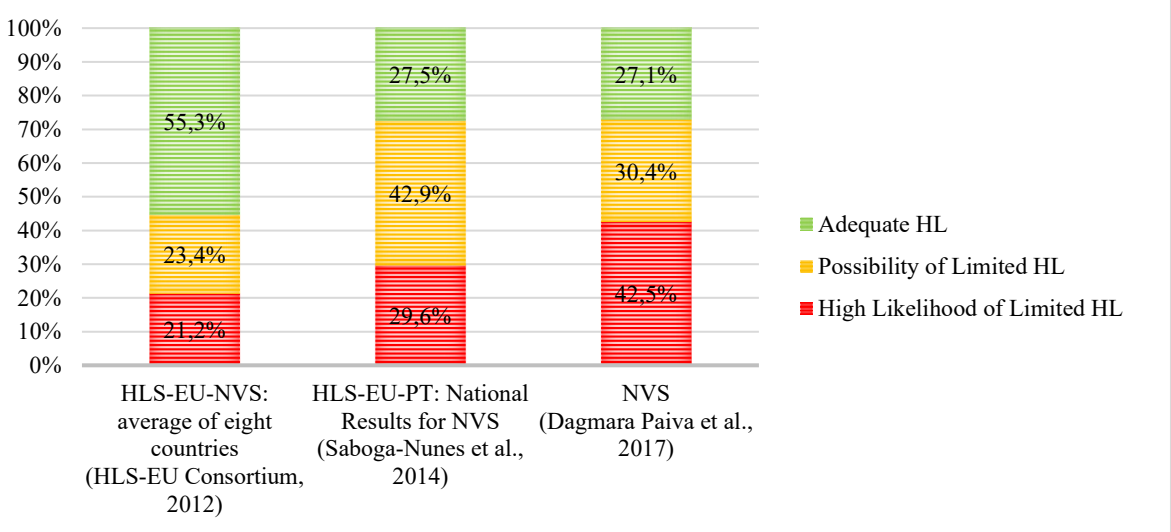
When comparing the average results obtained in the HLS-EU survey by Sørensen et al., with studies conducted in Portugal using translated and validated versions of the tool (Graphic 1), it is possible to formulate some readings. For example, in the group of people with Limited HL (considered as the sum of the "Inadequate" and "Problematic" categories), the HLS-EU countries average is 47.6%, a value that is similar to the 49% of ILS-PT (Espanha et al., 2016). For the remaining studies, the averages are higher than the presented ones, between 59.9% (Luís Saboga-Nunes et al., 2016) and 61.4% (Pedro et al., 2016), which implies a difference over 10% compared to the HLS-EU and ILS-PT average. Despite the different results verified in the presented studies, the Portuguese population has shown lower health literacy levels than the average of the HLS-EU countries. In contrast, national studies report "Excellent" HL levels between 8 and 10%, a much lower percentage than the average HLS-EU countries (16.5%).

1.4.2. NVS

The inclusion of the NVS tool in the HLS-EU-Q86 was due to its characteristic of rapid measurement of HL levels by assessing literacy and numeracy skills applied to nutritional information, allowing for the comparison and validation of results obtained between both tools (HLS-EU Consortium, 2012).

The results of this tool are determined by the number of correct answers, in a total of six questions, which correspond to the following scoring system: "High Likelihood of Limited HL" (0-1 correct answers); "Possibility of Limited HL" (2-3 correct answers); "Adequate HL" (4-6 correct answers).

Graphic 2 - Health Literacy Index: Comparison of NVS tool results in international and national samples



Source: Data organization by the author.

The results of the NVS application for the international sample (HLS-EU Consortium, 2012) show an almost symmetrical division between the results of "Adequate HL" (55.3%) and the set of "Possibility of Limited HL" and "High Likelihood of Limited HL" (44.6%) (Graphic 2). Results are very different when compared to the NVS applications in Portugal (Paiva et al., 2017; Luís Saboga-Nunes, Sørensen, & Pelikan, 2014), which present lower HL levels, with registered rates of "High Likelihood of Limited HL" between 29.6% and 42.5%.

A study (Veiga & Serrão, 2016) was also identified as having applied the NVS in an elderly cohort, in which it was registered that 80% of the sample had limited HL levels and the remaining 20% had adequate HL levels. However, the results for this study are not represented in the graphic above due to not being possible to differentiate the Limited HL result into the two corresponding dimensions (High Likelihood of Limited HL and Possibility of Limited HL).

On the other hand, the NVS results in Portugal have shown very similar results for the general population, with rates of "Adequate HL" between 27.1% e 27.5%, respectively. When compared to the average values of the HLS-EU survey, it is possible to observe a percentage decrease in the order of 25%. In comparison to the NVS results for the general population in Portugal, the NVS application for an elderly cohort registered lower HL levels.

When considering the lower outcomes in national studies one must be aware that around 40% of Portuguese citizens (over 18 years old) is estimated not to be able to understand nutritional information concerning food labelling, with this rate being aggravated up to 60% for individuals with lower education levels (DGS & ISAMB, 2019; S. Gomes, Nogueira, Ferreira, & Gregorio, 2017).

1.4.3. Questionnaire Survey

Following the exploratory documental analysis and considering that both HL measurement tools (HLS-EU-PT and NVS) were initially designed for the general population, it was considered important to collect specific data from the studied population segment. This allows gathering relevant information related to the participants' experiences and behaviours about particular issues related to social determinants of health by providing answer options, when viable, for them to express their opinions besides the pre-determined structured questions (Daymon & Holloway, 2011). It was considered that a questionnaire survey was an adequate method for the data collection related to the selected population segment and to explore relevant social determinants of health in the context of this research. For this purpose, a questionnaire guide and survey questions were prepared with basis on the Literature Review and exploratory unstructured interviews with experts from the field of Public Health, Education and Communication.

The pre-test survey was initially constituted of four batteries: Initial Data (Gender and Marital Status); Sociodemographic characteristics of the participant; Health and Lifestyle Information; Literacy and Digital Inclusion. It aimed to outline the type of information about health and lifestyle registered by the participants, their motivations to search for health-related information, how information is accessed, understood and used, among other social determinants of health (age, education, etc.). Each battery was designed to collect relevant information to study the sample's HL levels, sociodemographic data, daily activities, knowledge of health information, literacy and digital inclusion. The questions that comprise each battery were also aligned with the works being developed on the Public Health Unit of the Institute of Health Sciences of the Catholic University of Portugal.

The survey's pre-test was conducted with eight individual interviews, following the produced questionnaire guide. The choice of participants was based on inclusion factors, such as: participants must have ages equal to 65 years old or over, enrolled in Day Care Centers, living in pre-selected Parishes in the Municipality of Torres Vedras (UFCC, UFDPR, FT), with a history of living in rural areas. The following exclusion factors were considered: people with cognitive alterations, people who have lived for a more extended

period in an urban environment rather than in rural contexts, individuals with cultural variations that differ from that of endogenous populations.

Before starting the pre-test application of the questionnaire survey, an Informed, Free and Clarified Consent to Participate in Research Studies under the Declaration of Helsinki and the Oviedo Convention was given and read to each participant (Appendix D). The document was signed, in duplicate, by the author of the study and participant, with each party having a copy of the paper.

The pre-test questionnaire surveys were conducted by interview and recorded, being aligned with the authorization in the written consent. The scripts transcription was carried out to guarantee the validity of the interviews and collection of all relevant information for the preparation of the final survey (Maxwell, 2013). Based on this information, it was possible to identify questions formulated in unclear language or unrecognized terms, which were corrected and adapted to be univocal regarding its interpretation by different people (Quivy & Campenhoudt, 2005). It was also possible to ascertain new information, which was mentioned in more than one interview and proved to be valid to be included in the final survey. Having gathered the participants' opinions regarding the questions on the pre-test survey, the first version of the questionnaire survey was produced (Appendix E). This process encompassed the exclusion and addition of questions and response options in all the batteries. At the end of this process, a Survey Application Manual was produced, in which the instructions for each of the questions were defined (Appendix F). The purpose of this manual was to support and guide participants on how they can provide their opinion in the survey.

The final version of the survey resulted in a total of forty-six items, with items that allow multiple and open-ended responses, when possible, to enable participants to answer with a different alternative to the ones presented. In every question, it was included an option of "Does not know / Does not answer" to allow participants skipping questions if needed.

The starting battery consists of two questions that collect data on the participants' gender and marital status (Appendix G - Table 25).
The second battery comprises twenty-seven questions and includes a set of the participants' sociodemographic characteristics (Appendix G - Table 26), such as: age, characterization of

the environment in which they live and have lived, if they are independent or if they need help from caregivers (formal or informal), their education level and that of their parents (during their childhood), among others.
The third battery consists of seventeen questions and is focused on the participants' interactions with health and lifestyle information (Appendix G - Table 27). For example, to understand their digital literacy skills, exposure to the media, the knowledge of what type of health and lifestyle information they had, how did they access information, among others.

To organize data according to the studied dimensions in this research, questions in all the batteries were attributed to forty-five indicators, according to the following working concepts: Sociodemographic Data (total of ten indicators (Appendix G - Table 28)); Daily Activities (total of thirteen indicators (Appendix G - Table 29)); Literacy and Digital Inclusion (total of eleven indicators – Table 30); Knowledge of Health Information (total of eleven indicators (Appendix G - Table 31)).

1.4.4. Population and Sample

For data collection, the population included in the sample followed the inclusion as mentioned above and exclusion criteria used for the pre-test survey (Table 2) (Ferreira & Carmo, 2008), as follows:

Table 2 - Inclusion and exclusion criteria for individuals in the research sample

Inclusion Factors	Exclusion Factors
✓ Aged 65 years old or more. ✓ Enrolled in a Day Care Center. ✓ Living in Parishes from Torres Vedras' Municipality. ✓ Mostly rural background.	✓ Cognitive impairment. ✓ Mostly urban background. ✓ With cultural aspects different from those of the endogenous populations.

Source: Data organization by the author.

The sample's nature is of non-probability by convenience (Etikan, Musa, & Alkassim, 2016), as it does not consider all the elderly in each of the selected parishes, but solely the available and accessible participants (Prodanov & Freitas, 2013). This decision was due to the need for testing a representative sample of individuals that may provide insights into populations with whom they share common characteristics (Campenhoudt et al., 2019). Also, it was not the objective of this pilot study to have a sample with regional or national representativeness. Considering that this research is a pilot study, it aims to allow for the identification of trends and results that can be used in probabilistic samples for larger, more representative samples (Bowers, House, & Owens, 2011).

1.4.5. Data Collection Process

For the collection of empirical data for the research, three Day Care Centers in different Parishes from the Torres Vedras municipality were selected: *Centro de Dia da Associação de Socorros da Freguesia da Carvoeira* (CD-ASFC) (Carvoeira Parish Aid Association Day Center); *Centro de Dia da Freguesia de Dois Portos* (CD-FDP) (Dois Portos Parish Day Center); *Centro de Dia da Associação de Socorros da Freguesia de Turcifal* (CD-ASFT) (Turcifal Parish Aid Association Day Center). The choice of these places for the survey application was due to the convenience of finding individuals that met the inclusion and exclusion criteria in a single location.

The directors of the three Day Care Centers were contacted for the purpose and outlines of the research to be explained, along with obtaining the authorization for the survey application in each institution (Appendix H).

An application plan for the survey was designed with the support of the Technical Directors in each institution, which resulted in the following procedure:

1. The first contact with the Day Care users in each institution should take the form of a brief presentation of the research.

2. Identification of individuals who meet the inclusion and exclusion criteria.

3. Defining the survey application period to minimize activity disruptions in the normal functioning of the institution.

4. Obtain informed consent authorizations (identical to that used in the pre-test phase) from the Day Care users for their participation in the study. In this process, the theme and background of the research were explained, along with the possibility of voluntary participation and without prejudice if people did not want to participate, ensuring the confidentiality and anonymity of all participants. The particularity of the research being conducted with multiple institutions was also emphasized to guarantee collective anonymity. There was also a guarantee that the collected data would be of exclusive use for this research.

5. The choice was given to all individuals concerning their participation in the three tools for registering their answers with or without the support of the author of the study. The opportunity to have direct and indirect administration was considered important to overcome difficulties such as the participant not being able to read or complete the survey.

6. The application of the questionnaire survey, HLS-EU-PT and NVS was carried with the presence of the author of the study, in the order mentioned above.

The period for the data collection had the extent of three months, from March to May, in 2019. The average period for the completion of this process was of one month for each of the Day Centers.

From the data collection process, fifty questionnaire surveys were collected, along with fifty HLS-EU-PT valid surveys and forty-one NVS valid surveys. It was not possible to validate nine NVS surveys due to the difficulty of nine participants in reading the information required by the tool.

1.5. Research Limitations

The reading of this research's results and conclusions must consider some limitations. The sample is composed of a small group (fifty participants), especially when compared to the sample dimensions of similar studies in Portugal. The data collection process having been carried out in three Day Centers in the municipality of Torres Vedras results in low statistical representativeness when compared to the national panorama. Nonetheless, despite the sample not having national representativeness in Portugal, it is a valid sample and provides insights for what should be studied in the targeted population in future research. The choice of participants to integrate the sample only considered one type of support for the elderly in the Health Care and Social Services dimensions – Day Care Centers. Thus, the sample does not capture individuals who do not require this type of support or who have access to a different kind of social response.

The average time for each interview was registered to be of one hour and fifteen minutes. The length of the interview is partly explained by the length of the HLS-EU-PT tool and the questionnaire survey. On the other hand, the natural decline of cognitive abilities resulting from ageing has led to the need for support and monitoring when collecting data. The support focused, in large part, on the reading or repetition of each question, whenever requested by the participants.

The analysis of registered responses for the HLS-EU-PT and the Questionnaire Survey, being tools broadly based on the participant's self-assessment and declared information, is subject to the collect results different from reality. It must be noted that the declared responses of participants may be influenced by the social desirability bias, which indicates that people tend to express a more positive image of themselves when answering questionnaires. Therefore, the presented scenario for the HLS-EU-PT and Questionnaire Survey responses is possibly the most positive scenario, with results that correspond to reality being always below the declared answers.

Chapter 5 – Data Presentation and Analysis

1. Results of the Questionnaire Survey in the research

1.1. Sociodemographic Data

The research sample was constituted of fifty participants, of which thirty-six (72%) were female and fourteen (28%) were male (Table 3). It is important to note that, in the moments of social interaction with the elderly, as far as it was possible to ascertain, no process of mental degradation process was verified. All the elderly in whom it was possible to identify cognitive difficulties, the appearance of dementia and other usual situations associated with older age, were not included in the sample.

Table 3 - Sociodemographic characterization of the research sample

	Male		Female		Total	
	n	%	n	%	n	%
	14	28,0	36	72,0	50	100,0
Age (years)						
65-74 years old	5	35,7	10	27,8	15	30,0
75-84 years old	6	42,9	17	47,2	23	46,0
≧ 85 years old	3	21,4	9	25,0	12	24,0
Marital Status						
Married	10	71,4	11	30,6	21	42,0
Single	3	21,4	2	5,6	5	10,0
Widowed	1	7,1	23	63,9	24	48,0
With whom do participants live						
Spouse	10	71,4	11	30,6	21	42,0
By Oneself	4	28,6	12	33,3	16	32,0
Other Family Members	0	0,0	11	30,6	11	22,0
Other	0	0,0	2	5,6	2	4,0
Education Level						
Did not attend school	3	21,4	6	16,7	9	18,0
2nd Grade	3	21,4	3	8,3	6	12,0
3rd Grade	1	7,1	11	30,6	12	24,0
4th Grade	6	42,9	15	41,7	21	42,0
2nd Cycle	1	7,1	0	0,0	1	2,0
Secondary School	0	0,0	1	2,8	1	2,0

Source: Data organization by the author.

The participants' **age** declarations (Table 3) were registered to be between 65 and 92 years old, with an average of 79.28 years old and a standard deviation of 6.81 years. The operationalization of this indicator was based on the segmentation by age groups of 10 years, a criterion used by the EU Statistics Office (Eurostat, 2019). The sample was distributed among the following groups: 65 to 74 years old; 75 to 84 years old; 85 years old or more.

The age group with the lowest representation is that of participants aged 85 years old or more (24%), while the group with the highest representation is that of participants aged 75 to 84 years old (46%). The age group of participants aged between 65 and 74 years old represents 30% of the sample.

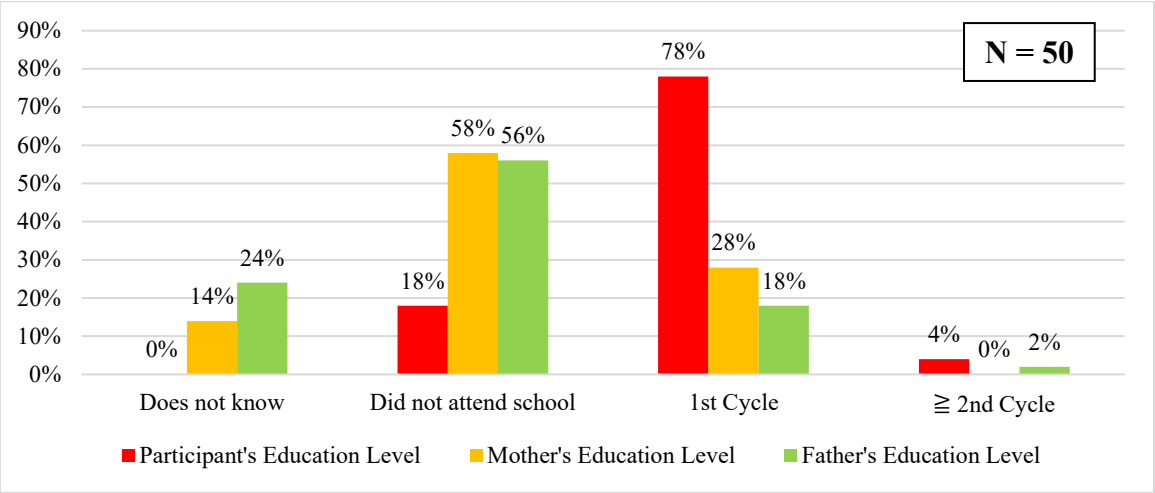
Regarding **marital status** (Table 3), the majority of participants declared either being married (42%) or widowed (48%), with a lower representation of those who registered to be single (10%).

It was registered **with whom do participants live** (Table 3), in which all married participants declared that, by the time of the data collection process, they lived only with their spouse. The remaining sample reported either living by oneself (32%), living with other family members (22%) or living with other social agents other than those listed (4%).

The participants' **education level** (Table 3) was registered, with 78% of the sample declaring to have completed at least one year of basic education. Given the high proportion of participants in the basic education category, data on this indicator was operationalized to present each grade year. It was also registered that 42% of the sample completed the 4th grade, 24% completed the 3rd grade, and 12% completed the 2nd grade. No participants have registered to have only completed the 1st grade, thus being excluded from this indicator. Overall, participants in the sample declared to have low levels of education attained.

A significant percentage of the participants stated that they had not attended school (18%), and the remaining 4% were divided between the frequency of the 2nd cycle and secondary school.

Graphic 3 – Declared levels of education attained by participants and their parents



Source: Data organization by the author.

For this research, it was considered that the 1st Cycle of School comprised the 1st, 2nd, 3rd and 4th grades of education, while the subsequent educational stages were identified as being equal or above 2nd Cycle.

A significant percentage of the sample was **unable to specify** (Graphic 3), in detail, the last completed year of schooling that their parents had completed. The distribution of responses for this category was 14% for the mother's education level and 24% for the father's education level.

The proportion of participants' declarations who **did not attend school** (18%) (Graphic 3) is smaller when compared to that of their parents, which is registered to be between 56-58%.

On the other hand, close to 80% of participants reported having completed at least one year of schooling in the **1st cycle** (Graphic 3). The distribution of responses for the same category was 18% and 28% for the father and mother's education levels, respectively.

A residual percentage of participants reported having completed at least one year of schooling corresponding to the **2nd cycle** or **secondary school** (4%) (Graphic 3). There was a single case where a father attended one year of schooling in this category.

All participants noted that the location in which they lived, at the moment of data collection had more similarities with rural areas than with urban areas. Of these, 50% reported never **having worked or lived in an urban environment** (Appendix I - Graphic 15). On the other hand, 26% of participants reported having lived or worked on an urban environment for less than fifteen years and the remaining 24% in a period equal to or greater than fifteen years. This indicator aimed to filter which participants were more distant from the communication processes that occur in urban environments.

Regarding the participants' **self-assessment about their health status** (Appendix I - Graphic 16), there was a proportional distribution of responses between the "Very Good / Good" and "Very Bad / Bad" category sets. However, at the extremes of the possible answers, only one participant (2%) reported having a "Very Good" health status. In contrast, five reported having a "Very Bad" health status (10%). There was also a higher number of participants who considered having a "Good" health status (29%) when compared to the ones who corresponded to "Bad" (20%). The remaining participants reported having a "Fair" health status (39%), the most common response among all participants. One participant did not answer the question.

Regarding the **daily use of medications** (Appendix I - Graphic 17), at the time of data collection, 10% of the participants reported not using any medication. In comparison, 40% registered a daily use between one to four medication(s). Around a third of the sample reported using between five to eight medications, and the remaining 22% reported using more than nine medications.

It was registered that 16% of the participants declared to have a **history of smoking** (Appendix I - Graphic 18, 18.A). In comparison, the majority (84%) indicated that they had never smoked. Of the participants who indicated having had a history of smoking, 50% had a lifetime smoking exposure less than or equal to ten pack-years and the remaining 50% had a lifetime smoking exposure greater than ten pack-years. The smoking rate in the sample is below the national average, partly explained by the majority of the sample being constituted by women, which to a large extent did not smoke in younger life stages, especially in rural contexts.

1.2. Daily Activities

Close to two-thirds of the participants (60%) declared to have **autonomy in performing their daily activities** (Appendix I - Graphic 19). The remaining noted the need for support from other people to perform their daily activities (40%). From the participants who registered the need for support in their daily activities (N = 20), the most cited **social agents who provided this support** (Appendix I - Graphic 19.A) were as follows: Family (14/20), Social Solidarity Private Institution (IPSS[7]) (12/20) and Friends (1/20). The IPSS encompasses the Day Care Centers' entity designation in Portugal.

The frequency of response related to **daily activities performed by participants** (N = 50) (Appendix I - Graphic 20) was registered and organized according to an ethogram of declared daily behaviours. Housework was the category with the highest frequency of mentions (30/50), followed by activities such as gardening (12/50), cooking (8/50), IPSS activities (8/50). A significant percentage reported doing nothing outside of IPSS activities (7/50) or watching television (3/50). The remaining activities were distributed in the "Other" category (2/50), including reading and sewing. The declared daily activities greatly reflect the asymmetric gender distribution, as by the time the participants were young, housework and related activities were mostly attributed to women, partly explaining the current activities.

The **participants' daily leisure activities** (N = 50) (Appendix I - Graphic 21) most frequently cited were watching television (19/49) and resting (17/49). The remaining responses were distributed by the following categories: "Reading" (7/49), "Housework" (4/49), "Walking" (4/49), "IPSS activities" (3/49), "Socializing in the café" (2/49), "Crochet" (2/49), "Gardening" (2/49) and "Other activities" (3/49). The latter was composed of activities such as listening to the radio, going through photographs and doing crosswords. One participant did not register daily leisure activities.

[7] Translation of the author's responsibility. The original denomination for the IPSS corresponds to *Instituição Particular de Solidariedade Social*.

As for the **daily meal frequency** (Appendix I - Graphic 22), the most substantial proportion of the sample (46%) indicated having four daily meals, followed by 30% having five or more daily meals. A significant percentage registered to have three daily meals (22%), while 2% declared having two or fewer daily meals.

The **daily consumption of fruit pieces** (Appendix I - Graphic 23) was registered, with 10% of the sample having indicated not to eat fruit on a daily basis. Close to a third of the sample (26%) stated the daily consumption of one piece of fruit, 40% consuming two pieces of fruit, 18% consuming three pieces of fruit and 6% consuming four or more pieces of fruit.
Regarding the **daily consumption of vegetables** (Appendix I - Graphic 24), the vast majority of the participants (92%) registered to eat vegetables one to three times a day. In comparison, the remaining (8%) indicated not to consume vegetables on a daily basis. Data collection for this indicator was set as portions to provide an estimate of the daily consumption frequency of vegetables.

Participants' declared **daily water intake** (Appendix I - Graphic 25) was registered to be less than or equal to 0.5L in 32% of the sample, with 28% drinking 1L, 26% drinking 1.5L and 14% drinking 2L or more. As this indicator comprises a self-assessment of participants, there may have been the difficulty of objectifying concrete values. In the referred dietary aspects by participants, the consumption of liquids is very frequent formats other than water, namely fruit, vegetables, soup, and other beverages (e.g., wine).

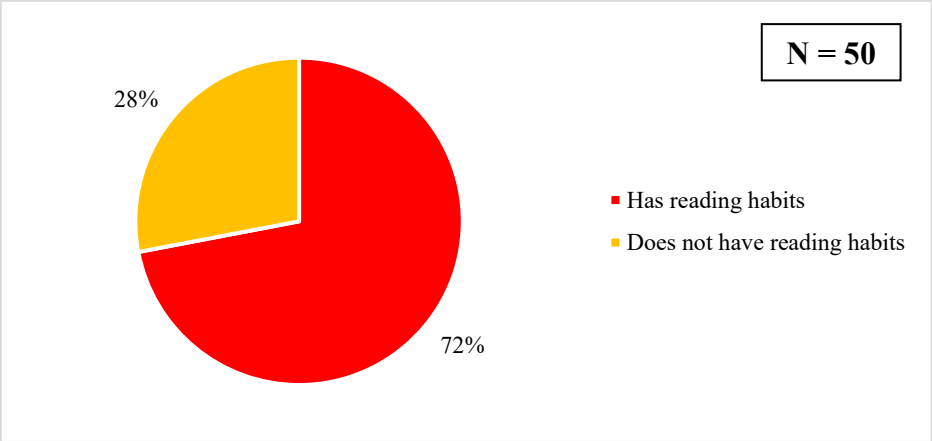
Regarding the **consumption history of alcoholic beverages** (Appendix I - Graphic 26, 26.A), 84% of the participants reported not to consume this type of drink, in contrast to the remaining 16% who consume it daily. Of the participants who claimed to consume alcoholic beverages, 50% reported drinking one glass a day, and the remaining 50% is equally divided between “two glasses” and “three or more glasses”. It must be noted that the registered values are declarations, hence there is the possibility that the consumption of alcoholic beverages may be higher than reported, with basis on the social desirability bias.
The average unit corresponding to 200 cm^3 per glass was considered as a metric. The purpose of data collection in this indicator is to survey typical behaviour patterns.

Concerning the **places where participants usually have their meals** (Appendix I - Graphic 27), the vast majority declared to do it at home and in the IPSS settings (96%), with one participant claiming to have meals at home and restaurant and another participant registering to have meals at home, IPSS and restaurant. Concerning the **responsible figure for preparing the participant's daily meals** (N = 50) (Appendix I - Graphic 28), the most cited case was the IPSS (49/50), which can be explained by all the participants being enrolled in a Day Care Center, having access to the daily meals services. For the situations outside the Day Care Center, it was also indicated to be of the participant's responsibility (21/50) and also of the responsibility of a participant's family member (20/50).

The frequency of the **most commonly consumed food at the participants' homes** (N = 50) (Appendix I - Graphic 29) was registered. The foods with the highest cited rates in the sample were the following: bread (43/50), cookies (42/50), fruit (41/50). There was also a significant percentage in the following categories: cheese (31/50), vegetables (29/50), sweets (25/50), yoghurts (24/50). The remaining foods were distributed in the categories of sausages (11/50), butter (3/50), milk (2/50) and other foods (7/50) such as cereals, soup, beans, fish and meat.

1.3. Literacy and Digital Inclusion

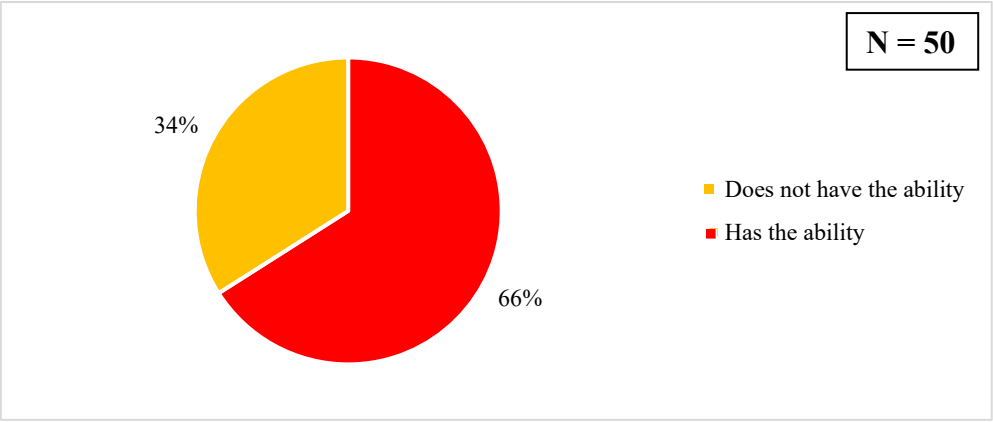
Graphic 4 – Declared reading habits



Source: Data organization by the author.

In the literacy dimension, close to a third of the sample reported not having **reading habits** (Graphic 4), in contrast to the remaining participants, who reported having the habit of reading magazines and/or newspapers whenever possible. The survey of data from this indicator aimed at knowing the participants' reading ability.

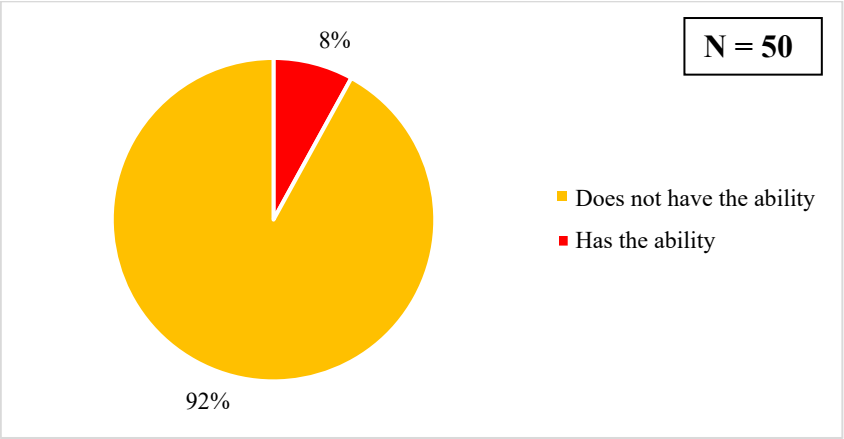
Graphic 5 – Declared ability to write letters/messages



Source: Data organization by the author.

About two-thirds of the participants (66%) reported having the **ability to write letters/messages** (Graphic 5), in contrast to the remaining (34%) who stated to not having that ability.

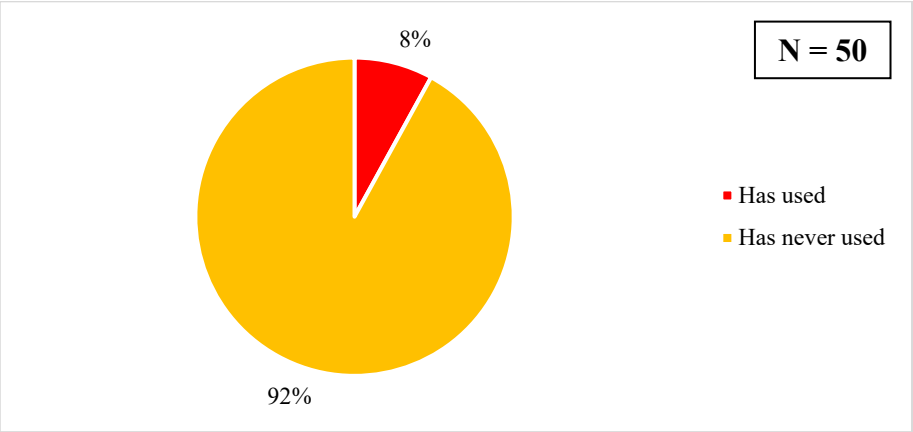
Graphic 6 – Declared ability to use the Internet



Source: Data organization by the author.

A vast majority of the sample (92%) reported not having the **ability to use the Internet** (Graphic 6). In comparison, the remaining (8%) declared to have the ability to use it. On the sample, 76% of the participants reported having the **support of a figure in the search information on the Internet** (Appendix I - Graphic 30, 30.A) for them, if needed, while 24% did not have this support. Despite data showing that the majority of participants have support in the search for information on the Internet, it is still necessary to study whether the elderly feel the need to ask for help in this search, to know details about the effective use of this resource. Participants who declared having support from social agents in searching for information on the Internet (N = 38) mainly cited members of their family, as follows: children (20/38), grandchildren (10/38), daughter-in-law or son-in-law (5/38), other family members (7/38). Support from workers in IPSS (1/38) was also cited along with other figures not specified (3/38).

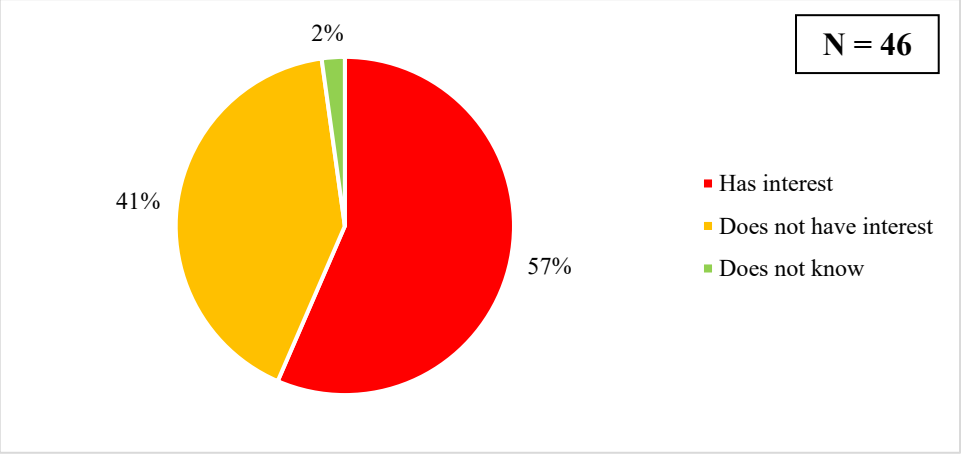
Graphic 7 – Declared history of computer use



Source: Data organization by the author.

Regarding the **history of computer use** (Graphic 7), 92% of the participants indicated that they had never used this device. In comparison, 8% reported having used it at least once.

Graphic 7.A – Declared interest in knowing how to use a computer



Source: Data organization by the author.

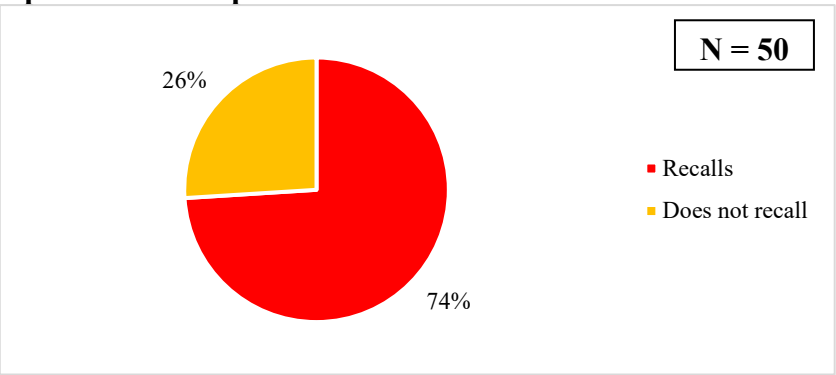
Of the participants who indicated that they had never used a computer, 57% reported having an **interest in knowing how to use** this device (Graphic 7.A), in contrast to 41% who reported having no interest in knowing how to use it. The remaining 2% reported not knowing how to answer. Similarly to the collected data on the ability to use the Internet, it is suggested that there is much room for improvement for the elderly in knowing how to use a computer.

Concerning participants declarations of **owning a telephone and/or mobile phone** (Appendix I - Graphic 31, 31.A), it was registered that 48% of the participants only had a telephone, 28% only had a mobile phone, 18% had both devices, and 6% had neither device. Of the participants who registered having a mobile phone (N = 23), all declared to used it to receive and/or make calls (23/23), with some used it to send messages (2/23) and to browse the Internet (1/23).

Regarding the **daily exposure time to television content** (Appendix I - Graphic 32), 60% of the participants reported watching this type of content for less than two hours, 26% for two to four hours, 10% for more than four hours and 4% do not watch television.
Concerning the **daily exposure time to radio content** (Appendix I - Graphic 33), 24% of respondents reported listening to this type of content for less than one hour, 16% for one to two hours, 12% for more than two hours and 48% reported not listening to the radio.

1.4. Knowledge of Health Information

Graphic 8 – Participants declared recall about health information

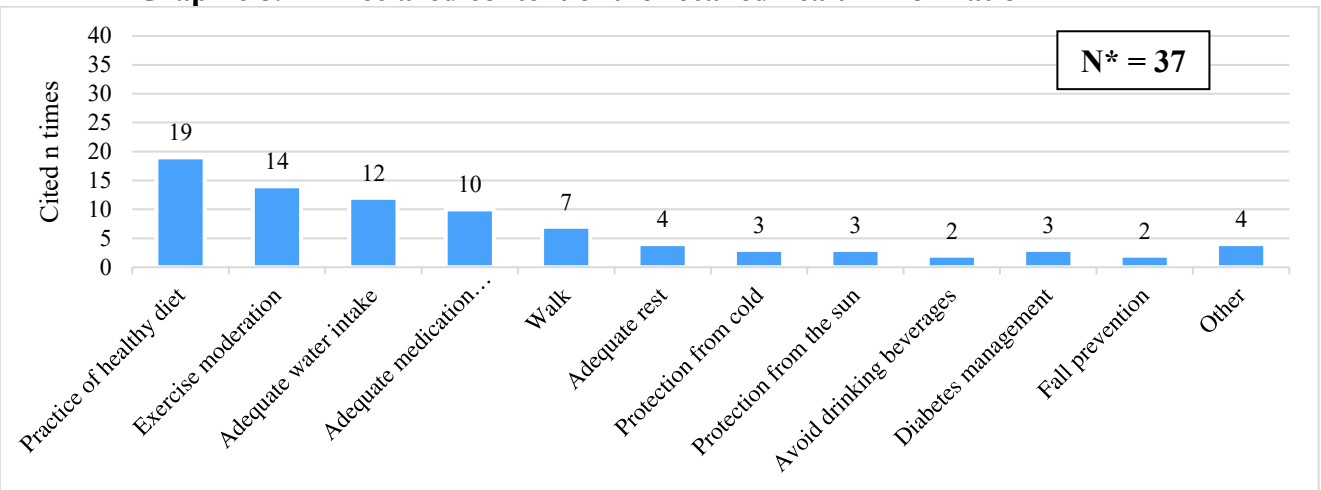


Source: Data organization by the author.

It was registered that 74% of the **participants recalled health information** (Graphic 8) at the time of data collection, while 26% did not remember any information of this type.

From participants that declared to recall health information (N = 37), the most cited **contents of the recalled health information** (Graphic 8.A) were the following: the practice of healthy diet (19/37), exercise moderation (14/37), adequate water intake (12/37) and adequate medication management (10/37), walking (7/37), having adequate rest (4/37). The remaining categories were distributed by protection from the cold (3/37), protection from the sun (3/37), avoiding drinking beverages (2/37), diabetes management (3/37), prevention of falls (2/37) and other contents (4/37).

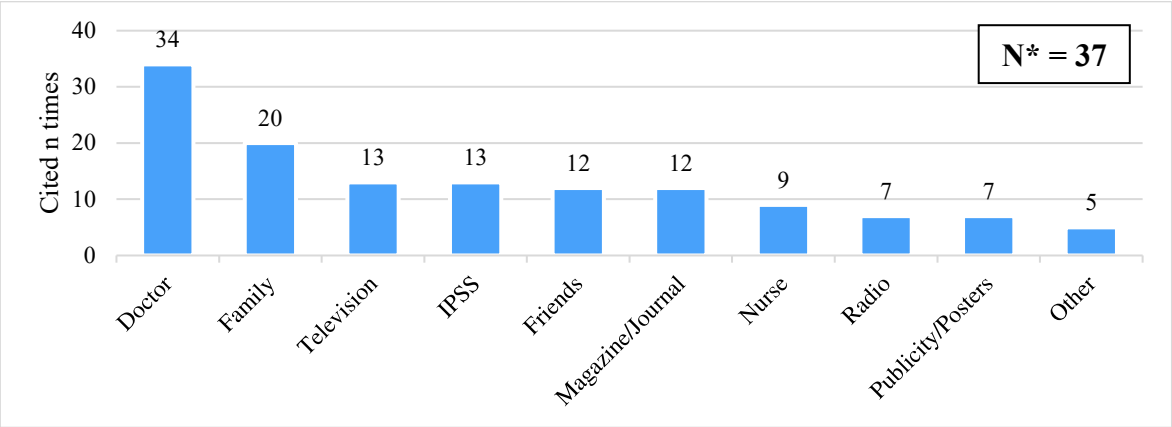
Graphic 8.A – Declared content of the recalled health information



Source: Data organization by the author.

***Note:** N = number of participants

Graphic 8.B – Declared sources that transmitted the health information

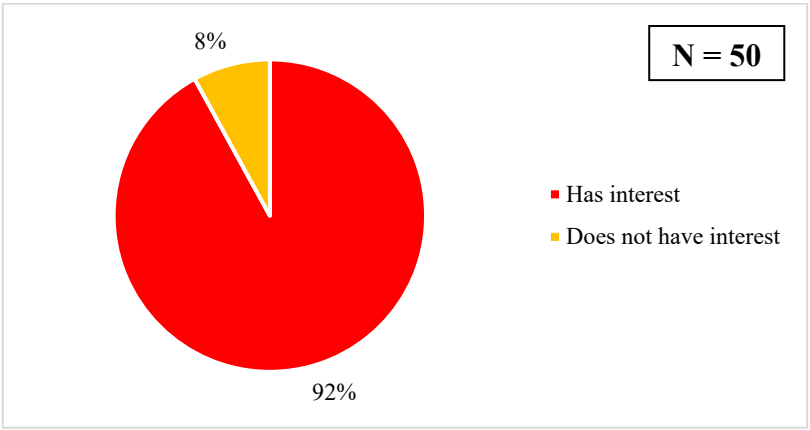


Source: Data organization by the author.

***Note:** N = number of participants

From the patients that declared to recall health information (N = 37), the most cited **sources that transmitted health information** (Graphic 8.B) were as follows: doctor (34/37), family (20/37), television (13/37), IPSS (13/37), friends (12/37), magazine/journal (12/37). The remaining were identified as nurse (9/37), radio (7/37), publicity/posters (7/37) and other sources (5/37), including the Internet, hospital and health centre.

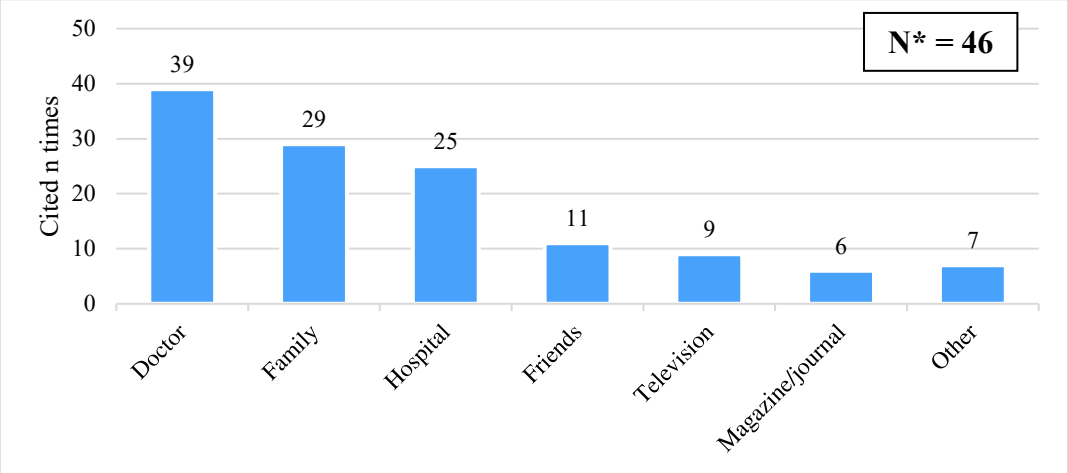
Graphic 9 – Declared interest in searching for health information



Source: Data organization by the author.

When questioning participants regarding their **interest in searching for health information** (Graphic 9), 92% of the sample reported having active interest and 8% registered to not having interest.

Graphic 9.A – Declared used sources for the search of health information



Source: Data organization by the author.

***Note:** N = number of participants

From the participants who declared to have interest in searching for health information (N = 46), the **used sources for the search of health information** (Graphic 9.A) most frequently cited were as follows: doctor (39/46), family (29/46), hospital (25/46). It was registered that they also resort to friends (11/46), television (9/46), magazines/journals (6/46) and other sources (7/46), such as the Internet, health centre and IPSS.

As for **knowledge about the National Health Plan** (Appendix I - Graphic 34), 80% of the participants declared that they did not know about it. The remaining participants (16%) declared to know the National Health Plan (NHP) and 4% did not know how to answer the question.

The NHP is a subject typically limited to the knowledge of doctors and other professionals in primary medical and health posts. Therefore, the 16% of participants that declared to know the NHP may present false health literacy. This means that these individuals may not know the contents of the document but declare to know the NHP's content.

Regarding the **knowledge about Health Programs** (Appendix I - Graphic 35, 35.A), 18% of the participants registered to know at least one of these programs and 82% reported not knowing any Health Program. Of the participants who claimed to know about Health Programs, 89% reported knowing the Health Program for Vaccination and 11% reported knowing the Priority Health Program for Mental Health. It must be noted that the presented

proportions are only representative of 18% of the total sample. Similar to the declaration of knowledge about the National Health Plan, there is the possibility of false health literacy or sense of knowledge due to knowing the programmes for these particular health dimensions but not its contents.

Knowledge about the SNS 24 (Appendix I - Graphic 36, 36.A, 36.B) was registered, where 52% of the participants declared knowing the Service and 48% did not know it. Of the participants who reported knowing the SNS 24, 58% reported not knowing how to use the Service. In comparison, the remaining 42% stated that they knew how to use it. Finally, of the eleven participants who reported knowing how to use the SNS 24, 64% never used the Service, 18% used it once or twice and 18% used it three to four times.

2. Results of the Health Literacy Level Measurement Tools in the Research

2.1. HLS-EU-PT Results

2.1.1. HLS-EU-PT Score Distribution

To verify the reliability of the HLS-EU-PT application in the current research, its internal consistency was tested by using the Cronbach's alpha for the different HL index of the tool. Considering the classical approach criteria for Cronbach's alpha values[8], the four HL indices show high-reliability levels (Table 4), with three registering values over $\alpha = 0.90$ and one having obtained $\alpha = 0.85$, which is still a good reliability level. It must be noted that despite the presented values being valid for the sample, in which there is a low number of participants, in broader samples there may be a fluctuation for greater or lesser values.
For the Health Care HL and Disease Prevention HL dimensions, there were two participants in each index that did not achieve the minimum valid answers for the index score to be calculated. In the former, the participants were from both genders, while in the latter, both participants belong to the female gender.

Table 4 - Collected HLS-EU-PT surveys, by HL index, with valid/missing cases, respective percentages and Cronbach's alpha

	n	Valid Cases	Valid Cases (%)	Missing Cases	Missing Cases (%)	**Cronbach's Alpha (α)**
Gen-HL Score	50	50	100	0	0	**0.93**
HC-HL Score	50	48	96	2	4	**0.93**
DP-HL Score	50	48	96	2	4	**0.90**
HP-HL Score	50	50	100	0	0	**0.85**

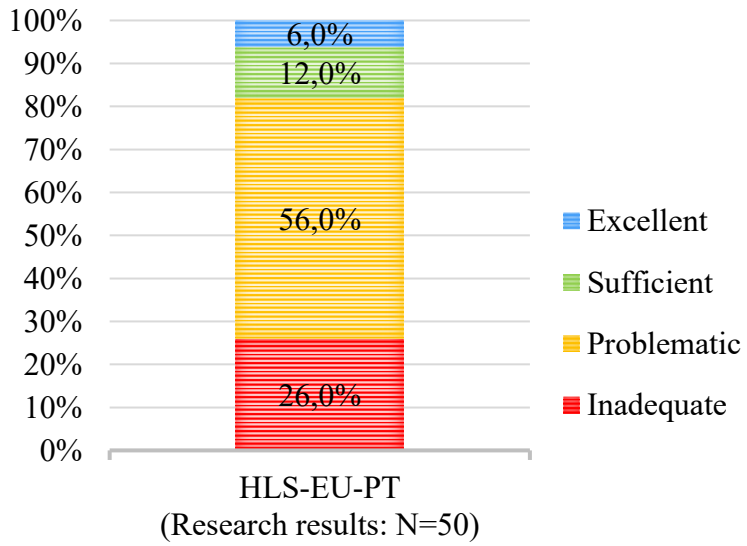
Source: Data organization by the author.

The results of the HLS-EU-PT application in the research's sample, following the scoring system used in the HLS-EU, had the following descriptive distribution for the general health

[8] Despite there being no consensus on the values threshold for different Cronbach's alpha, it was found in the literature that scores $0.8 > \alpha \geq 0.7$ comprise acceptable internal consistency (Taber, 2018), while values $0.9 > \alpha \geq 0.8$ are considered good and $\alpha \geq 0.9$ is considered Excellent.

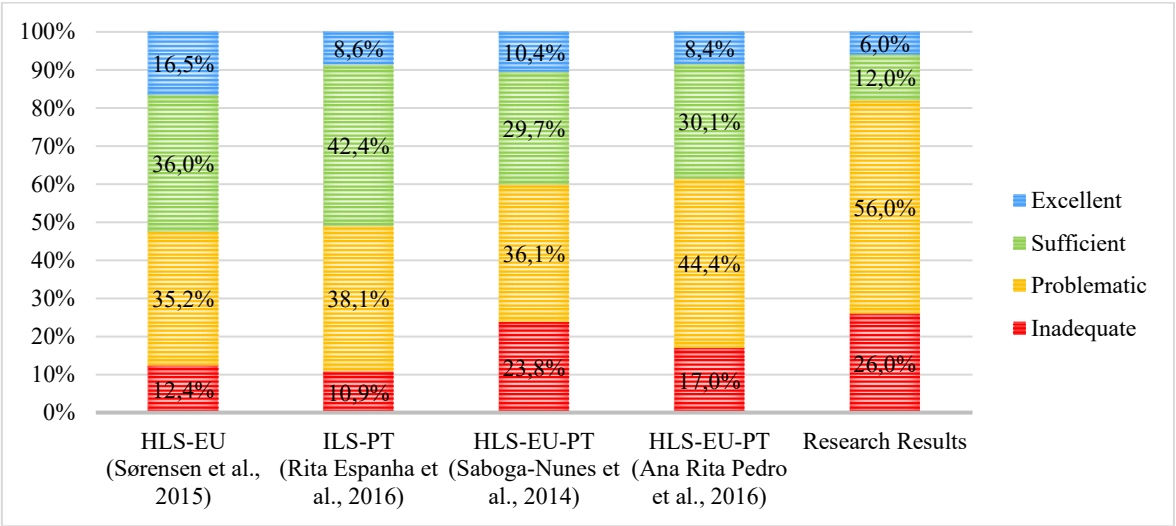
literacy dimension (Graphic 10): the smallest proportion of the sample (6%) obtained a score corresponding to excellent HL; followed by the score corresponding to sufficient HL (12%). Most of the sample obtained a score corresponding to problematic HL (56%); the remaining represents a score equivalent to inadequate HL (26%). The sum of values in both Problematic and Inadequate HL represents 82% of individuals with limited HL.

Graphic 10 - Gen-HL index results of the HLS-EU-PT application in the research



Source: Data organization by the author.

Graphic 11 - General Health Literacy Levels: HLS-EU results comparison between samples (International, national and current research)

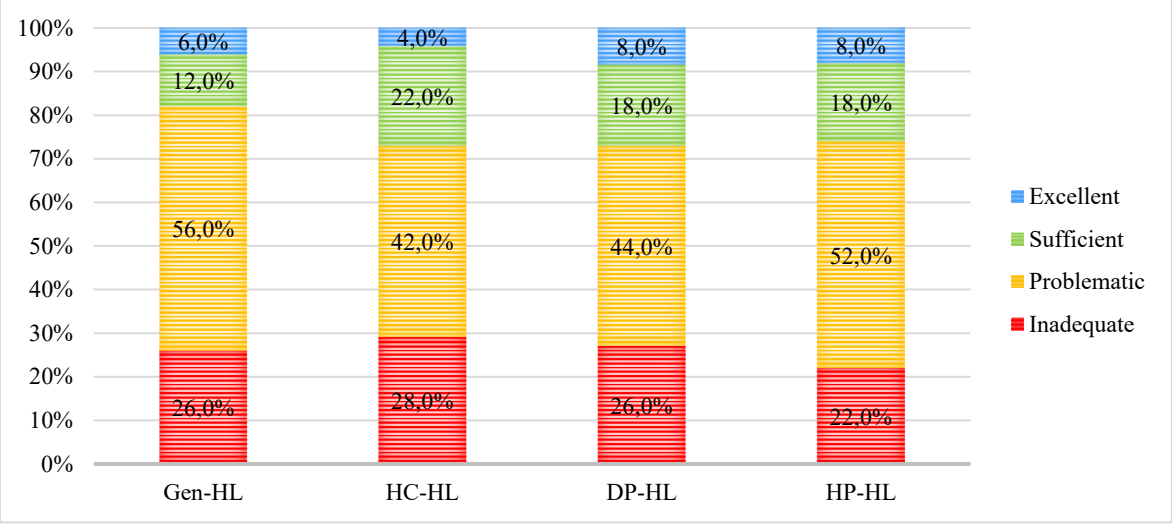


Source: Data organization by the author.

It is possible to verify that the HL levels for the considered sample are much lower when compared to results from other national/international studies (Graphic 11). The major differences were registered in the "Problematic" and "Sufficient" levels. In the former, the current study comprises 56% of the current research sample, while for other studies it ranges from 35,2% to 44,4%. In the latter, this research registered 12%, while in other studies, it ranged between 29,7% and 42,4%. As for the "Inadequate" and "Excellent" levels, despite the differences being lesser, it is equally important to note the same comparison. For the former, while other studies registered values between 10,9% and 23,8%, in the present sample it reaches 26%. Finally, in the former, it was registered a value of 6% for this level, being lower than the values found for other studies, between 8,4% and 16,5%.

Also, it was verified that Limited HL values in the current research represent 82% of the sample, being much higher than the found representativity in other studies, between 47,6% and 61,4%. Results for the HLS-EU-PT application in the current research, for the remaining HL indices, show lower Limited HL values (Graphic 12) between 72,9% (Health Care HL and Disease Prevention HL) and 74% (Health Promotion HL).

Graphic 12 - HLS-EU-PT results by HL index, application in the research



Source: Data organization by the author.

Table 5 - Percentage distribution of HLS-EU-PT Gen-HL levels, by gender

	Male		Female		Total	
	n	%	n	%	n	%
	14	28,0	36	72,0	50	100
Gen-HL levels						
Inadequate	3	21,4	10	27,8	13	26,0
Problematic	10	71,4	18	50,0	28	56,0
Sufficient	0	0,0	6	16,7	6	12,0
Excellent	1	7,1	2	5,6	3	6,0

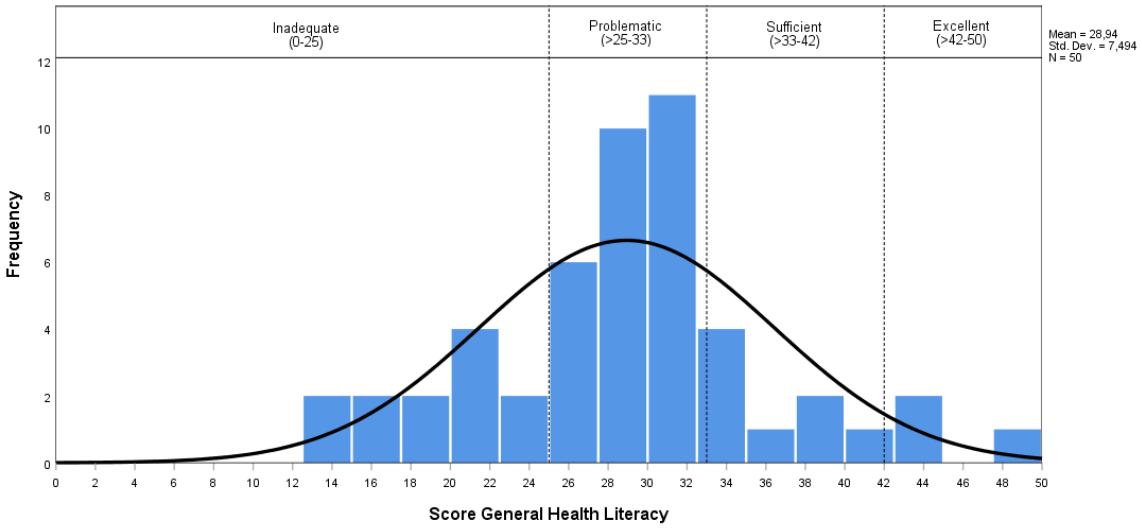
Source: Data organization by the author.

Analyzing the Gen-HL distribution (Table 5), in the male group, only one participant has obtained an HL level higher than "Problematic", with major representativeness of 71,4% being related to the "Problematic" level followed by 21,4% on "Inadequate". Female participants obtained scores in all HL indices, most being in the "Problematic" level (56%) and "Inadequate" (26%). Despite having smaller representativeness, scores were also obtained in the levels "Sufficient" (12%) and "Excellent" (6%).

While there is a higher sample representativity of male individuals (28%) when compared to female individuals (72%), the former obtained higher limited HL scores (92,8%) than the latter (77,8%).

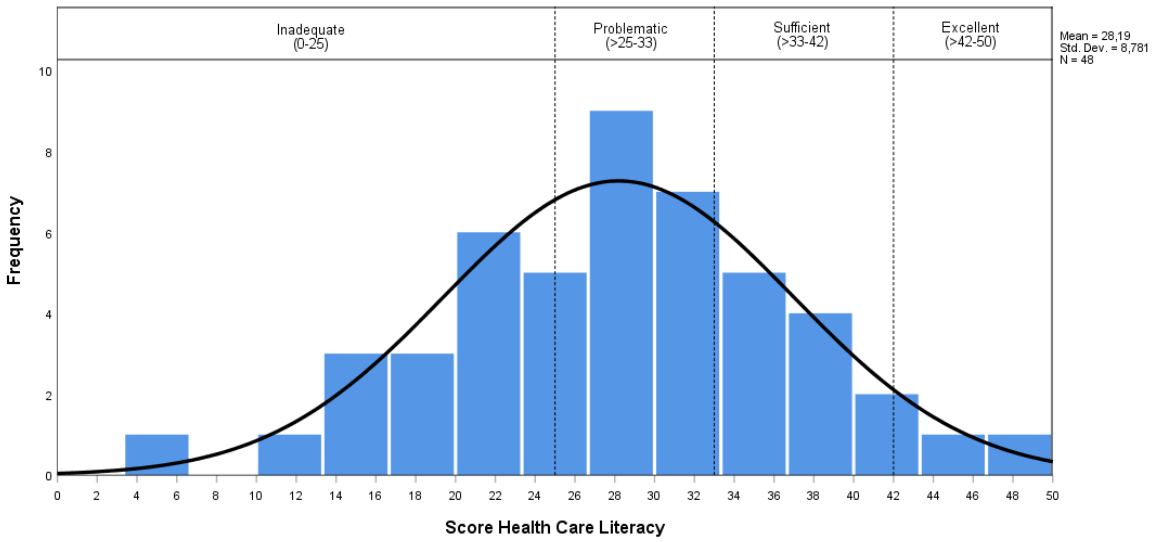
Skewness values for the total sample in the four indices represent an approximately symmetric score mesokurtic distribution, with most values being concentrated in the Problematic HL result (Figures 8-11; Appendix J – Table 32). In the total sample, it is possible to verify that the score distribution is skewed right for the General HL and Disease Prevention indices, while it is skewed left for the Health Care and Health Promotion indices.

Figure 8 – HLS-EU-PT: General Health Literacy Score Distribution



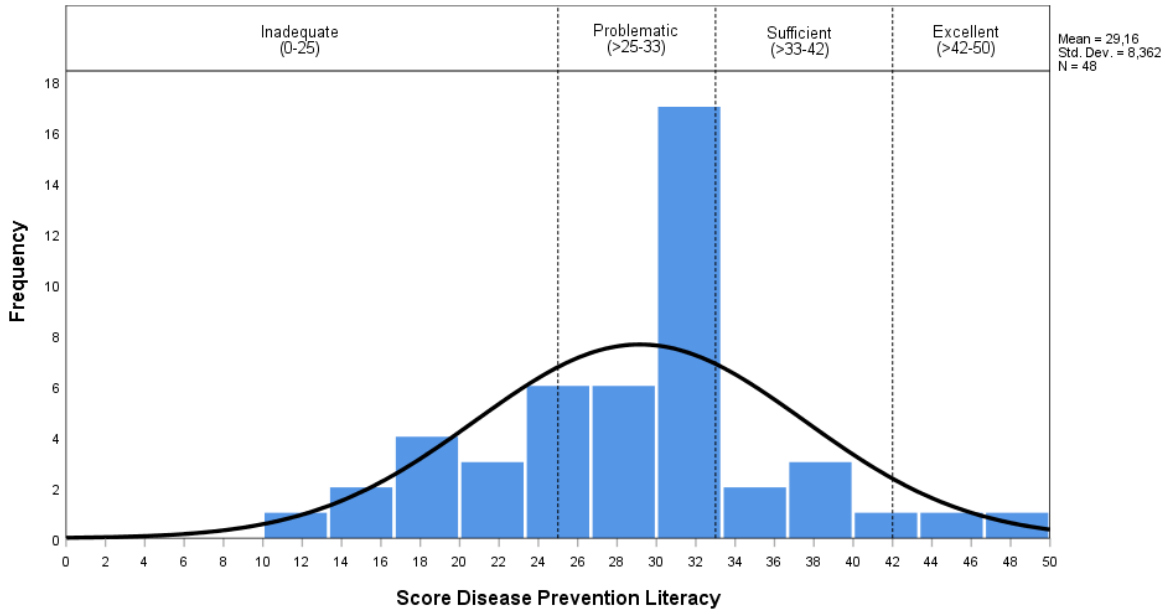
Source: Data organization by the author.

Figure 9 - HLS-EU-PT: Health Care Literacy Score Distribution



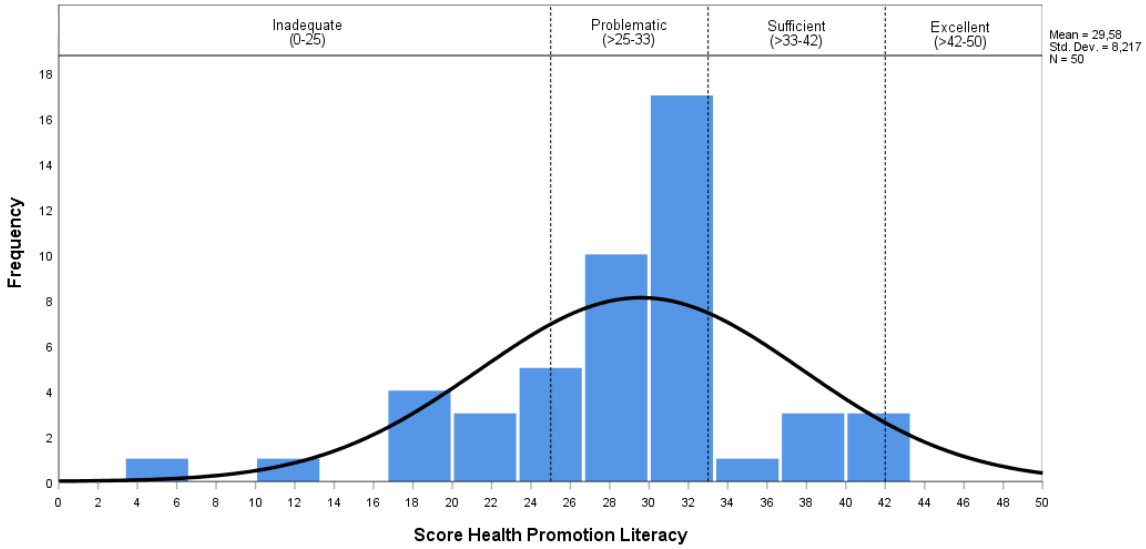
Source: Data organization by the author.

Figure 10 - HLS-EU-PT: Disease Prevention Literacy Score Distribution



Source: Data organization by the author.

Figure 11 - HLS-EU-PT: Health Promotion Literacy Score Distribution



Source: Data organization by the author.

2.1.2. Responses Distribution for the HLS-EU-PT Questions

For the **General Health Literacy** dimension of the HLS-EU-PT, the questions that participants registered to be either "Very Easy" or "Easy" were Q.29. (34%) and Q.41. (68%), respectively (Appendix J - Table 33, 35, 37). The former is related to deciding if the participant should have a flu vaccination and the latter about judging where the participant's life affects its health and well-being. For the categories "Very Difficult" and "Difficult" the questions with most registered answers were Q.35. (26%) and Q.2. (44%), respectively. The former being related to finding information about political changes that may affect health and the latter regarding finding information about the treatment of illness that concerns the participant.

By merging the results of "Very Easy" + "Easy" and "Very Difficult" + "Difficult" it is possible to verify which were the questions that participants found to be on each side of the spectrum (Appendix J - Table 34, 36, 38). In the former, the question with most answers (88%) was registered in Q.14. (regarding following the instructions on medication), Q.42. (regarding the participant's judgment on how its housing conditions can help to stay healthy) and in the aforementioned Q.29. and Q.41. For the latter, the question with the most answers was the aforementioned Q.35. (71%).

The percentage of answers in the "NS/NR" category was generally low, ranging between 0% and 14%. Only a question (Q.36.) reaching 14%, being related to the finding of efforts that promoted participant's health at work. This question was considered an endogenous limitation of the HLS-EU-PT for the studied population due to explicit vocalization of the workplace, thus neglecting all individuals who cannot work, are retired, among others. For the tool application, there was an attempt to overcome this limitation by adapting the question to the participants' context in the Day Care Centers.

For the **Health Care** dimension of the HLS-EU-PT (Appendix J - Table 33, 34), the questions that participants registered to be either "Very Easy" or "Easy" were Q.15. (28%) and Q.14. (66%), respectively. The former is related to calling an ambulance in an emergency and the latter about following the instructions on medication. For the categories "Very Difficult" and "Difficult" the questions with most registered answers were Q.6. (18%) and Q.2. (44%), respectively. The former being related to the understanding of leaflets that

come with one's medication and the latter regarding finding information about the treatment of illness that concerns the participant.

By merging the results of "Very Easy" + "Easy" and "Very Difficult" + "Difficult" it is possible to verify which were the questions that participants found to be on each side of the spectrum. In the former, more than 80% of participants' answers were registered in Q.16. (regarding the following of instructions of the doctor or pharmacist) and in the aforementioned Q.14. For the latter, over half of the sample selected the questions Q.1. (finding information about illness that concerns the participant), Q.10. (judging advantages and disadvantages of different treatment options) and the aforementioned Q.2., Q.6.

The percentage of answers in the "NS/NR" category was generally low, ranging between 0% and 6%. Only a question (Q.12.) reaching 12%, being related to the judgment of participants regarding the reliability of information about illness in the media.

For the **Disease Prevention** dimension of the HLS-EU-PT (Appendix J - Table 35, 36), the questions that participants registered to be either "Very Easy" or "Easy" were Q.29. (34%) and Q.23. (66%), respectively. The former is related to deciding if the participant should have a flu vaccination and the latter about understanding why the participant needs health screenings. For the category "Difficult" the question with most registered answers was Q.25. (38%), being related to the participants' judgment on the need to go to a doctor for a check-up. For the category "Very Difficult" the questions with most registered answers were Q.17. and Q.18. (22%). The former being related to finding information about how to manage unhealthy behaviours such as smoking, low physical activity or drinking too much and the latter regarding finding information on how to manage mental health issues such as stress or depression.

By merging the results of "Very Easy" + "Easy" and "Very Difficult" + "Difficult" it is possible to verify which were the questions that participants found to be on each side of the spectrum. In the former, more than 80% of participants' answers were registered in Q.21. (regarding the understanding of health warnings about behaviour such as smoking, low physical activity and drinking too much), Q.22. (regarding the understanding of the participant about the need of vaccinations) and in the aforementioned Q.23. For the latter, over half of the sample selected the aforementioned question Q.18.

The percentage of answers in the "NS/NR" category was generally low, ranging between 0% and 8%. The questions that registered 8% were Q.17., Q.18, as mentioned above as the one's participants had the most difficulty, and also Q.24. (regarding the participant's judgment about how reliable health warnings are, such as smoking, low physical activity and drinking too much).

For the **Health Promotion** dimension of the HLS-EU-PT (Appendix J - Table 37, 38), the question that participants registered to be either "Very Easy" or "Easy" were Q.44. (26%) and Q.41. (68%), respectively. The former is related to making decisions to improve the participants' health and the latter about judging where the participant's life affects their health and well-being. For the category "Difficult" the questions with most registered answers were Q.34. and Q.35 (38%). The former being related to finding information on how the participant's neighbourhood could be more health-friendly and the latter regarding finding information about political changes that may affect health. For the category "Very Difficult" the question with most registered answers was also Q.35.

By merging the results of "Very Easy" + "Easy" and "Very Difficult" + "Difficult" it is possible to verify which were the questions that participants found to be on each side of the spectrum. In the former, more than 80% of participants' answers were registered in: Q.37. (regarding the understanding of advice on health from family members or friends); Q.40. (regarding the understanding of information on how to keep the participant's mind healthy); Q.42. (regarding the participant's judgment on how its housing conditions can help to stay healthy) and in the aforementioned Q.41. and Q.44.

The percentage of answers in the "NS/NR" category was generally low, ranging between 0% and 14%. The question that registered 14% was Q.36., being related to the finding of efforts that promoted participant's health at work.

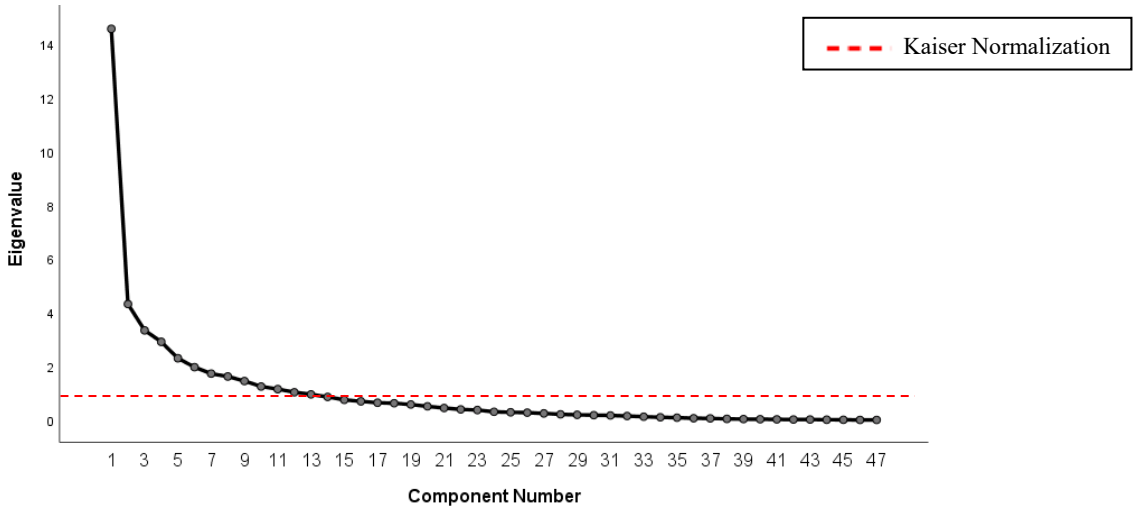
2.1.3. HLS-EU-PT Factor Analysis – Principal Components

Considering all the questions answered of the HLS-EU-PT, a factor analysis via the principal components was conducted to understand if the survey could be applied by using a lesser number of components.

Values for communalities were assessed for the 47 HLS-EU-PT questions, which resulted in an average of .800 (Appendix J - Table 39). The usual criteria of acceptance for communality values (> .650) are confirmed for all variables, with the punctual sacrifice of one question (Q.6.) due to having a lower value but still matching acceptable criteria (> .500). Considering the communalities mentioned above values, it was considered that all questions were valid for the principal components' factor analysis.

Through the factor analysis via principal components, using the Kaiser Normalization, it was possible to identify twelve factors, with the extraction sums of squared loadings accounting 80% total variance of HL results. Also, by analyzing the resulting Eigenvalues Scree plot (Figure 12) and corresponding stress test (Appendix J – Table 40) it is possible to identify three main aspects: 1) The total variance of the first factor is highly explanatory; 2) The stress test value for the second factor drops abruptly but is still explanatory; 3) The remaining factors have extremely low-stress values, with an eventual secondary explanatory stress value on the third factor, followed by a global common beam comprised by the remaining factors.

Figure 12 - HLS-EU-PT factor analysis for the principal components: Eigenvalues Scree Plot



Source: Data organization by the author.

For further clarification of the significance of the identified factor loadings, the component matrix was rotated using the Varimax method with Kaiser Normalization. Other rotation methods were excluded due to data not being repetitive, nor the expected matrix orthogonality suggested the need for using Quartimax, Direct Oblimin or others. The obtained factors after the Varimax rotation redistributed the factor loadings, as expected. For the HLS-EU-PT, the rotation process converged in 23 iterations, which can be explained by the broad number of questions that lead to a greater convergence of factors in a common beam. Questions in each factor were highlighted with different colours (Table 6, 7; Appendix J - Table 41), which respectively represented modular relations after the component matrix rotation: red =].500; .650[; yellow = [.650; .800[; green ≥ .800. No highlight was used in seven questions with lesser correlation values than the ones mentioned above in all components. After the matrix rotation, each factor that presented significant relations with the HLS-EU-PT items was entitled, based on the interpretation of the author of this work, according to a possible dimension of thought associated with the identified set of questions (Table 6, 7).

The first two principal factors were identified as main factors by representing around half (40%) of the total variance from the twelve principal factors, with the Eigenvalue for Factor #1 explaining around 31% of the total variance, followed by Factor #2 (9.19%). These values explain participants' thought processes in each dimension, with Factor #1 being considered to represent the access, understanding and use of information and Factor #2 (much less representative than Factor #1) being considered to represent the preparedness to deal with medical emergencies or illness.

The remaining principal factors were identified as complementary factors, constituting a global common beam that represents mathematic effects supporting main factors, having around 40% total variance. The remaining factors represent a total variance of around 20%, which is mainly explained by the diversity of the human thought associated with random effects.

Table 6 – Factor analysis (principal components) of the HLS-EU-PT results: Main factors – Total Variance

Factors	Questions	Eigenvalue Saturation (%)	Initial Eigenvalues	Extraction Sums of Squared Loadings (%)	Rotation Sums of Squared Loadings (%)
Factor #1 - Access, understanding and using information	Q.31. "decide how you can protect yourself from illness based on information in the media?"	76,48%	14,57	31,00	9,01
	Q.39. "understand information in the media on how to get healthier?"	73,91%			
	Q.34. "find information on how your neighbourhood could be more health-friendly?"	72,76%			
	Q.28. "judge if the information on health risks in the media is reliable?"	61,48%			
	Q.35. "find out about political changes that may affect health?"	53,43%			
	Q.27. "judge which health screenings you should have?"	52,77%			
Factor #2 - Preparedness to deal with medical emergencies or illness	Q.3. "find out what to do in case of a medical emergency?"	86,20%	4.32	9,19	8,66
	Q.8. "understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?"	71,32%			
	Q.7. "understand what to do in a medical emergency?"	70,76%			
	Q.4. "find out where to get professional help when you are ill?"	68,38%			

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Table 7 - Factor analysis (principal components) of the HLS-EU-PT results: Complementary factors

Factors	Questions	Eigenvalue Saturation (%)	Initial Eigenvalues	Extraction Sums of Squared Loadings (%)	Rotation Sums of Squared Loadings (%)
Factor #3 – Understanding and use of information to maintain and improve health	Q.45. "join a sports club or exercise class if you want to?"	71,52%	3.3	7,10	7,80
	Q.40. "understand information on how to keep your mind healthy?"	70,32%			
	Q.44. "make decisions to improve your health?"	64,78%			
	Q.15. "call an ambulance in an emergency?"	60,32%			
	Q.37. "understand advice on health from family members or friends?"	58,58%			
Factor #4 – Access and understanding of information to prevent or manage health conditions	Q.20. "find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?"	75,18%	2,91	6,19	7,79
	Q.38. "understand information on food packaging?"	74,81%			
	Q.26. "judge which vaccinations you may need?"	68,81%			
	Q.6. "understand the leaflets that come with your medicine?"	60,76%			
Factor #5 - Understanding preventive information	Q.21. "understand health warnings about behaviour such as smoking, low physical activity and drinking too much?"	72,80%	2,30	4,89	6,86
	Q.23. "understand why you need health screenings?"	72,47%			
	Q.46. "influence your living conditions that affect your health and wellbeing?"	61,43%			
	Q.41. "judge where your life affects your health and well- being?"	58,36%			
Factor #6 - Promotion of health and well-being in the community	Q.47. "take part in activities that improve health and well-being in your community?"	85,94%	1,97	4,18	6,74
	Q.36. "find out about efforts to promote your health at work?"	61,87%			
	Q.33. "find out about activities that are good for your mental well-being?"	59,43%			

Factor #7 – Judgement about health decisions in interactions with the doctor	Q.9. “judge how information from your doctor applies to you?”	64,24%	1,72	3,67	6,35
	Q.10. “judge the advantages and disadvantages of different treatment options?”	62,92%			
	Q.5. “understand what your doctor says to you?”	59,26%			
Factor #8 – Judgement of how housing conditions and everyday behaviours influence Health	Q.42. “judge how your housing conditions help you to stay healthy?”	86,35%	1,62	3,45	6,07
	Q.43. “judge which everyday behaviour is related to your health?”	66,39%			
Factor #9 - Judgement and compliance with health information	Q.24. “judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?”	81,22%	1,45	3,08	5,92
	Q.16. “follow instructions from your doctor or pharmacist?”	71,16%			
Factor #10 - Finding health information to manage and prevent health conditions	Q.18. “find information on how to manage mental health problems like stress or depression?”	77,69%	1,25	2,65	5,91
	Q.19. “find information about vaccinations and health screenings that you should have?”	68,59%			
Factor #11 - Search for diagnostic and treatment information	Q.2. “find information on treatments of illnesses that concern you?”	63,35%	1,15	2,44	4,55
	Q.1. “find information about symptoms of illnesses that concern you?”	56,47%			
	Q.11. “judge when you may need to get a second opinion from another doctor?”	53,61%			
Factor #12 – Decisions regarding vaccination	Q.29. “decide if you should have a flu vaccination?”	89,77%	1,03	2,19	4,36
	Q.22. “understand why you need vaccinations?”	51,08%			

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

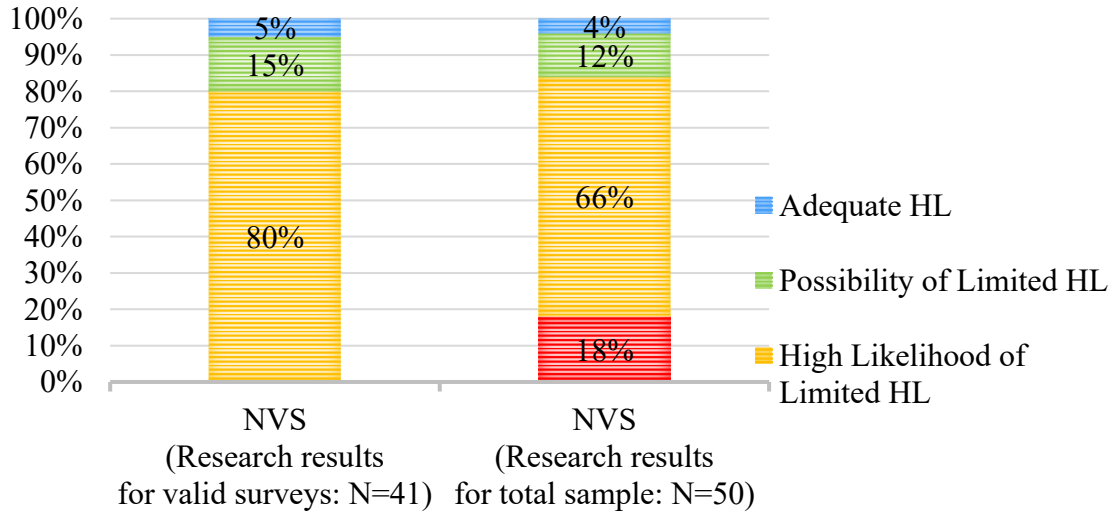
2.2. NVS Results

2.2.1. NVS Score Distribution

In the NVS application in this research, the internal reliability of the tool was tested using the Cronbach's alpha, registering α = .694, which corresponded to a questionable value. For this HL measurement tool, 18% of participants did not have sufficient literacy skills to be able to read the NVS nutritional sheet, thus not having completed the survey. Therefore, out of the forty-one valid records, the largest representation of the sample (80%) obtained a score corresponding to a High Likelihood of Limited HL, followed by who achieved a score equivalent to the Possibility of Limited HL (15%) and the lowest proportion of participants obtained a score corresponding to Adequate HL (5%).

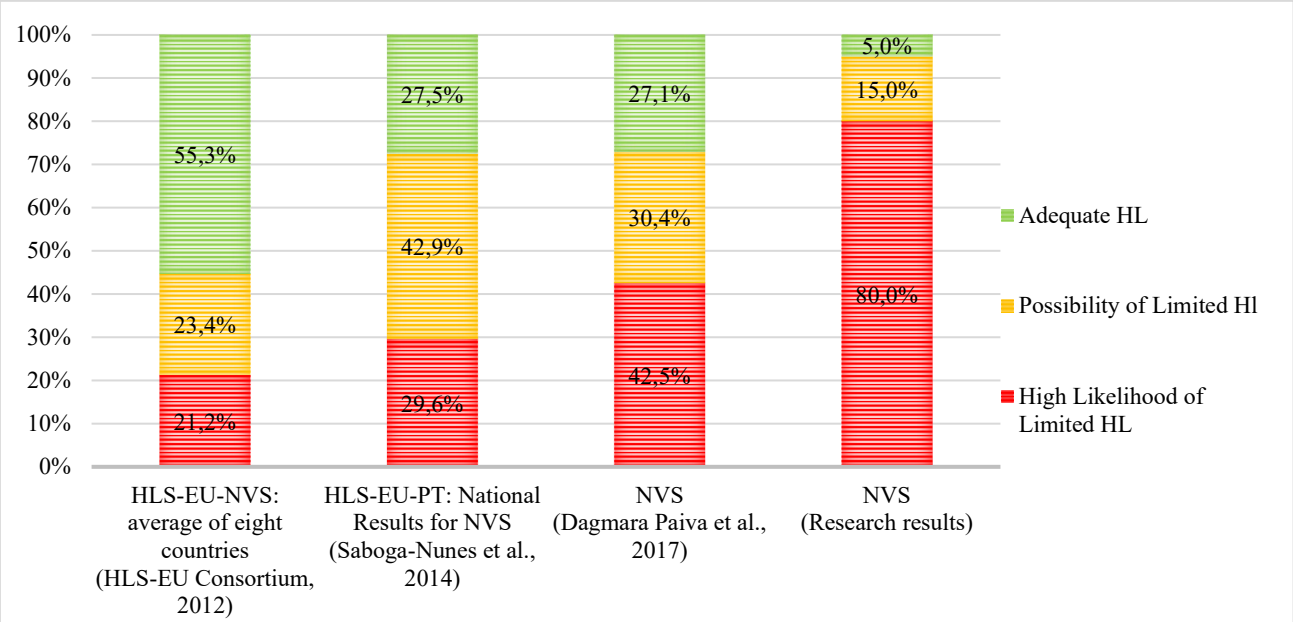
To assess the concordance of results between the NVS and the HLS-EU-PT, considering that the latter had all fifty valid surveys for the General HL measurement, it was considered necessary to also present the results for the NVS for the same subjects (Graphic 13). Following this prospect, there are 18% of missing surveys, which would reduce the representativeness of participants with "High Likelihood of Limited HL" to 66%, followed by 12% in "Possibility of Limited HL" and 4% of "Adequate HL". In the case of the participants who could not complete the survey, if included in the lowest HL level of the NVS tool, the High Likelihood of Limited HL proportion would rise to 84%, thus making the limited HL representativeness in the sample to be equal to 96%.

Graphic 13 - Results of the NVS application in the research



Source: Data organization by the author.

Graphic 14 - Health Literacy Levels: NVS results comparison between samples (International, national and current research)



Source: Data organization by the author.

By comparing the NVS results from the current research with other national/international studies (Graphic 14), it is possible to verify significant differences in Health Literacy levels. When compared to national surveys for the general population, the elderly cohort has around the double "High Likelihood of Limited HL" (80%) and four times higher when compared to the NVS from the HLS-EU Consortium. On the opposite side of the HL levels, the "Adequate HL" (5%) is around five times lower than in national studies and eleven times smaller than the HLS-EU Consortium values. The representativeness of "Possibility of Limited HL" (15%) is also significantly lower than found results in the national and international studies.

Regarding the Limited HL, values in the current research represent 95% of the sample ("High Likelihood of Limited HL" + "Possibility of Limited HL"), while in other Portuguese general population samples this value ranges similarly between 72,5% to 72,9%, in an elderly cohort equal to 80% and in the HLS-EU Consortium it is equal to 44,6%.

2.2.2. Responses Distribution for the NVS Questions

Table 8 - Distribution of correct NVS responses for both genders and respective score

	Male		Female		Total	
	n	%	n	%	n	%
	11	26,8	30	73,2	41	100
Correct NVS responses						
0	6	54,5	16	53,3	22	53,7
1	3	27,3	8	26,7	11	26,8
2	1	9,1	3	10,0	4	9,8
3	0	0,0	2	6,7	2	4,9
4	0	0,0	1	3,3	1	2,4
5	0	0,0	0	0,0	0	0,0
6	1	9,1	0	0,0	1	2,4
NVS Score						
High Likelihood of Limited HL	9	81,8	24	80,0	33	80,5
Possibility of Limited HL	1	9,1	5	16,7	6	14,6
Adequate HL	1	9,1	1	3,3	2	4,9

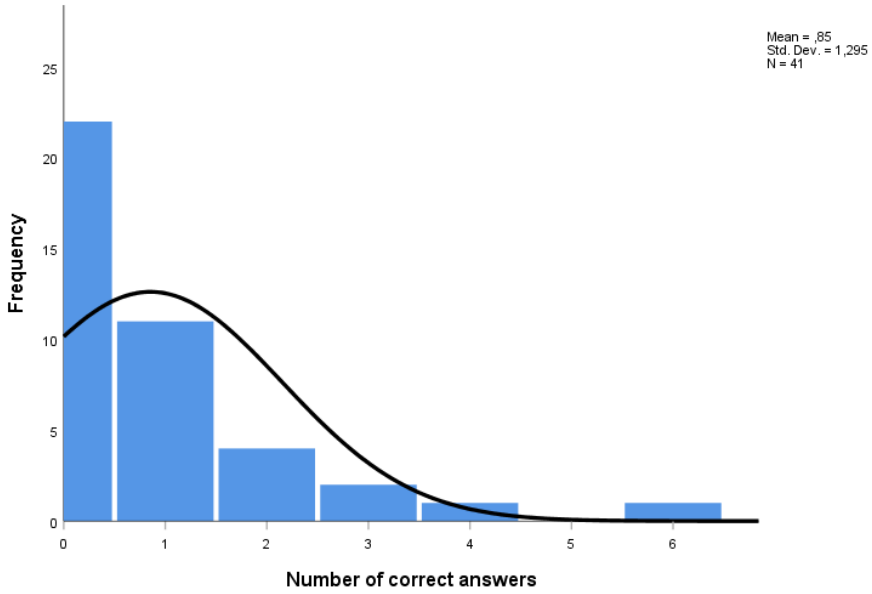
Source: Data organization by the author.

The percentual distribution of correct answers (Table 8) was very similar for both genders between 0-2 correct responses, which in the total sample represent 90,3%. From the remaining four participants, one answered the six questions correctly, while two answered three questions, and one answered four questions.

The score “High Likelihood of Limited Literacy” had similar scores between genders, corresponding to between 80,0%-81,8%. As for the “Possibility of Limited Literacy”, female participants (16,7%) registered a higher percentage than male participants (9,1%). The contrary was found for the score “Adequate Literacy”, with male participants registering 9,1% while female participants registered 3,3%.

For the total sample the distribution was highly skewed to the right (Figure 13; Appendix J – Table 42), represented by a general leptokurtic kurtosis featuring a clear peak of answers corresponding to the High Likelihood of Limited Literacy score.

Figure 13 - NVS Correct Answers Distribution



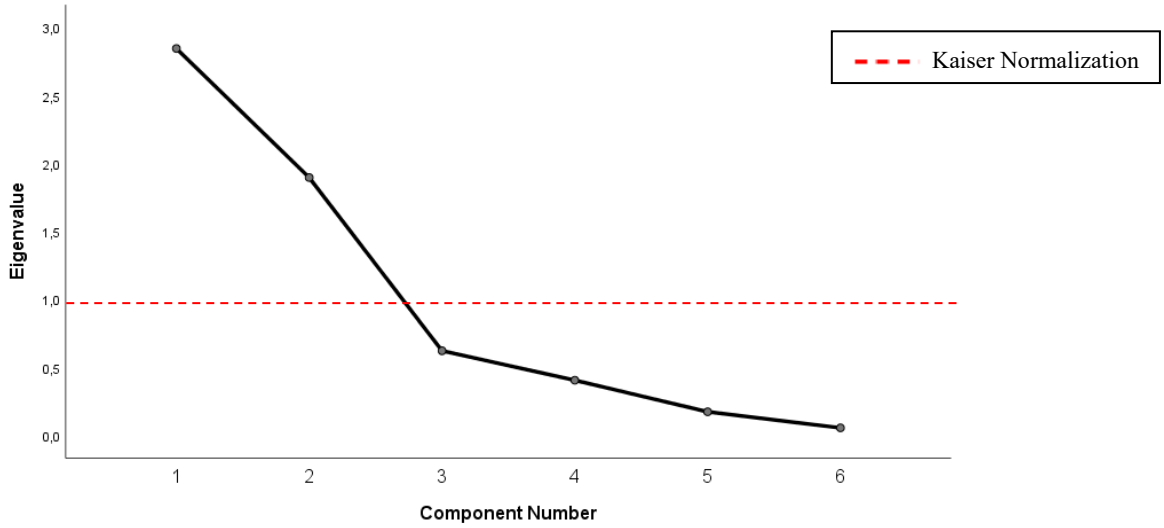
Source: Data organization by the author.

2.2.3. NVS Factor Analysis – Principal Components

A factor analysis via the principal components was also conducted for the six questions that comprise the NVS, aiming to assess if the application of this tool could be performed by using a lesser number of components.

It was verified that communality values for this test registered an average of .790, having acceptable proportions for all variables that may be explained through the corresponding factors (Appendix J - Table 43). A punctual sacrifice was verified for one question (Q.2.) due to having a communality value of .623, lower than the usual communality criteria (> .650) but still corresponding to acceptable criteria (> .500). Overall, all questions for the NVS had valid communality values to proceed with the principal component's factor analysis. The test was conducted using the Kaiser Normalization, in which two main factors were identified, with corresponding extraction sums of the squared loading accounting for around 79% total variance of HL results. The analysis of the resulting Eigenvalues Scree plot and stress test (Figure 14) allowed to identify the differential variance values between the two main factors, being equal to .949, allowing the reading of two main aspects: 1) The first factor total variance is highly explanatory; 2) The second factor slightly decreases in total variance but is still explanatory; 3) The remaining four factors comprise a global common beam with Eigenvalues < 1.

Figure 14 - NVS factor analysis for the principal components: Eigenvalues Scree Plot



Source: Data organization by the author.

To understand the significance of each factor loadings, the component matrix was rotated using the Varimax method, applying the Kaiser Normalization. Similarly to the factor analysis for the HLS-EU-PT, no other rotation methods were used due to data not being repetitive or the expected matrix orthogonality suggested the need for a different rotation. The resulting values for the NVS questions' factor loadings were redistributed, as expected. The rotation process for the NVS converged in three iterations, which shows a very robust matrix. For each factor, questions were highlighted different colors (red =].500; .650[; yellow = [.650; .800[; green ≥ .800), representing modular relations after rotating the component matrix (Table 9; Appendix J – Table 44). Following the matrix rotation, each factor with significant relations with the NVS questions was entitled, based on the interpretation of this work's author, according to a possible dimension of though associated with the identified set of questions (Table 9).

The first two principal factors were identified as main factors due to representing a total variance of around 79% which explain participants' thought processes in different dimensions, with the Eigenvalue for rotated Factor #1 explaining around 47% of the total variance, followed by rotated Factor #2, around 32%. According to the nature of questions that comprised each factor, it was considered that Factor #1 encompassed the use of numeracy skills to understand information on the NVS nutritional label, while Factor #2 comprised the use of literacy skills to understand information. The remaining four principal factors were identified as a global common beam, explaining the diversity of the human thought along with random effects, due to having Eigenvalues < 1, representing a total variance of around 21%.

Table 9 - Factor analysis (principal components) of the NVS: Main factors – Total Variance

	Questions	Eigenvalue Saturation (%)	Initial Eigenvalues	Extraction Sums of Squared Loadings (%)	Rotation Sums of Squared Loadings (%)
1 – Use of numeracy skills	Q.3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes 1 serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?	90,47%	2,85	47,42	46,47
	Q.4. If you usually eat 2500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?	82,73%			
	Q.1. If you eat the entire container, how many calories will you eat?	81,10%			
	Q.2. If you are allowed to eat 60 g of carbohydrates as a snack, how much ice cream could you have?	78,38%			
2 – Use of literacy skills	Q.5. Pretend that you are allergic to the following subs. Is it safe for you to eat this ice cream?	97,86%	1,90	31,60	32,55
	Q.6. (Ask only if the patient responds "no" to question 5): Why not?	97,67%			

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the NVS (Barry D. Weiss et al., 2005). Respective questions in Portuguese available from the NVS in Appendix A.

2.3. HLS-EU-PT and NVS

Considering the obtained HL level results for both tools, the proportion of Limited HL differed between the HLS-EU-PT (82%) and the NVS (95% for valid surveys, 96% for the total sample). Aligned with these results, the concordance of results between individual surveys was also verified (Table 10).

Table 10 - HL score distribution by common valid HLS-EU-PT and NVS surveys

(N = 41)		**HLS-EU-PT**			
		Excellent	Sufficient	Problematic	Inadequate
NVS	Adequate HL	1	1	0	0
	Possibility of Limited HL	0	1	5	0
	High Likelihood of Limited HL	2	3	19	9

Source: Data organization by the author.

To assess the concordance of results obtained by participants in the HLS-EU-PT and NVS, the corresponding valid scores of each participant were organized and compared in a cross table for both tools. As aforementioned, it was not possible to obtain nine valid NVS surveys, corresponding to 18% of the total sample. Therefore, for a valid comparison of correspondent HL levels between tools, a total of forty-one valid surveys were considered, representing participants who had completed both surveys. To establish a comparison basis between results of both tools, the following reading is suggested: the score "Adequate HL" would correspond to the score "Excellent" and "Sufficient"; the score "Possibility of Limited HL" and "High Likelihood of Limited HL" would correspond to the scores "Problematic" and "Inadequate", as both sets represent Limited HL in the HLS-EU-PT and NVS.

Following this reading, it is possible to verify that two participants registered the score "Excellent" in the HLS-EU-PT and the score "High Likelihood of Limited HL" in the NVS, thus not showing concordance between results of both tools. Also, three participants have registered the score "Sufficient" in the HLS-EU-PT and the score "High Likelihood of

Limited HL" in the NVS. Finally, there was a participant that registered the score "Sufficient" in the HLS-EU-PT and "Possibility of Limited HL" in the NVS.

In addition to the nine participants of which it was not possible to collect valid NVS surveys, from the forty-one valid surveys regarding both tools, six participants did not comply with the concordance of results (12% of the total sample). This context means that by comparing the obtained results between both tools, only 70% of survey results would be valid.

Table 11 - ANOVA table for the HLS-EU-PT HL indices and NVS results

			Sum of Squares	df	Mean Square	F	Sig.
Gen-HL * NVS	Between Groups	(Combined)	464.853	5	92.971	1.988	.105
		Linearity	426.648	1	426.648	9.125	.005
		Deviation from Linearity	38.205	4	9.551	.204	.934
	Within Groups		1636.491	35	46.757		
	Total		2101.344	40			
HC-HL * NVS	Between Groups	(Combined)	709.529	5	141.906	2.151	.083
		Linearity	633.423	1	633.423	9.600	.004
		Deviation from Linearity	76.106	4	19.026	.288	.883
	Within Groups		2243.368	34	65.981		
	Total		2952.896	39			
DP-HL * NVS	Between Groups	(Combined)	434.892	5	86.978	1.376	.258
		Linearity	308.143	1	308.143	4.876	.034
		Deviation from Linearity	126.750	4	31.687	.501	.735
	Within Groups		2085.454	33	63.196		
	Total		2520.346	38			
HP-HL * NVS	Between Groups	(Combined)	376.626	5	75.325	1.167	.345
		Linearity	243.954	1	243.954	3.779	.060
		Deviation from Linearity	132.672	4	33.168	.514	.726
	Within Groups		2259.172	35	64.548		
	Total		2635.799	40			

Source: Data organization by the author.

The ANOVA test for the Gen-HL and NVS results (Table 11) indicates a statistical tendency for significance (p = .105). It should be noted that the obtained p-value for the Gen-HL and NVS may be greatly influenced by the HC-HL dimension, which obtained a value of p = .083, also having a statistical tendency closer to significance. As for the results between the NVS and the remaining HLS-EU-PT indices, for Disease Prevention HL p = .258 and Health Promotion HL p = .345, which means that there is no statistically significant difference.

Table 12 - Pearson Correlation Test between NVS and HLS-EU-PT indices

		NVS	Gen-HL	HC-HL	DP-HL	HP-HL
NVS	Pearson Correlation	1	.451**	.463**	.350*	.304
	Sig. (2-tailed)		.003	.003	.029	.053
	N	41	41	40	39	41
Gen-HL	Pearson Correlation	.451**	1	.849**	.899**	.912**
	Sig. (2-tailed)	.003		.000	.000	.000
	N	41	50	48	48	50
HC-HL	Pearson Correlation	.463**	.849**	1	.603**	.641**
	Sig. (2-tailed)	.003	.000		.000	.000
	N	40	48	48	46	48
DP-HL	Pearson Correlation	.350*	.899**	.603**	1	.807**
	Sig. (2-tailed)	.029	.000	.000		.000
	N	39	48	46	48	48
HP-HL	Pearson Correlation	.304	.912**	.641**	.807**	1
	Sig. (2-tailed)	.053	.000	.000	.000	
	N	41	50	48	48	50

**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).

Source: Data organization by the author.

The Pearson correlation coefficient between the Gen-HL and the NVS was also assessed (Table 12), with p = .003 and r = .451, showing a positive moderate correlation value and a statistically significant linear relationship between variables. For the remaining HL indices, positive moderate correlations were also identified for the Health Care HL (p = .003; r = .463) and the Disease Prevention HL (p = .029; r = .350) dimensions, with a statistical tendency being identified for the Health Promotion HL (p = .053; r = .304).

3. Questionnaire Survey Indicators and HLS-EU-PT Indices

To verify possible relations between the studied social determinants of health and the obtained HL levels of the sample, it was considered suitable to proceed with the data organization regarding Means, ANOVA, Chi-Square and Pearson Correlation tests. This procedure was conducted for each dimension of the questionnaire survey and HLS-EU-PT Indices.

3.1. Sociodemographic Data Dimension

For the analysis of the questionnaire survey's questions regarding Sociodemographic Data and the HLS-EU-PT dimensions, the Means and ANOVA test were conducted. The parametric test was not performed in indicators that did not meet the criteria of five minimum valid answers for each of the indicator response options, as follows: as follows: "Marital Status" (only in the DP-HL), "With whom do participants live", "Levels of education attained by participants' parents (Father)", "History of smoking measured by pack-year". Two questions that did not meet the aforementioned criteria were recoded to be tested via ANOVA: "Education level", by organizing the cases according to the categories "Did not attend school", 2nd Grade, 3rd Grade, 4th Grade or higher; "Participants' self-assessment regarding their health status", by organizing responses according to the categories "Very Good / Good", "Fair", "Very Bad / Bad". The Pearson's Coefficient Correlation test was also performed, considering the aforementioned indicators.

For the ANOVA test (Table 13), in the General HL dimension there was only one indicator with p-value < 0.05 - "Participant's background related to living/working in urban environments" (p = .026). For the same indicator, in the Disease Prevention HL dimension the p-value was similar (p = .025), and with statistical tendency in Health Promotion HL dimension (p = .069). These results show a statistically significant value between the indicator mentioned above and the Gen-HL and DP-HL dimensions, and a possible value to be studied in the HP-HL dimension. The results for this indicator in the Pearson's correlation coefficient test identified statistically significant relations in the Gen-HL (p = .026; r = .314), for the DP-HL (p = .025; r = .324) and for the HP-HL (p = .069; r = .259) showing a weak

positive relationship in these dimensions. For the remaining indicators in the Gen-HL, the ANOVA test does not show statistically significant values ($p > 0.05$), as follows: Gender ($p = .847$), Age ($p = .167$), Marital Status ($p = .267$), Education level ($p = .704$), Levels of Education attained by participants' parents (Mother: $p = .828$), Participant's background related to living/working in urban environments in years ($p = .912$), Participants' self-assessment regarding their health status ($p = .197$), Daily use of medications ($p = .472$), History of smoking ($p = .622$).

For the remaining HC-HL dimension, in the ANOVA test, it was found that no indicator had statistically significant values. For the DP-HL dimension, it was found that Age had a statistically significant value ($p = .038$). This indicator was also verified to have a statistically significant value in the Pearson Coefficient Correlation test for the DP-HL dimension ($p = .029$), and a statistical tendency for the Gen-HL dimension ($p = .088$).

In the indicators that were not possible to test in the ANOVA, its analysis was conducted using the Pearson Chi-Square Test (Table 14), for which only the levels of education attained by participants' parents (Father) was verified to have statistical significance ($p = .041$).

Using the Pearson correlation coefficient test regarding the Sociodemographic Data and HLS-EU-PT questions (Table 15), it was also possible to identify other indicators with statistical significance between variables. Through this test it was possible to identify an indicator in the Gen-HL – "Participants' self-assessment regarding their health status" -, showing a statistically significant value ($p = .046$; $r = .287$). For the same indicator, a statistically significant value was also verified in DP-HL ($p = .040$; $r = .301$), and a statistical tendency in HP-HL ($p = .071$; $r = .260$). Also, an additional indicator was verified to have a statistical tendency in Gen-HL – History of smoking, measured by pack-year ($p = .078$; $r = .656$). For this indicator, a statistically significant difference was verified on the HP-HL dimension ($p = .045$; $r = .718$) and a statistical tendency in the HC-HL dimension ($p = .061$; $r = .685$).

The daily use of medications was also found to have a statistically significant difference in the Pearson coefficient correlation test for the DP-HL dimension ($p = .048$; $r = 287$) and a statistical tendency in the HP-HL dimension ($p = .093$; $r = .240$).

Finally, the marital status was found to have a statistical tendency in the DP-HL (p = .067; r = -.266) and HP-HL dimensions (p = .096; r = -.238).

Table 13 - Means and ANOVA Test of Sociodemographic Data and HLS-EU-PT Indices

Indicators		Means (HLS-EU-PT scores) and ANOVA Test											
		Gen-HL			HC-HL			DP-HL			HP-HL		
		Means	F	*p*	Means	F	*p*	Means	F	*p*	Means	F	*p*
Gender	Male	28,606	.038	.847	28.178	.000	.995	28,658	.070	.793	29,206	.039	.843
	Female	29,069			28.195			29,366			29,725		
Age	65-74 years	30,544	1.859	.167	30.140	.943	.397	31,182	3.524	.038	30,518	.666	.518
	75-84 years	29,730			28.452			30,722			30,217		
	≧ 85 years	25,419			25.435			23,897			27,188		
Marital Status	Married	30,971	1.36	.267	29.773	.751	.478	31,976	-	-	31,412	1.417	.253
	Single	27,060			29.320			25,515			24,932		
	Widowed	27,553			26.568			27,222			28,945		
Education Level	Did not attend school	27,291	.471	.704	28.511	1.121	.351	26,914	.299	.826	25,988	.749	.529
	2nd Grade	30,292			29.237			30,938			30,498		
	3rd Grade	27,558			24.041			29,275			29,527		
	4th Grade or higher	29,953			29.848			29,597			30,774		
Levels of education attained by participants' parents (Mother)	Does not know	29,691	.190	.828	30.566	.895	.416	30,251	.067	.935	27,746	.206	.815
	Did not attend school	29,259			28.807			28,999			30,002		
	1st Cycle	27,901			25.582			28,918			29,623		
Participant's background related to living/working in urban environments	Did not live/work in urban environments	31,268	5.245	.026	30.035	2.170	.147	31,842	5.401	.025	31,690	3.464	.069
	Lived/worked in an urban environment	26,611			26.346			26,478			27,470		
Participant's background related to living/working in urban environments, in years	< 15 years	26,729	.012	.912	25.493	.270	.609	26,425	.001	.970	28,390	.835	.370
	≧15 years	26,483			27.199			26,540			26,473		
Participants' self-assessment about their health status	Very Good / Good	27,989	1.682	.197	27.986	.562	.574	27,021	2.013	.146	28,832	1.376	.263
	Fair	27,930			27.315			28,652			28,347		
	Very Bad / Bad	32,057			30.506			32,746			32,681		

Daily use of medications	No medications	25,738	.853	.472	27.384	1.217	.315	24,332	1.337	.275	25,320	.978	.411
	1 to 4 medication(s)	28,607			29.352			27,857			28,518		
	5 to 8 medications	28,351			24.573			29,987			30,651		
	≧ 9 medications	31,746			30.973			32,433			32,085		
History of smoking	Has history of smoking	27,725	.246	.622	27.887	.010	.923	26,835	.738	.395	28,803	.084	.774
	Has never smoked	29,171			28,242			29,624			29,728		

Source: Data organization by the author.

Table 14 - Pearson Chi-Square Test of Sociodemographic Data and HLS-EU-PT Indices

		Pearson Chi-Square Test							
		Gen-HL		HC-HL		DP-HL		HP-HL	
Indicators		Means	*p*	Means	*p*	Means	*p*	Means	*p*
Marital Status	Married	-	-	-	-	31,976	.276	-	-
	Single	-		-		25,515		-	
	Widowed	-		-		27,222		-	
With whom do participants live	Spouse	30,971	.668	29,773	.712	31,976	.900	31,412	.479
	By Oneself	28,733		28,047		27,667		30,154	
	Other Family Members	25,625		25,899		25,540		25,607	
	Other	27,485		26,040		28,885		27,605	
Levels of education attained by participants' parents (Father)	Does not know	29,068	.374	30,329	.554	29,509	.758	28,079	.041
	Did not attend school	28,966		27,122		29,435		30,311	
	1st Cycle	28,631		28,440		27,574		29,816	
	≧ 2nd Cycle	29,43		31,250		32,220		25,000	
History of smoking measured by pack-year	≦ 10 Pack-year	25,283	.333	26,643	.221	23,710	.423	25,923	.238
	> 10 Pack-year	30,168		28,820		29,960		31,683	

Source: Data organization by the author.

Table 15 - Pearson Correlation Coefficient Test of Sociodemographic Data and HLS-EU-PT Indices

Indicators	Pearson Correlation Coefficient Test											
	Gen-HL			HC-HL			DP-HL			HP-HL		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
Gender	.028	.847	50	.001	.995	48	.039	.793	48	.029	.843	50
Age	-.244	.088	50	-.197	.180	48	-.315	.029	48	-.144	.320	50
Marital Status	-.189	.189	50	-.055	.711	48	-.266	.067	48	-.238	.096	50
With whom do participants live	-.147	.308	50	-.107	.467	48	-.218	.138	48	-.096	.505	50
Education Level	.092	.526	50	.049	.740	48	.061	.679	48	.174	.228	50
Levels of education attained by participants' parents (Mother)	.013	.928	50	.057	.700	48	.050	.733	48	-.093	.522	50
Levels of education attained by participants' parents (Father)	.007	.961	50	.152	.303	48	.009	.950	48	-.118	.414	50
Participant’s background related to living/working in urban environments	.314	.026	50	.212	.147	48	.324	.025	48	.259	.069	50
Participant’s background related to living/working in urban environments in years	-.023	.912	25	.110	.609	24	.008	.970	24	-.187	.370	25
Participants’ self-assessment about their health status	.287	.046	49	.199	.179	47	.301	.040	47	.260	.071	49
Daily use of medications	.200	.163	50	.033	.826	48	.287	.048	48	.240	.093	50
History of smoking	.071	.622	50	.014	.923	48	.126	.395	48	.042	.774	50
History of smoking, measured by pack-year	.656	.078	8	.162	.729	7	.685	.061	8	.718	.045	8

Source: Data organization by the author.

3.2. Daily Activities Data Dimension

Concerning the analysis of the questionnaire survey's dimension Daily Activities Data and the HLS-EU-PT dimensions, the Means and ANOVA test were also organized. It was not possible to conduct the parametric test for six indicators due to not meeting the criteria of five minimum valid answers for each of the indicator response options, not being possible to adequately recode, as follows: "Daily consumption of fruit pieces" (only in the DP-HL dimension), "Daily consumption of vegetables in portions", "Daily consumption of alcoholic beverages". Two questions that did not meet the aforementioned criteria were recoded to be tested via ANOVA: "Daily meal frequency", by organizing the cases according to the categories "≤ three meals, four meals, ≥ five meals"; "Daily consumption of fruit pieces", by organizing responses according to the categories "one piece, two pieces, ≥ three pieces, Does not eat". The Pearson's Coefficient Correlation test was also performed, considering the aforementioned indicators.

Also, it was not possible to proceed with statistical tests for six indicators, due to being of multiple answers, representing a very high number of cases with cell count less than 5, as follows: "Social agents providing support to participants in daily activities", "Daily activities performed by participants", "Daily leisure activities practised by the participants", "Places where participants usually have their meals", "Figure responsible for cooking daily meals", "Most commonly consumed food at home".

The ANOVA test (Table 16) for the Gen-HL identified a statistical tendency in the indicator of daily consumption of fruit pieces (p = .067), similarly to the HC-HL (p = .114) and HP-HL dimensions (p = .067). For the Pearson Coefficient Correlation test in this indicator, a statistical tendency was identified in the HP-HL (p = .088; r = -.244). No statistically significant difference were found for the remaining questions in the Gen-HL dimension, as follows: Participants' self-perception regarding their autonomy in performing daily activities (p = .372), Daily meal frequency (p = .940), Daily water intake (p = .824), Consumption history of alcoholic beverages (p = .893).

In the indicators that were not possible to test in the ANOVA, its analysis was conducted using the Pearson Chi-Square Test (Table 17). The results for this test did not present indicators with statistical significance values.

For the Pearson correlation coefficient test (Table 18) regarding the Daily Activities data and the HLS-EU-PT questions, it was also possible to identify an additional indicator with statistical tendency – Daily consumption of alcoholic beverages (p = .087; r = .640). There were no statistically significant correlations in the remaining HLS-EU-PT indices.

Table 16 - Means and ANOVA Test of Daily Activities Data and HLS-EU-PT Indices

Indicators		Means (HLS-EU-PT scores) and ANOVA Test											
		Gen-HL			HC-HL			DP-HL			HP-HL		
		Means	F	*p*	Means	F	*p*	Means	F	*p*	Means	F	*p*
Autonomy in performing daily activities	Independent	28,159	.811	.372	27,843	.103	.750	28,301	.704	.406	28,489	1.332	.254
	Needs help	30,111			28,676			30,362			31,217		
Daily meal frequency	≤ Three meals	28,344	.062	.940	30,273	.441	.646	26,421	.858	.431	28,259	.261	.771
	Four meals	29,296			27,566			29,959			30,387		
	≥ Five meals	28,869			27,386			30,251			29,399		
Daily consumption of fruit pieces	One piece	33,777	3.217	.067	32,405	1.855	.114	34,358	-	-	34,234	2.546	.067
	Two pieces	26,226			25,354			25,891			27,649		
	≥ Three pieces	29,156			28,940			29,354			29,753		
	Does not eat	26,696			26,360			28,075			24,792		
Daily water intake	≤ 0,5L	30,368	.301	.824	30,778	.705	.554	30,015	.088	.966	30,238	.068	.977
	1L	27,883			26,235			28,448			29,703		
	1,5L	28,736			27,993			29,169			28,972		
	≥ 2L	28,164			26,894			28,630			28,960		
Consumption history of alcoholic beverages	Consumes	28,607	.018	.893	27,191	.104	.749	30,359	.194	.662	28,221	.256	.615
	Does not consume	29,003			28,361			28,920			29,839		

Source: Data organization by the author.

Table 17 - Pearson Chi-Square Test of Daily Activities Data and HLS-EU-PT Indices

Indicators		Means (HLS-EU-PT scores) and Pearson Chi-Square Test							
		Gen-HL		HC-HL		DP-HL		HP-HL	
		Means	*p*	Means	*p*	Means	*p*	Means	*p*
Daily consumption of fruit pieces	One piece	-	-	-	-	34,358	.731	-	-
	Two pieces	-		-		25,891		-	
	Three pieces	-		-		28,500		-	
	≥ Four pieces	-		-		33,195		-	
	Does not eat	-		-		28,075		-	
Daily consumption of vegetables	One portion	28,355	.414	27,752	.180	28,836	.396	28,125	.648
	Two portions	29,032		28,351		28,700		30,177	
	≥ Three portions	30,407		25,003		34,643		32,827	
	Does not eat	29,718		31,478		29,390		29,447	
Daily consumption of alcoholic beverages	One glass	26,080	.313	23,867	.301	27,043	.369	27,223	.313
	Two glasses	25,090		23,955		26,795		24,830	
	≧ Three glasses	37,180		35,415		40,555		33,610	

Source: Data organization by the author.

Table 18 - Pearson Correlation Test of Daily Activities Data and HLS-EU-PT Indices

Indicators	Pearson Correlation Coefficient Test											
	Gen-HL			HC-HL			DP-HL			HP-HL		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
Autonomy in performing daily activities	.129	.372	50	.047	.750	48	.123	.406	48	.164	.254	50
Daily meal frequency	.067	.646	50	-.093	.528	48	.182	.215	48	.119	.410	50
Daily consumption of fruit pieces	-.210	.143	50	-.175	.233	48	-.155	.294	48	-.244	.088	50
Daily consumption of vegetables, in portions	.066	.649	50	.068	.648	48	.073	.620	48	.098	.499	50
Daily water intake	-.094	.517	50	-.136	.356	48	-.048	.745	48	-.064	.660	50
Consumption history of alcoholic beverages	.020	.893	50	.047	.749	48	-.065	.662	48	.073	.615	50
Daily consumption of alcoholic beverages	.577	.134	8	.597	.157	7	.640	.087	8	.344	.404	8

Source: Data organization by the author.

3.3. Literacy and Digital Inclusion Data Dimension

Regarding the analysis of the questionnaire survey's dimension Literacy and Digital Inclusion Data and HLS-EU-PT indices, the Means and ANOVA test were verified. It was not possible to proceed with the parametric test in five indicators, due to not meeting the criteria of five minimum valid answers for each of the indicator response options, not being possible to adequately recode, as follows: "Ability to use the Internet", "History of computer use", "Interest in knowing how to use a computer", "Participants owing a telephone and/or mobile phone", "Exposure time to television content, in hours". The Pearson's Coefficient Correlation test was also performed, considering the aforementioned indicators.
Also, it was not possible to proceed with statistical tests for six indicators, due to being of multiple answers, representing a very high number of cases with cell count less than 5, as follows: "Social agent who supports the search for information on the Internet", "Mobile phone usage".

In the ANOVA test (Table 19), for all the HLS-EU-PT dimensions, no statistically significant relationship was found in the studied indicators. However, two statistical tendencies were identified for the indicator "Support in searching information on the internet" in the HC-HL (p = .109) and DP-HL (p = .103) dimensions. In the latter, a marginally significant trend (p = .103; r = -.238) was also found in the Pearson's correlation coefficient test.

In the indicators that were not possible to test in the ANOVA, its analysis was conducted using the Pearson Chi-Square Test (Table 20). The results for this test did not present indicators with statistical significance values.

In the Pearson's correlation coefficient (Table 21), only the indicator "History of computer use", showed statistically significant differences for the Gen-HL (p = .044; r = .287) and for the DP-HL (p = .007; r = .386), showing a low positive degree of correlation. An additional indicator in the DP-HL dimension registered a statistical tendency – Participants owing a telephone and/or mobile phone (p = .066; r = -.267).

Table 19 - Means and ANOVA Test of Literacy and Digital Inclusion Data and HLS-EU-PT Indices

Indicators		Means (HLS-EU-PT scores) and ANOVA Test											
		Gen-HL			HC-HL			DP-HL			HP-HL		
		Means	F	*p*	Means	F	*p*	Means	F	*p*	Means	F	*p*
Reading Habits	Has reading habits	29,197	.149	.701	28,685	.404	.528	29,390	.087	.770	29,883	.171	.681
	Does not have reading habits	28,278			26,859			28,601			28,802		
Ability to write letters/messages	Has the ability	29,403	.366	.548	28,513	.116	.735	29,701	.397	.532	30,400	.965	.331
	Does not have the ability	28,040			27,602			28,078			27,989		
Support in searching information on the Internet	Does not have support	26,186	2.183	.146	24,665	2.670	.109	25,748	2.764	.103	28,037	.551	.461
	Has support	29,809			29,365			30,297			30,067		
Exposure time to radio content, in hours	Does not listen to radio	28,031	.962	.419	26,634	.766	.519	28,290	.521	.670	28,955	1.685	.183
	< 1h	29,619			28,448			29,855			30,853		
	1-2h	32,489			32,351			32,025			33,560		
	> 2h	26,480			28,785			27,135			24,227		

Source: Data organization by the author.

Table 20 - Pearson Chi-Square Test of Literacy and Digital Inclusion Data and HLS-EU-PT Indices

Indicators		Means (HLS-EU-PT scores) and ANOVA Test							
		Gen-HL		HC-HL		DP-HL		HP-HL	
		Means	*p*	Means	*p*	Means	*p*	Means	*p*
Ability to use the Internet	Does not have the ability	29,168	.548	28,196	.209	29,540	.334	29,905	.623
	Has the ability	26,313		28,128		24,980		25,845	
History of computer use	Has never used	29,566	.548	28,527	.246	30,122	.334	30,165	.623
	Has used	21,730		24,480		18,572		22,850	
Interest in knowing how to use a computer	Does not have interest	30,515	.427	29,163	.406	30,991	.452	31,332	.907
	Has interest	28,835		28,055		29,462		29,311	
	Does not know	30,560		28,890		-		30,210	
Participants owing a telephone and/or mobile phone	Only has a telephone	30,853	.377	28,962	.158	31,895	.793	31,533	.654
	Only has a mobile phone	26,556		26,255		26,060		27,721	
	Has neither device	31,327		31,043		31,110		31,250	
	Has both devices	26,749		28,062		25,908		26,707	
Exposure time to television content, in hours	Does not watch television	23,220	.430	25,695	.621	25,555	.725	18,750	.357
	< 2h	30,725		28,968		31,253		32,321	
	2-4h	25,985		27,324		25,066		25,506	
	> 4h	28,196		27,084		29,524		28,056	

Source: Data organization by the author.

Table 21 - Pearson Correlation Test of Literacy and Digital Inclusion Data and HLS-EU-PT Indices

Indicators	Pearson Correlation Coefficient Test											
	Gen-HL			HC-HL			DP-HL			HP-HL		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
Reading Habits	-.056	.701	50	-.093	.528	48	-.043	.770	48	-.060	.681	50
Ability to write letters/messages	-.087	.548	50	-.050	.735	48	-.092	.532	48	-.140	.331	50
Ability to use the Internet	.104	.470	50	.002	.988	48	.152	.301	48	.135	.348	50
Support in searching information on the Internet	-.209	.146	50	-.234	.109	48	-.238	.103	48	-.107	.461	50
History of computer use	.287	.044	50	.129	.383	48	.386	.007	48	.244	.088	50
Interest in knowing how to use a computer	.111	.464	46	.059	.701	44	.096	.536	44	.111	.463	46
Participants owing a telephone and/or mobile phone	-. 188	.191	50	-.024	.870	48	-.267	.066	48	-.205	.153	50
Exposure time to television content, in hours	-.128	.375	50	-.057	.702	48	-.145	.324	48	-.158	.273	50
Exposure time to radio content, in hours	-.143	.322	50	-.135	.361	48	-.118	.426	48	-.152	.293	50

Source: Data organization by the author.

3.4. Knowledge of Health Information Data Dimension

Regarding the analysis of the questionnaire survey's dimension of Health Information data and the HLS-EU-PT indices, the Means and ANOVA test were conducted. It was not possible to proceed with the parametric test in four indicators due to not meeting the criteria of five minimum valid answers for each of the indicator response options, not being possible to adequately recode, as follows: "Interest in searching for health information", "Knowledge of the National Health Plan", "Use of the SNS 24". The Pearson's Coefficient Correlation test was also performed, considering the aforementioned indicators.
Also, it was not possible to proceed with statistical tests for six indicators, due to being of multiple answers, representing a very high number of cases with cell count less than 5, as follows: "Content of the recalled health information", "Sources that transmitted the health information", "Sources for the search of health information", "Which Health Programmes is the participant knowledgeable".

No statistically significant differences were identified in the ANOVA test for the questions in all HLS-EU-PT indices (Table 22).

In the indicators that were not possible to test in the ANOVA, its analysis was conducted using the Pearson Chi-Square Test (Table 23). The results for this test did not present indicators with statistical significance values.

Results for the Pearson correlation coefficient test (Table 24) identified two indicators with statistical tendencies – Knowledge of the National Health Plan ((p = .065; r = -.263) and Use of the SNS 24 (p = .102; r = .519).

Table 22 - Means and ANOVA Test of Knowledge of Health Information Data and HLS-EU-PT Indices

Indicators		Means (HLS-EU-PT scores) and ANOVA Test											
		Gen-HL			HC-HL			DP-HL			HP-HL		
		Means	F	*p*	Means	F	*p*	Means	F	*p*	Means	F	*p*
Participants recall about health information	Recalls	29,263	.261	.612	28,177	.000	.986	29,708	.615	.437	30,168	.725	.399
	Doest not recall	28,019			28,227			27,513			27,906		
Knowledge about Health Programmes	Knows	30,243	.328	.570	28,256	.001	.982	31,917	1.210	.277	31,429	.551	.462
	Does not know	28,653			28,177			28,523			29,174		
Knowledge about the SNS 24	Knows	28,522	.165	.686	27,410	.374	.544	28,983	.021	.886	29,477	.008	.928
	Does not know	29,391			28,970			29,336			29,691		
Does the participant know how to use the SNS 24?	Knows	28,339	.640	.909	27,744	.020	.889	28,638	.032	.859	29,667	.012	.912
	Does not know	28,657			27,172			29,230			29,338		

Source: Data organization by the author.

Table 23 - Pearson Chi-Square Test of Literacy and Digital Inclusion Data and HLS-EU-PT Indices

Indicators		Means and ANOVA Test							
		Gen-HL		HC-HL		DP-HL		HP-HL	
		Means	*p*	Means	*p*	Means	*p*	Means	*p*
Interest in searching for health information	Has interest	28,852	.816	27,996	.209	29,120	.419	29,626	.869
	Does not have interest	29,950		30,330		29,760		29,048	
Knowledge about the National Health Plan	Knows	31,714	.307	29,464	.793	31,880	.910	34,836	.264
	Does not know	28,502		28,125		28,689		28,628	
	DK/DA	26,600		25,000		27,220		27,605	
Knowledge about the SNS 24	Knows	28,522	.281	27,410	.240	28,983	.493	29,477	.421
	Does not know	29,391		28,970		29,336		29,691	
Use of the SNS 24	Never used	27,117	.232	26,816	.333	27,103	.333	27,939	.425
	1-2 time(s)	24,565		24,550		22,220		25,800	
	3-4 times	36,390		40,630		37,220		39,585	

Source: Data organization by the author.

Table 24 - Pearson Correlation Test of Knowledge of Health Information Data and HLS-EU-PT Indices

Indicators	Pearson Correlation Coefficient Test											
	Gen-HL			HC-HL			DP-HL			HP-HL		
	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N	Pearson Correlation	Sig. (2-tailed)	N
Participants recall about health information	-.074	.612	50	.003	.986	48	-.115	.437	48	-.122	.399	50
Interest in searching for health information	.040	.782	50	.074	.616	48	.019	.899	48	-.019	.894	50
Knowledge about the National Health Plan	-.168	.243	50	-.087	.555	48	-.147	.319	48	-.263	.065	50
Knowledge about Health Programmes	-.082	.570	50	-.003	.982	48	-.160	.277	48	-.106	.462	50
Knowledge about the SNS 24	.059	.686	50	.090	.544	48	.021	.886	48	.013	.928	50
Does the participant know how to use the SNS 24?	.024	.909	26	-.030	.889	24	.038	.859	24	-.023	.912	26
Use of the SNS 24	.462	.153	11	.260	.468	10	.521	.123	10	.519	.102	11

Source: Data organization by the author.

Chapter 6 - Data Discussion

1. Results from the HLS-EU-PT, NVS and Questionnaire Survey

It was verified that the HLS-EU-PT application in the research sample (N=50) had a Cronbach's Alpha value of $\alpha = 0.93$ for the General HL and values between $\alpha = [0.85;0.93]$ for the remaining indices, representing an overall high internal consistency for the tool. Values for the same indicator in similar national studies appointed for similar values between: $\alpha = 0,96$ in Gen-HL and $\alpha = 0,91$ for the remaining indices in the ILS-PT (Espanha et al., 2016); $\alpha = 0,96$ in Gen-HL and between $\alpha = 0,90$-$0,96$ for the remaining indices in the HLS-EU-PT by Pedro et al. (Pedro et al., 2016); $\alpha = 0,95$ in Gen-HL and between $\alpha = 0,91$-$0,97$ in the HLS-EU-PT (Luís Saboga-Nunes et al., 2014).

The registered General HL levels in the sample were overall lower than the ones registered in national studies. The major difference was found in the Limited HL levels, with 82% in the research sample and values between 49%-61,4% in national studies (Espanha et al., 2016; Pedro et al., 2016; Luís Saboga-Nunes et al., 2014).

In the current research, Gen-HL results for Limited HL (82%) were worse than the remaining HLS-EU-PT indices (72,9%-74%), corresponding to a difference of around 10%. The Health Promotion HL (74%) had a slight difference in Limited HL when compared to the Health Care HL and Disease Prevention HL (both with 72,9%). Nonetheless, overall results for theses indices were very similar.

The average means registered in the sample for the HLS-EU-PT indices ranged between 28,2 and 29,6, corresponding to the Health Care HL and the Health Prevention HL indices, respectively. These values show that in all the HLS-EU-PT indices, the score distribution was mostly concentrated in the Problematic HL level, representing scores between 25 and 33.

The obtained results for the HLS-EU-PT in the current elderly ruralized sample suggest that this population group might have aggravated Limited HL levels, directly differing to over 20% to 30% in Gen-HL when compared to the general population, not considering confidence intervals. It was also verified that the low HL levels are very similar between the remaining HLS-EU-PT indices, suggesting that there are no differential critical dimensions in which participants have lower performances.

In the HLS-EU-PT, the questions in which most participants declared to be “Very Easy” (34%) was related to the decision of taking a flu vaccination and “Easy” (68%) concerning the participants' judgment of how life affects one’s health and well-being. Both questions also had a major representation in the conjunction “Very Easy + Easy” (88%), along with two other questions directed at following instructions on medication and the participants’ judgment on how their housing conditions could help them to stay healthy. On the other hand, the question in which most participants answered to be “Very Difficult” (26%) was related to finding information about political changes that may affect health and “Difficult” (44%) concerning finding information about the treatment of illness. The former question was the one with most representativeness in the conjunction “Very Difficult + Difficult” (71%).

To understand the participants’ main dimensions of thought when answering the HLS-EU-PT, a factor analysis via the principal components was assessed. The test revealed a total of twelve factors that accounted for around 80% total variance of HL results. The first two principal factors represented half the total variance of the twelve factors identified, around 40%, being considered the main factors. These corresponded to dimensions such as access, understanding and using information, and preparedness to deal with medical emergencies or illness. The remaining ten principal factors represent the other half of total variance, around 40%, being considered complementary due to representing supporting mathematic effects to the former factors, such as using health information to maintain and improve the health status, interacting with the doctor, search for specific information, among others. The remaining factors represent a total variance of around 20% that comprise random effects related to the diversity of human thought.

Regarding the NVS tool application in the research, it was not possible for 18% of participants to complete the survey due to not having sufficient literacy to read the tool’s nutritional sheet. The Cronbach’s Alpha value for the NVS was registered to be $\alpha = .694$, showing a questionable internal consistency for the valid surveys in this tool. Results for the remaining forty-one participants indicate a proportion of Limited HL equal to 95% (High Likelihood of limited HL (80%) + Possibility of Limited HL (15%) of the sample, with only 5% registering adequate HL. To establish a similar basis with the sample number of the HLS-EU-PT, scores were also obtained with the inclusion of missing surveys. This process

resulted in 96% of the sample having obtained Limited HL in the NVS, a value that differed from the Limited HL in the HLS-EU-PT by around 13-14%.

The factor analysis via the principal components for the NVS questions was used to assess the participants' main dimensions of thought. Through this test, it was verified that from the total six questions from the NVS, two main factors were identified to account for around 79% total variance of HL results. The first corresponded to dimensions of numeracy skills for interpreting the nutritional label and the second of literacy skills for the same purpose. The remaining factors represented a total variance of around 21%, explaining random effects related to the diversity of human thought.
Data for the factor analysis via the principal components for the NVS were also found in a national study (Anabela Correia Martins et al., 2014), in which two main factors were identified, explaining around 61% of the total variance, being comprised by similar inter-item correlations.

An analysis to the results' concordance between the HLS-EU-PT and the NVS was also conducted, for each common valid survey (N = 41), suggested that in 12% of the total sample the obtained HL levels did not match. Two participants registered to have Excellent HL levels in the HLS-EU-PT and High Likelihood of Limited HL in the NVS. Four participants registered to have Sufficient HL levels in the HLS-EU-PT, with three registering a High Likelihood of Limited HL and one Possibility of Limited HL in the NVS. Therefore, results suggest that, in addition to the 18% of participants who could not complete the NVS survey due to illiteracy, there were also 12% who obtained different HL levels between tools, resulting in a total of 30% of invalid surveys for the total sample.
In a national study (Luís Saboga-Nunes et al., 2014) that was possible to consult data regarding the application of both tools, a difference between HL results was also identified. While in the HLS-EU-PT 53% of participants registered to have Limited HL levels, in the NVS the proportion corresponded to 72,5%, representing a difference of 19,5% between results. Considering the aforementioned values, it is suggested that the concordance of results between both tools is not verified due to the difference in HL levels.
Verified national studies for the NVS application (Paiva et al., 2017; Luís Saboga-Nunes et al., 2014) registered Limited HL values between 72,5%-72,9%, with the "High Likelihood

of Limited HL" having values between 29,6% and 42,5%. When comparing these NVS results with the current research it is possible to verify a higher proportion of Limited HL in the studied sample, and a major difference in the representativeness of "High Likelihood of Limited HL" in the ruralized elderly. Furthermore, a study (Veiga & Serrão, 2016) in which the NVS was applied in an elderly cohort showed HL levels of 80%, a value still lower than the 95% found in the current research. According to the NVS results, the HL levels are suggested to be generally more aggravated in this population group than the general population and possibly in elderly samples that do not differentiate rural background. Moreover, it is also possible that a higher proportion of ruralized elderly is to be found in the lowest HL level, solely in relation to the NVS studies for the general population.

The ANOVA test was conducted between the HLS-EU-PT indices and the NVS, showing no statistically significant differences, but identifying two statistical tendencies for significance in the Gen-HL and HC-HL dimensions. For future studies, it may be interesting to further test the HC-HL in a broader sample, given that is the only dimension with possible statistical significance, comprising part of the Gen-HL.
The Pearson correlation coefficient test showed moderate positive correlations with statistically significant differences for the Gen-HL, Health Care HL and Disease Prevention HL. Also, the obtained result for the HP-HL almost achieved the $p = 0.05$, thus being considered as having a statistical tendency.

Considering the aforementioned analysis between tools, it is shown that the application of the NVS may not be suitable for measuring HL levels in this population group mostly due to illiteracy. Also, using the NVS does not guarantee a concordance of results as a complementary test with HLS-EU-PT, as in addition to the illiteracy obstacle there were also identified different HL scores. For example, as identified above regarding the two participants who registered Excellent levels of HL in the HLS-EU-PT and a High Likelihood of Limited HL in the NVS; and also the four participants registering Sufficient HL levels in the HLS-EU-PT while obtaining scores below the Adequate HL of the NVS.

To address the secondary objective of the research, HL levels obtained from the HLS-EU-PT were studied along with social determinants of health data collected with the Questionnaire Survey to verify possible relations between both factors.

In the **Sociodemographic Data dimension**, it is suggested that five indicators may have a statistically significant relation with at least one HL index from the HLS-EU-PT, as follows:

1. **Age**

Age was verified to have a statistically significant difference with the DP-HL index, by the ANOVA test (p = .038), and a weak negative relationship with the Pearson's correlation coefficient test (p = .029; r = -.315). Also, results suggest that the indicator has a statistical tendency in the Gen-HL (p = .088; r = -.244).
Ageing is often described in national and international literature as being related to lower HL levels, especially for individuals of 65 years old or more (Espanha et al., 2016; HLS-EU Consortium, 2012; Pedro et al., 2016; Luís Saboga-Nunes et al., 2014; Veiga & Serrão, 2016). As this sample is composed of age groups stratified over the 65 years old, there is more homogeneity regarding this indicator, which could be an explanation for the statistically significant difference in the DP-HL index and statistical tendency in the Gen-HL. Nonetheless, it may be interesting to study this indicator in future research, as it may provide insights on the health literacy levels stratified by age groups in samples comprising individuals with 65 years old and over.

2. **Participant's Background related to living/working in urban environments**

Participant's background related to living/working in urban environments was also verified to have a statistically significant difference in the Gen-HL and the DP-HL. This was suggested by the ANOVA test result of p = .026 (Gen-HL) and p = .025 (DP-HL) and by the Pearson's coefficient correlation test with matching *p-values*. Also, a statistical significance was found in the HP-HL.
In the literature, it is widely described that the place of residence, urban and rural, was related to HL levels, with better results being found in individuals with urban residence (Catarina

Martins, 2017; Lee, Choi, Lee, & Nam, 2017; Toçi, 2014). Considering that Portugal is a country with a highly ruralized background, it was considered important to assess if the elderly with a ruralized background who have lived or worked in urban environments had a difference in health literacy levels in comparison to those who did not. Obtained results for this study suggest that it may be relevant to include this indicator in future research with broader samples.

3. Participants' self-assessment regarding their health status

The participant's self-assessment regarding their health status was found to have a statistically significant difference in the Pearson Coefficient Correlation test for the Gen-HL (p = .046; r = .287), and the DP-HL (p = .040; r = .301). Also, a statistical significance was found for this indicator regarding the HP-HL (p = .071; r = .260).

This indicator is also assessed in the HLS-EU, with results in the literature suggesting that the negative self-assessment of one's health status and the existence of chronic health conditions of comorbidities is associated with lower HL levels (Espanha et al., 2016; Sørensen et al., 2015). The declared responses by the research participants suggest that around a third of participants ("Very Bad" + "Bad" sets) need training and support to manage and improve their health status adequately, as only one participant reported having a very good health status, opposed to five reported having a very bad health status.

4. Daily use of medications

The daily use of medications was verified to have a statistical significance in the Pearson Coefficient Correlation test for the DP-HL (p = .048; r = .287) and a statistical tendency for the HP-HL (p = .093; r = .240).

In the literature, negatives health outcomes, including an increased risk of mortality have been identified between low HL levels and the use of medication in elderly populations (Parekh, Ali, Davies, & Rajkumar, 2018). In the research sample, around half of the participants declared to take five or more medications, from which 22% reported using more than nine medications. This suggests that due to the health conditions associated with ageing

and the presence of comorbidities, along with low health literacy levels, the elderly population is more vulnerable to medication-related harm.

5. History of smoking, measured by pack-year

Having a history of smoking, the amount of pack-year smocked by participants was verified to have a statistically significant difference in the HP-HL index. This was suggested by the ANOVA test result of $p = .045$ and the Pearson correlation coefficient test ($p = .045$; $r = .718$), showing a high positive degree of correlation.

The study of the relations between smoking practice and health literacy levels were found to be limited in the literature, with no weight being found towards the existence/non-existence of relationship between indicators (Geboers, Reijneveld, Jansen, & de Winter, 2016; Panahi, Ramezankhani, Tavousi, & Niknami, 2018). In the particular case of the elderly, a study (Geboers et al., 2016) assessed the relation of HL levels and smoking when mediated by social contacts. Interestingly, it was found that low HL levels were found to be related with more smoking in the elderly with a great set of social contacts, as well as with less smoking in individuals with fewer social contacts (Geboers et al., 2016). It is suggested that both smoking and pack-years should be considered elements for further research in the elderly population, especially in those related to HL, while also considering the dimension of social contacts.

Two additional indicators were verified to have a statistical tendency - Marital Status (by the Pearson Correlation Coefficient Test for the DP-HL ($p = .067$; $r = -.266$) and the HP-HL ($p = .096$; $r = -.238$) dimensions) and the Levels of education attained by participants' parents (Father) (by the Pearson Chi-Square Test ($p = .041$) – which suggests that in broader studies will also be interesting to verify if the statistical significance is verified. In a national study, it was identified that marital status had a relation with HL levels, in which individuals who were married had higher HL levels (Veiga & Serrão, 2016). Parental attained education levels have been identified in the literature as a determinant for the education attainment success of their children, also exerting a crucial influence on health literacy levels (Parekh et al., 2018).

In the **Daily Activities Data dimension** from the Questionnaire Survey, it was verified that two indicators have statistical tendencies for significance relations with the HLS-EU-PT indices, as follows:

1. **Daily consumption of fruit pieces**

The daily consumption of fruit pieces was found to have a statistical tendency, using the ANOVA test, in the Gen-HL (p = .067; r = 3.217), the HC-HL (p = .114; r = 1.855) and the HP-HL (p = .067; r = 2.546). It was also found a statistical tendency with the HP-HL in the Pearson Correlation test (p = .088; r = -.244).
In the literature, a study from a rural area in Australia was found (Lim et al., 2017), in which HL is identified as having an important role in increasing fruit/vegetables intake to meet the consumption of daily recommended portions. However, no studies were found regarding HL levels relation with the daily consumption of fruit pieces. Nonetheless, the inclusion of this indicator in future studies may provide additional insights into the identified knowledge gap.

2. **Daily consumption of alcoholic beverages**

For the Pearson Correlation Coefficient, it was identified that the daily consumption of alcoholic beverages has a statistical tendency in the DP-HL dimension (p = .087; r = .640). Few studies were found regarding health literacy levels and the consumption of alcoholic beverages, with most being related to young individuals. In a national study (A. M. Rodrigues et al., 2018) with an elderly cohort, around a third of participants declared to consume alcoholic beverages on a daily basis. With this indicator being suggested to be very present in the elderly population in Portugal, its inclusion in future studies may provide insights in its relation with health literacy.

In the **Literacy and Digital Inclusion Data dimension** from the Questionnaire Survey, it is suggested that one indicator – History of computer use - has a statistically significant relation, in the Pearson Correlation Coefficient test, with the Gen-HL (p = .044; r = .287) and DP-HL (p = .007; r = .386) dimensions.

In the literature, it was found that participants who declare to have lower levels of computer literacy also have inadequate HL levels (Chesser et al., 2016). Considering that over 90% of the research sample declared to never having used a computer, and around half declaring to have interest in using one, it is suggested that the inclusion of both indicators is further studied.

Also, two indicators were verified to have statistical tendencies to significance, by the Pearson Correlation Coefficient test – Support in searching information on the Internet (p = .103; r = -.238) and Participants owing a telephone and/or mobile phone (p = .066; r = .267). The purpose of inclusion for both indicators in the research was to assess, in more detail, the relation of the elderly with digital technologies, such as the assistance of searching for information on the Internet, if needed, and the access to mobile phones and corresponding purpose of use. No specific studies were found in the literature regarding the relation of both indicators with HL levels.

Finally, for the last dimension of the Questionnaire Survey, regarding **Knowledge of Health Information Data**, no statistically significant differences were found in any indicator using the ANOVA, Pearson Chi-Square and Pearson correlation coefficient tests. However, it was found that two indicators have statistical tendencies to significance, using the Pearson Correlation Coefficient Test – Knowledge of Health Programmes (p = .065; r = -.263) and Use of the SNS 24 (p = .102; r = .519).
The inclusion of both indicators in the research was to assess, in further detail, the knowledge of participants regarding available health information, programmes and services. In particular, for the use of the SNS 24 as an available mobile health service in Portugal, as it has been found in the literature that fostering HL through digital platforms may have an important role in health promotion (Ownby, Acevedo, & Waldrop-Valverde, 2019). Nonetheless, no literature was found regarding the relations between HL and the Portuguese Health Programmes and SNS 24.

The reading of the social determinants of health collected data in the Questionnaire survey also allows establishing an interpretation basis of results regarding the communicational context of the measurement of health literacy levels.

The low attained education levels were very clear in the studied sample, with only two participants declaring to have higher education levels than the 4th Grade. Declared levels of education attained by participants and their parents showed to be even lower. In the literature, education and overall literacy have been widely appointed as a determinant of health literacy, along with effective communication, that greatly influences one's global health status (Sørensen et al., 2012; Vamos, Okan, Sentell, & Rootman, 2020). Considering the context in which the participants of the study lived during their childhood and the one of their parents, there were great limitations for literacy opportunities, with high illiteracy rates and the majority of students attaining primary education (P. Gomes & Machado, 2019). The low education levels represent difficult challenges for the capacitation of individuals with an adequate set of tools to navigate the social system and acquire different skills. For example, the training of communication skills is fundamental to understand what is being communicated and to transmit meaning. Therefore, education is affirmed as a fundamental dimension that greatly contributes to the distribution of cultural capital, allowing greater social mobility through functional differentiation (Bourdieu, 1998). Following this reading, there are direct frailties in education that contribute to the elderly being a vulnerable group regarding low HL levels (Espanha et al., 2016).

According to participant's declarations, around a third of the sample do not have reading habits nor has the ability to write a letter, which can be partly explained by the individuals who did not attend school, comprising 12% of the sample. Therefore, in line with the declared information, it is suggested that around a third of the sample have some degree in access to information, solely based on basic literacy skills. Also, only 8% of the participants declared to have the ability to use the Internet and to ever having used a computer. Over half of participants declared to have interest in knowing how to use this device, which suggests that the issue may be related to the lack of training related to digital technology rather than the lack of motivation to learn. Despite around half the sample having a telephone, the majority of participants declared to mostly use it to received and/or make calls. This data suggests that there is a great need for reinforcing measures that foster info-inclusion and

reduce the digital divide. Access to information through digital technology means, especially on the Internet, is suggested to be residual. On the contrary, it was registered that the elderly have great exposure to digital content via television, with over half participants having declared to watch this type of content for less than two hours, with only 4% declaring not to watch television. As for radio, despite being less consumed than television, it was verified that around half the sample declared to listen to this type of content. Both traditional media represent an opportunity for the elderly to have access to health information. However, it was identified in a national study (Oliveira & Espanha, 2018), that the media coverage in television, radio, newspapers and online platforms in Portugal was very low concerning information to foster health literacy, with topics on public health and disease treatments being more frequent than those related to the prevention of health risks and management of health. Regarding sources in which participants declared to recall having transmitted health information, the Doctor, Family and Television were the most frequent. Also, declared sources for the search of health information was declared by the majority of participants to be the Doctor, Family and Hospital. This data suggests that participants resort to more personal approaches when accessing sources to search for health information, with the Doctor being the social actor most frequently declared, followed by the Family, being aligned with data from national studies (Espanha et al., 2016; Serrão & Veiga, 2020).

The swift increase towards the use of digital technologies, in which access and available information are in continuous growth, places increased importance on literacy skills to adequately navigate social systems constituted by communications. In populations with low attained education levels and low HL, such as the population segment in this study's sample, there are serious limitations in the search, access, understanding and use of information, such as that related to Health. In line with Luhmann's work, the second improbability of communication is aggravated if the access to information via digital technologies is limited (Luhmann, 1981). This relationship with information is partly reflected in the preference for personal approaches in the search for information. However, the results of this study suggest that more traditional means present an opportunity for decreasing the improbability of communication by transmitting relevant health information to the elderly, such as television or radio. Nonetheless, the transmitted information must have in consideration the literacy levels of the different publics, as a unique message is susceptible to different interpretations

by different people. It is of the utmost importance that initiatives are designed to foster education and different types of literacy (including HL) in vulnerable groups, but also to tailor communication processes to the different publics. For example, the adequation of the Doctors' speech to patients to approach an adequate level of understanding by the patient or investing in services that consider different HL levels of the users, such as the SNS 24. Such initiatives have the potential of greatly contributing to reducing the improbabilities of communication regarding the understanding of is being transmitted and changing behaviours in line with the transmitter's intentions (Luhmann, 1992, 2006).

The current COVID-19 pandemic is having a major impact on the elderly population, being considered one of the most vulnerable groups facing the virus (ASPHER, 2020). The major difference between COVID-19 and other diseases is that its prevention and management is mainly an informative situation. Being a new disease, scientific works focused on COVID-19 have been rapidly changing, to a point in which what was known in one day could no longer be true in the next day. COVID-19 has been showing evidence that effective communication is crucial in the face of a threat, in the case, a disease (Reddy & Gupta, 2020). Communication has shown to have the potential for both positive and negative outcomes, either in saving lives or in increasing mortality mainly by reducing the disease incidence. The adequate understanding and compliance with guidelines of major international and national health entities, such as the use of masks, is estimated to have the potential of saving millions of lives (Flaxman et al., 2020; Hsiang et al., 2020; Reiner et al., 2020). On the other hand, effective communication and the social receptivity to preventive measures is undermined by misinformation, fake news and conspiracy theories that often lead to risk behaviours that may affect one's health and of people one is responsible for (Reddy & Gupta, 2020).

It is important to note that the data collection for this procedure, from March to May 2019, occurred seven months before the first report of infection case by the new virus SARS-CoV-2. Naturally, despite not being possible to study elements directed related to the COVID-19 pandemic, the results of this dissertation encompass a frame of health literacy aspects and social determinants of health that could provide insights on the elderly vulnerability to the virus. The low HL levels registered in the sample indicate a clear vulnerability in facing the risks on a pandemic. Despite the aggravated possibility for the elderly to develop severe

COVID-19, the low HL skills difficult the access, understanding and filtering of high-quality information. The conditions are met for aggravated inequalities in this population, especially in Health, with the need for great reinforcement of HL being appointed as a fundamental dimension to compensate negative outcomes of the pandemic and supporting the sustainability of the National Health Service. The success of health literacy strengthening measures greatly depends on the follow-up with training regarding the importance and application of preventive measures, accompanied by communication with clear, useful and transparent information, especially from the governmental entities and the media.

Conclusion

This work comprised a pilot study, having as main objective the behaviour assessment of the HLS-EU-PT and NVS tools in measuring Health Literacy levels in a ruralized elderly population. In the behaviour analysis of both tools' application in a cohort of fifty individuals, with characteristics that represented the population segment, an infrastructural limitation was found in the NVS. This limitation was likely due to the high proportion of illiterate participants in the research cohort (18% of the total sample). The Cronbach's Alpha for this tool was registered to be $\alpha = .694$, representing a questionable value for internal reliability. Therefore, it is possible that the NVS may not be adequate for application in cohorts intending to study similar population segments that comprise a significant number of illiterate participants. On the other hand, this limitation may be surpassed with the HLS-EU-PT. Despite being an extensive tool, the used metrics for the skills and knowledge self-appreciation were suggestive of higher adequacy for the functional literacy measurement. The obtained Cronbach's Alpha for this tool was registered to be $\alpha = 0.90$ for the Gen-HL index and between $\alpha = 0.85$ and $\alpha = 0.90$ for the remaining HL indices, showing high internal reliability.

Results for the HLS-EU-PT in the current sample showed a Limited HL proportion of 82%, for the Gen-HL, while for the NVS it was between 95%-96% considering the readings of including/excluding valid surveys. It was verified that there was a difference in the concordance of the results between both tools, in which 12% of the total sample obtained HL results that did not match. Adding to the 18% of participants who did not complete the NVS survey, if both tools were considered for the research, it would imply a total of 30% invalid surveys.

It was verified that this population segment has lower HL levels, a result obtained in both tools, in comparison to other national studies of the general population. Also, HL values are lower for this specific population segment when compared to studies in elderly cohorts, which may be an influence of a highly ruralized background, indicating the need for further studies about this dimension. Nonetheless, the aforementioned results fundament the reading that the elderly population is a vulnerable group to low HL levels.

For this pilot study, it was also considered of the utmost importance to assess if social determinants of health had relations with the HL levels of the studied population. It should be noted that, due to the limitation of the study sample being small, the main contribution of the statistical analysis comprised the identification of possible social determinants of health with relations to HL levels. This assessment aimed to provide relevant insights on which social determinants of health may be relevant to study in future research.

Through the analysis of collected data by the Questionnaire Survey, it was possible to identify social determinants of health that may have a relation with HL, with results appointing for both statistical significance and statistical tendencies for significance with at least one HL dimension from the HLS-EU-PT. In the Sociodemographic data dimension, statistically significant relations were identified in five indicators (Age; Participant's background related to living/working in urban environments; Participants' self-assessment regarding their health status; Daily use of medications; History of smoking, measured by pack-year) and statistical tendencies in two indicators (Marital status; Levels of education attained by the participant's father). For the Daily Activities data dimension, only statistical tendencies were identified for two indicators (Daily consumption of fruit pieces; Daily consumption of alcoholic beverages) with no statistically significant relations being identified. In the Literacy and Digital Inclusion data dimension, a statistically significant relation was verified for one indicator (History of Computer Use) and a statistic tendency for two indicators (Support in searching information on the Internet; Participants owing a telephone and/or mobile phone). In the Knowledge of Health Information Data, only statistical tendencies were identified in two indicators (Knowledge of Health Programmes and Use of the SNS 24), with no statistically significant relations being identified.

The present research contributed to the understanding and research field focused on the HL dimensions of elderly populations. The main contributes were verified at two levels: 1) Methodology - with the application behaviours assessment of two commonly used HL measurement tools in Portugal in an elderly cohort, namely with highly ruralized background, and corresponding HL levels; Sociodemographic – with the study of social determinants of health of a specific population, enriching the existing knowledge about characteristics of populations with similar characteristics, and possible relations of these indicators with HL dimensions.

There is great room for improvements in filling the knowledge gap regarding sociodemographic characteristics and other social determinants of health in the elderly, especially those with highly ruralized background, fundamental for understanding inherent communication processes regarding accessing, understanding and using health information. Also, to adequately proceed with the study of social determinants of health and measurement of HL levels in elderly cohorts, especially of rural backgrounds, it is suggested that tailored criteria and methodology is further studied.

Fostering health literacy faces an ample room for improvement, being of the utmost importance for every individual, especially for those in more vulnerable groups, such as the elderly. Now, more than ever, in the face of a pandemic that sets older adults and individuals with underlying health conditions at higher risk of severe illness, health literacy can be a key element with the potential to save millions of lives. The need for adequate health literacy is of the utmost urgency for the present, but it also encompasses an opportunity for a healthier future by capacitating people with knowledge on how to prevent the appearing of health conditions, and manage their health and well-being, as well as of those of whom they are responsible for.

A possible contribution of this pilot study is to provide insights for a broader international project with a more in-depth approach about social determinants of health and relation with HL levels. Future research should aim to address the limitations of general literacy nature commonly associated with the studied population segment, along with other features that stem from the natural course of life. For this future work, at least three scientific articles resulting from this dissertation are scheduled for production in the Public Health Unit of the Institute of Health Sciences of the Portuguese Catholic University.

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Appendixes

Appendix A – HLS-EU-PT and NVS Tool Sheets

1. HLS-EU-PT

Guião do entrevistador

De modo a poder delinear o fluxo de informações de saúde e estilo de vida, estou a desenvolver a presente investigação. Agradeço a sua participação! A sua colaboração na resposta a estas perguntas, ajudará a compreender melhor como se processam as informações de saúde e estilo de vida, desde o momento em que é transmitida até ao momento em que é recebida. Assim, espero contribuir para um futuro com mais e melhor saúde.

Obrigado pela sua colaboração.

As suas respostas são confidenciais.

Registar hora em que iniciou o inquérito ❒❒.❒❒h

Responda por favor sinceramente a cada pergunta **conforme** a opção que na sua opinião é a mais correta.

O número expressa a opinião do entrevistado a cada uma das seguintes perguntas. Os números ① e ④ são as respostas extremas. Se o texto que se encontra perto do n.º ① corresponde ao que a pessoa pensa, seleccione-o com uma ☒. Se o texto que se encontra perto do n.º ④ corresponde ao que pensa, seleccione-o com uma ☒. **Se pensar diferentemente seleccione o número que melhor expresse os sentimentos da pessoa**. Considere uma só resposta a cada pergunta.

Numa escala que vai de ① Muito fácil, ② fácil, ③ difícil ④ Muito difícil quão fácil diria que é:	Muito fácil / Fácil / Difícil / Muito difícil
Questionário Europeu de Literacia para a Saúde (grupo 1: 1-47)	
Q 1 1 ."... encontrar informações sobre sintomas de doenças que lhe dizem respeito ou preocupam?"	① ② ③ ④ ⑤não sabe/não responde
2"... encontrar informações sobre tratamentos de doenças que lhe dizem respeito ou preocupam?"	① ② ③ ④ ⑤não sabe/não responde
3"... descobrir o que fazer em caso de uma emergência médica?"	① ② ③ ④ ⑤não sabe/não responde
4"... descobrir onde obter ajuda especializada quando está doente? (por ex. junto de um médico, farmacêutico, psicólogo)"	① ② ③ ④ ⑤não sabe/não responde
5"... compreender o que o seu médico lhe diz?"	① ② ③ ④ ⑤não sabe/não responde
6"... compreender a bula (os folhetos) que acompanham o seu medicamento?"	① ② ③ ④ ⑤não sabe/não responde
7"... compreender o que fazer numa emergência médica?"	① ② ③ ④ ⑤não sabe/não responde
8"... compreender instruções do seu médico ou farmacêutico sobre o modo como tomar um medicamento que lhe foi receitado?"	① ② ③ ④ ⑤não sabe/não responde
9"... avaliar como é que a informação proveniente do seu médico se aplica ao seu caso?"	① ② ③ ④ ⑤não sabe/não responde
10"... avaliar vantagens e desvantagens de diferentes opções de tratamento?"	① ② ③ ④ ⑤não sabe/não responde
11"... avaliar quando pode necessitar de uma segunda opinião de outro médico?"	① ② ③ ④ ⑤não sabe/não responde
12"... avaliar se a informação sobre a doença, nos meios de comunicação, é de confiança?" (por ex. TV, Internet ou outros meios de comunicação)	① ② ③ ④ ⑤não sabe/não responde
13"... usar informações que o seu médico lhe dá para tomar decisões sobre a sua doença?"	① ② ③ ④ ⑤não sabe/não responde
14"... seguir/cumprir as instruções sobre medicação?"	① ② ③ ④ ⑤não sabe/não responde
15"... chamar uma ambulância numa emergência?"	① ② ③ ④ ⑤não sabe/não responde
16"...seguir/cumprir as instruções do seu médico ou farmacêutico?"	① ② ③ ④ ⑤não sabe/não responde

17"... encontrar informações para lidar com comportamentos que afetam a sua saúde, tais como fumar, atividade física insuficiente e tomar bebidas alcoólicas em demasia?"	① ② ③ ④ ⑤não sabe/não responde
18"... encontrar informações para lidar com problemas de saúde mental, tais como stresse ou depressão?"	① ② ③ ④ ⑤não sabe/não responde
19"... encontrar informações sobre vacinas e exames de saúde que devia fazer?" (por ex. exame de mama, teste de açúcar no sangue, tensão arterial)	① ② ③ ④ ⑤não sabe/não responde
20"... encontrar informações sobre como prevenir ou controlar condições, tais como o excesso de peso, tensão arterial alta ou colesterol alto?"	① ② ③ ④ ⑤não sabe/não responde
21"... compreender avisos relativos à saúde e comportamentos tais como fumar, atividade física insuficiente e tomar bebidas alcoólicas em demasia?"	① ② ③ ④ ⑤não sabe/não responde
22"... compreender porque precisa de vacinas?"	① ② ③ ④ ⑤não sabe/não responde
23"... compreender porque precisa de exames de saúde? (por ex. exame de mama, teste de açúcar no sangue, tensão arterial)"	① ② ③ ④ ⑤não sabe/não responde
24"... avaliar quão seguras são as advertências envolvendo a saúde, em aspectos tais como fumar, atividade física insuficiente e tomar bebidas alcoólicas em demasia?"	① ② ③ ④ ⑤não sabe/não responde
25"... avaliar quando precisa de ir a um médico para um check-up ou exame geral de saúde?"	① ② ③ ④ ⑤não sabe/não responde
26"... avaliar quais são as vacinas de que pode precisar?"	① ② ③ ④ ⑤não sabe/não responde
27"... avaliar que exames de saúde precisa fazer? (por ex. exame de mama, teste de açúcar no sangue, tensão arterial)"	① ② ③ ④ ⑤não sabe/não responde
28"... avaliar, se as informações sobre os riscos de saúde nos meios de comunicação são de confiança? (por ex. TV, Internet ou outros meios de comunicação)"	① ② ③ ④ ⑤não sabe/não responde
29"... decidir se deve fazer a vacina contra a gripe?"	① ② ③ ④ ⑤não sabe/não responde
30"... decidir como se pode proteger da doença com base nos conselhos da família e amigos?"	① ② ③ ④ ⑤não sabe/não responde
31"... decidir como pode proteger-se da doença com base em informações dadas através dos meios de comunicação? (por ex. jornais, folhetos, internet ou outros meios de comunicação)"	① ② ③ ④ ⑤não sabe/não responde
32"... encontrar informações sobre atividades saudáveis tais como atividade física, alimentação saudável e nutrição?"	① ② ③ ④ ⑤não sabe/não responde
33"... saber mais sobre as atividades que são boas para o seu bem-estar mental? (por ex. meditação, exercício, caminhada, pilates, etc)"	① ② ③ ④ ⑤não sabe/não responde

34"... encontrar informações que contribuam para que o seu bairro possa tornar-se mais amigo da saúde? (por ex. redução de ruído e poluição, a criação de espaços verdes, de lazer)"	① ② ③ ④ ⑤não sabe/não responde
35"... saber mais sobre as mudanças políticas que possam afetar a saúde? (por ex. legislação, programas de rastreio de saúde, novas mudanças de governo, de reestruturação de serviços de saúde, etc)"	① ② ③ ④ ⑤não sabe/não responde
36"... saber mais sobre os esforços para promover a sua saúde no local onde trabalha?"	① ② ③ ④ ⑤não sabe/não responde
37"... compreender conselhos sobre saúde que lhe chegam dos familiares ou amigos?"	① ② ③ ④ ⑤não sabe/não responde
38"... compreender informação contida nas embalagens dos alimentos?"	① ② ③ ④ ⑤não sabe/não responde
39"... compreender a informação recebida dos meios de comunicação para se tornar mais saudável?" (por ex. Internet, jornais, revistas)"	① ② ③ ④ ⑤não sabe/não responde
40"... compreender a informação que visa manter a sua mente saudável?"	① ② ③ ④ ⑤não sabe/não responde
41"... avaliar até que ponto a zona onde vive afeta a sua saúde e bem-estar?" (por ex. a sua comunidade, o seu bairro)	① ② ③ ④ ⑤não sabe/não responde
42"... avaliar o modo como as suas condições da sua habitação ajudam a manter-se saudável?"	① ② ③ ④ ⑤não sabe/não responde
43"... avaliar que comportamento seu do dia a dia está relacionado com a sua saúde? (por ex. beber bebidas alcoólicas, hábitos alimentares, exercício, etc.)"	① ② ③ ④ ⑤não sabe/não responde
44"... tomar decisões para melhorar a sua saúde?"	① ② ③ ④ ⑤não sabe/não responde
45"... integrar um clube desportivo ou aula de ginástica se desejar?	① ② ③ ④ ⑤não sabe/não responde
46"... influenciar as condições da sua vida que afetam a sua saúde e bem-estar? (por ex. ingestão de bebidas alcoólicas, hábitos alimentares, exercício, etc.)"	① ② ③ ④ ⑤não sabe/não responde
47"... tomar parte nas atividades que melhoram a saúde e o bem-estar na sua comunidade?" Fim dos itens da Escala Europeia de Literacia para a Saúde	① ② ③ ④ ⑤não sabe/não responde

2. NVS

Esta informação encontra-se no verso de uma embalagem de 0,5L de gelado

Informação nutricional		
Cada porção tem		125 mL
Porções por embalagem		4
Quantidades por porção		
Calorias 250	Calorias provenientes de gordura 120	
		%VDR*
Teor total de gordura	13 g	20%
Gorduras saturadas	9 g	40%
Colesterol	28 mg	12%
Sódio	55 mg	2%
Teor total de hidratos de carbono	30 g	12%
Fibra alimentar	2 g	
Açúcares	23 g	
Proteínas	4 g	8%

*As percentagens do valor diário recomendado (VDR) são baseadas numa dieta de 2000 calorias diárias. Os seus valores diários podem ser mais baixos ou mais elevados dependendo das suas necessidades calóricas.

Ingredientes: Natas, leite magro, xarope, água, gemas de ovo, açúcar mascavado, gordura do leite, óleo de amendoim, açúcar, manteiga, sal, carragenina, extracto de baunilha.

	RESPOSTA CORRECTA?	
	SIM	**NÃO**
LER: Esta informação encontra-se no verso de uma embalagem de 0,5L de gelado		
PERGUNTAS		
1. Se comer a embalagem inteira, quantas calorias estará a consumir? **Resposta correcta**: 1000 cal	.....	.....
2. Se lhe for permitido consumir 60 gramas de hidratos de carbono numa sobremesa, que quantidade de gelado pode comer? **Respostas correctas** (qualquer das seguintes): até 2 porções até metade da embalagem	.....	.....
3. O seu médico aconselha-o a reduzir a quantidade de gorduras saturadas na sua alimentação. Habitualmente você consome 42 gramas de gorduras saturadas por dia, já contando com uma porção de gelado. Se deixar de comer gelado, quantos gramas de gorduras saturadas passará a consumir por dia? **Resposta correcta**: 33	.....	.....
4. Se habitualmente consumir 2500 calorias por dia, que percentagem desse valor é que estará a consumir se comer uma porção de gelado? **Resposta correcta**: 10%	.....	.....
Suponha que é alérgico às seguintes substâncias: penicilina, amendoins, látex e picadas de abelha.		
5. É seguro para si comer este gelado? **Resposta correcta**: Não	.....	.....
6. (Perguntar só se a pessoa responde "não" à pergunta 5): Porque não? **Resposta correcta**: Porque tem óleo de amendoim	.....	.....
Total Respostas Correctas	.....	

Appendix B – Authorization for the Use of the HLS-EU-PT

1

Questionário Europeu de Literacia para a Saúde - HLS-EU-PT®

Todas as dimensões e versões do HLS-EU-PT® (Questionário Europeu de Literacia para a Saúde - HLS-EU-PT®)* estão registadas (copyright) e só podem ser usadas com permissão do autor. Uma base de dados de utilizadores registrados é mantida para garantir que os direitos de autor não são violados. Para usar a HLS-EU-PT será necessário obter uma licença.

All sections and versions of the HLS-EU-PT® (Questionário Europeu de Literacia para a Saúde - HLS-EU-PT®)* are copyright and may only be used with permission from the author. A database of registered users is maintained to ensure that copyright is not breached. To be able to use the HLS-EU-PT you will need to obtain a license.

Para obter um contrato de licença HLS-EU-PT, por favor preencha este formulário e devolva-o a:
Professor Luis Saboga Nunes Phone: +351 91 4747 066 Email: saboga@prosalus.com

To obtain a HLS-EU-PT license agreement, please complete this form and return it to:
Professor Luis Saboga Nunes Phone: +351 91 4747 066 Email: saboga@prosalus.com

Após a receção de um contrato de licenciamento específico para o seu estudo, projeto ou programa, como utilizador licenciado deve respeitar as condições desta licença.

Upon receipt of an executed license agreement specific to your study, project or program you will be a licensed user and you must abide by the conditions of this license.

2

Como utilizador licenciado HLS-EU-PT receberá também um apoio limitado, incluindo aconselhamento em questões de investigação que envolvam a HLS-EU-PT e qualquer uma das três dimensões HLS-EU-PT que selecionar usar.

As a licensed HLS-EU-PT user you will also receive limited support including advice on research questions involving HLS-EU-PT and which of the three HLS-EU-PT domains that you might be best to use.

Aviso importante:

• A licença para usar a HLS-EU-PT dá-lhe direito a usar o instrumento em sua forma completa. As condições de direitos de autor proíbem a modificação de qualquer uma das perguntas HLS-EU-PT, estrutura ou respostas dos itens. Em situações em que o contexto de aplicação exija alterações circunstâncias, estas poderão ser autorizadas pelo autor de modo a salvaguardar essas circunstâncias específicas. Neste formulário em "anotações especiais (7)" deverá ser especificado o contexto e as mudanças de alteração pretendidas. A omissão de qualquer uma das perguntas ou dimensões da HLS-EU-PT inviabiliza que possa alegar que usou a escala HLS-EU-PT. A Escala HLS-EU-PT deve ser tratada de acordo com as recomendações prescritas para garantir interpretações de dados fidedignos, consistentes com os estudos de validação. Ao se registar concorda em cumprir com esses requisitos.

Important notice:

A license to use the HLS-EU-PT entitles you to use the instrument in its complete form. The Copyright conditions prohibit modification of any of the HLS-EU-PT questions, item stems or item responses. In situations where the context requires changes to the instrument, they may be allowed by the author so as to safeguard these specific circumstances. In this form under "special notations (7)" should be specified the context and changes that are required. The omission of any of the HLS-EU-PT questions within a scale means that you cannot claim that you have used a HLS-EU-PT scale. HLS-EU-PT scales must be scored as prescribed to ensure interpretations of the data are trustworthy and consistent with the validation studies. By registering you agree to abide by these requirement.

Esta exigência procura garantir que os resultados de diferentes estudos são diretamente comparáveis, e que os leitores de relatórios ou artigos possam estar seguros de que os resultados apresentados são de questionários padronizados, validados e válidos.

This requirement is to ensure that results from different studies are directly comparable, and that readers of reports or articles can be assured the reported results are from standardized and valid questionnaires.

Digitally signed by Luis Saboga Nunes
DN: cn=Luis Saboga Nunes, o=ProSalus, ou=Renasceres, email=saboga@prosalus.com, c=PT
Date: 2019.02.21 15:35:44 Z

Ref 190221HLSEUPT Autorização de utilização
Pela presente declaração (inclui 6 páginas)
Diogo de Sousa Rebelo Franco
está autorizado a usar dentro das condições a seguir explicitadas o Questionário Europeu de Literacia para a Saúde - HLS-EU-PT®

1. **Organização/Organisation**

Nome da organização /Name of organisation:
Universidade Católica Portuguesa de Lisboa
Pessoa de contato / Contact person:
Diogo de Sousa Rebelo Franco

Email /Email address:
diogofranco553@hotmail.com

Telm / Phone number: 918030312
Endereço / Address: Rua da Tapada, nº23 Carreiras
Cidade / Town / City: Torres Vedras
Estado / State:
País / Country: Portugal
Endereço WebWebsite:

2. **Tipo de organização / Type of organisation:**

- ☐ Hospital / Serviços de saúde / Hospital/Medical Practice
- ☐ Organização Comunitária de Saúde / Community Health organisation
- ☐ organização não-governamental/Non-Government organisation (e.g. Diabetes Foundation)
- ☒ organização académica/Academic organization (e.g. University or Student)
- ☐ Serviço Nacional de Saúde / SNS / SUS / NHS / Primary Care Trust / Commissioning
- ☐ outro (especifique) Other (please specify):

3. **Nome do Projeto / Name of Project / Program:** Contributos da comunicação como ferramenta de promoção da saúde do idoso

Resumo / Summary of your project:

Muita da explicação do estado de saúde do idoso pode ser compreendida através do estudo do fluxo de informação constituído pela forma como este acede, apreende e utiliza informações sobre saúde e estilos de vida. A compreensão desta matéria, ainda pouco documentada a nível de trabalhos desenvolvidos em Portugal, poderá ajudar a mapear processos e áreas de melhoria no fluxo identificado.

Um dos objetivos desta investigação é perceber quais as categorias de informações transmitidas pela DGS, serviço central do Ministério da Saúde, que visam a promoção da saúde do idoso. Paralelamente, outro objetivo será investigar o modo como uma amostra de 75 idosos, acede, apreende e utiliza as categorias de informações recolhidas junto da DGS. De forma a averiguar se os idosos com determinados conhecimentos têm, de facto, estilos de vida mais saudáveis será fundamental mapear os seus níveis de literacia em saúde, através da aplicação da ferramenta *Portuguese Health Literacy Survey.* Através da análise dos dados obtidos através desta ferramenta, será possível verificar se o nível de literacia em saúde dos idosos em Portugal está em linha os valores médios europeus.

Deste modo, será possível identificar e formular hipóteses acerca de áreas de melhoramento no fluxo identificado que tenham como objetivo principal o aumento da literacia em saúde dos idosos.

4. Lista dos investigadores principais / List principal investigators: (title, first name, and surname)

Dr. Diogo Franco

5. Características do programa / Characteristics of your program:

5.1 datas de início e fim / start and finish dates

Início / Start date: 1 de Outubro de 2018 **Fim / End date:** 1 de Outubro de 2019

5.2 Projeto ou programa financiado? / Is your study, project or program funded?

- ☒ Não.
- ☐ Sim, para uso comercial (produto ou serviço) / Yes, for commercial use, of a product or service
- ☐ Sim, para a pesquisa / Yes, for research proposes

Se é financiado por favor especificar o valor do financiamento / If it is funded please specify the size of funding:

- ☐ <€50,000
- ☐ €50,000 - €199,999
- ☐ €200,000 or greater

5.3 Número de entrevistados que se espera completem a HLS -EU- PT / Number of respondents completing the HLS-EU-PT (e.g. 60 participantes / participants): 75

5.4 Número de vezes HLS -EU- PT será administrada a cada participante / Number of times HLS-EU-PT will be administered to each participant: 1x

5.6 Características dos inquiridos / Characteristics of respondents:

☒ Grupo etário / Specific age group (age range) 65+ anos

☐ Pessoas com alguma patologia particular / People with a particular disease (especifique / specify)

_____

5.6 Método de distribuição da HLS-EU-PT / Method of delivery of the HLS-EU-PT:

☐ correio / Mail
☐ telephone/ Telephone
☒ entrevista / Interview / oral
☐ por alguém próximo / Filled in by proxy (e.g. doctor, partner, parent, or caregiver)
☐ na internet, de base computacional / Web / computer-based
☐ outro (especifique) Other (please specify):_____

6. Proteção dos dados / Privacy Disclosure

6.1 Disponibiliza os detalhes que forneceu neste formulário para que estejam disponíveis a outras organizações ou pesquisadores que trabalham em áreas semelhantes? / Are you willing to have the details you have provided on this form made available to other organizations or researchers working in similar fields?

☒ Sim / Yes
☐ Não / No

6.2 Prosseguimos com investigação focada na sensibilidade, validade e fidedignidade da HLS -EU- PT cujo objetivo é fornecer parâmetros de referência da HLS-EU-PT para auxiliar pesquisadores e organizações na compreensão dos resultados . Está disposto a disponibilizar os seus dados (sem identificação) para apoiar este processo? / We are conducting research into the sensitivity, validity and reliability of the HLS-EU-PT and aim to provide benchmarks for HLS-EU-PT to assist researchers and organisations in understanding of the results. Are you willing to make your data available in de-identified format to support this?

☒ Sim / Yes
☐ Não / No

7. (anotações especiais) Considera que a aplicação do questionário carece de adaptações específicas ao seu contexto de investigação? / (special notations) Do you consider that the survey needs specific changes that are required in order to adjust to the specific social context of your research?

☐ Sim / Yes
☒ Não / No

No caso de ter respondido "sim" registe a seguir as anotações especiais: (especifique aqui o contexto e as alterações pretendidas do questionário no caso de estas se revelarem necessárias para que o seu estudo tenha em conta algum aspeto específico da sua utilização) / If you have answered "yes" register in the following lines your change request: (specify here the context of the questionnaire application and required changes if these are necessary so that your study will better respond to any particular aspect)

_____ .....

6

Obrigado por preencher este formulário de inscrição e enviá-lo para
Thank you for completing this registration form and send it to

Luis A. SABOGA NUNES, MPH, PhD . Professor . Rede Lusófona para a Promoção da Literacia para a Saúde (ProLiSa) www.literacia-saude.info
Email saboga@prosalus.com Telm. (+ 351) 91 47 47 066

* Questionário Europeu de Literacia para a Saúde - HLS-EU-PT (ou Questionário Europeu de Literacia em Saúde, Escala Europeia de Literacia para a Saúde, Escala Europeia de Literacia em Saúde) IGAC direção de serviços de propriedade intelectual Registo n.º 4140/2014 Ref: SIIGAC/2014/7098

Appendix C – Authorization for the Use of the NVS

Re: Autorização do uso da ferramenta traduzida NVS

Dagmara Paiva <dpaiva@med.up.pt>
qua, 13/02/2019 08:40
Para: diogo franco <diogofranco553@hotmail.com>

Bom dia, Diogo,

Fico muito contente pelo seu interesse na área. A versão portuguesa do *Newest Vital Sign* está livremente disponível no site da Acta Médica Portuguesa, aqui:
https://www.actamedicaportuguesa.com/revista/index.php/amp/article/view/9135/5254

Permita-me fazer uma sugestão, tendo em conta a elevada proporção de idosos que não sabem ler nem escrever e na qual terá dificuldade de aplicar este instrumento.
Há dois instrumentos que poderá usar em alternativa ou complemento:

- o METER, que também está validado para a população portuguesa e disponível aqui:
http://healthliteracy.bu.edu/meter-pt

- o HLS-EU-PT, que é um instrumento de 47 perguntas, mais longo, mas que pode ser aplicado a pessoas que não sabem ler:
https://www.sciencedirect.com/science/article/pii/S0870902516300311

Muitas felicidades para o seu projeto!

Boa semana,

Dagmara Paiva, MD, GP, PhD, researcher for the EPIUnit - Instituto de Saúde Pública, Universidade do Porto, Porto, Portugal
http://ispup.up.pt/people/5403/about/

Dagmara Paiva, MD, GP, PhD, researcher for the EPIUnit - Instituto de Saúde Pública, Universidade do Porto, Porto, Portugal

http://ispup.up.pt/people/5403/about/

On Wed, Feb 13, 2019 at 12:27 AM diogo franco <diogofranco553@hotmail.com> wrote:

> Ex.ª Srª. Prof. Doutora Dagmara Paiva,
>
> O meu nome é Diogo de Sousa Rebelo Franco, sou estudante de mestrado em Ciências da Comunicação na Universidade Católica Portuguesa de Lisboa.
>
> Estou atualmente no 2º ano de mestrado, pelo que de momento estou a trabalhar na minha dissertação, sob a orientação do Prof. Doutor Henrique Lopes e Prof. Doutor Fernando Ilharco. O tema que escolhi abordar é "Contributos da comunicação como ferramenta de promoção da saúde do idoso".
>
> Uma das vertentes desta investigação é a abordagem de uma população idosa, em

freguesias rurais, de forma a avaliar o seu nível de literária em saúde. Li o seu artigo "Prevalência de Literacia em Saúde Inadequada em Portugal Medida com o Newest Vital Sign" e achei a ferramenta muito interessante. Deste modo, solicito a sua permissão para utilizar a sua versão do Newest Vital Sign, traduzido para português, que não consta diretamente no seu artigo.

Estou disponível para prestar quaisquer esclarecimentos.

Agradeço desde já ta sua atenção.

Com os melhores cumprimentos,
Diogo Franco

Appendix D – Informed, Free and Clarified Consent to Participate in Research Studies

Consentimento Informado, Livre e Esclarecido para Participação em Estudos de Investigação

(de acordo com a Declaração de Helsínquia e a Convenção de Oviedo)

Título do estudo

"Contributos da comunicação como ferramenta de promoção da saúde do idoso – Estudo piloto numa população rural"

Enquadramento

No âmbito do 2° ano do curso de Mestrado em Ciências da Comunicação, na vertente de Organização, Comunicação e Liderança, da Universidade Católica Portuguesa de Lisboa, este estudo será conduzido no Centro de Dia da Associação de Socorros da Freguesia da Carvoeira, no Centro de Dia da Associação de Socorros da Freguesia do Turcifal e no Centro de Dia de Dois Portos. A orientação deste estudo será feita pelo Professor Doutor Henrique Lopes e coorientação do Professor Doutor Fernando Ilharco.

Explicação do estudo

Será realizada uma entrevista com base em inquérito, na qual lhe serão colocadas, numa primeira fase, algumas perguntas sobre dados sociodemográficos, informações de saúde e estilo de vida, conhecimento do SNS, sendo efetuado um registo das suas declarações.
A forma de seleção do participante tem como princípio a sua frequência em um dos Centros de Dia supracitados, pelo que a entrevista terá lugar na respetiva instituição.
Serão também aplicadas duas ferramentas, uma sendo o Questionário de Literacia Europeu, e o outro o *Newest Vital Sign*, ambos validados e traduzidos para português.

Condições e financiamento

Neste estudo não existem pagamentos de deslocações ou quaisquer contrapartidas, sendo este um estudo sem financiamento. A sua participação é voluntária, pelo que não terá prejuízos caso não queira participar. Informo também que este estudo mereceu o Parecer favorável da Direção do Centro de Dia em que está inscrito.

Confidencialidade e anonimato

O seu anonimato está garantido, pelo que não será necessário registar os seus dados de identificação e a realização da entrevista será feita em ambiente de privacidade. A confidencialidade e o uso exclusivo dos dados recolhidos para o presente estudo estão também garantidos.

Agradeço a sua participação e contributo para este estudo. O meu nome é Diogo de Sousa Rebelo Franco, sou o investigador a cargo deste trabalho de investigação. Frequento o 2º ano de Mestrado em Ciências da Comunicação, na vertente de Comunicação, Organização e Liderança, na Faculdade de Ciências Humanas da Universidade Católica Portuguesa de Lisboa. Pode contactar-me pelos seguintes meios:

Contacto telefónico: 918030312

Endereço eletrónico: diogofranco553@hotmail.com

Por favor, leia com atenção a seguinte informação. Se achar que algo está incorreto ou que não está claro, não hesite em solicitar mais informações. Se concorda com a proposta que lhe foi feita, queira assinar este documento.

Assinatura do investigador: _____

Declaro ter lido (ou que me foi lido) e compreendido este documento, bem como as informações verbais que me foram fornecidas pela pessoa que acima assina. Foi-me garantida a possibilidade de, em qualquer altura, recusar participar neste estudo sem qualquer tipo de consequências. Desta forma, aceito participar neste estudo e permito a utilização dos dados que de forma voluntária forneço, confiando em que apenas serão utilizados para esta investigação e nas garantias de confidencialidade e anonimato que me são dadas pelo investigador.

Nome: _____

Assinatura: _____ Data: ___ / ___ / ___

ESTE DOCUMENTO É COMPOSTO DE 3 PÁGINAS E FEITO EM DUPLICADO: UMA VIA PARA O INVESTIGADOR, OUTRA PARA A PESSOA QUE CONSENTE.

Appendix E – Questionnaire Survey

Inquérito

Nota: Em cada pergunta tem também um quadro, no qual pode indicar com um X, as seguintes opções:

- "Não sabe" – Se não souber responder à pergunta;
- "Não responde" – Se não quiser responder à pergunta.

Por exemplo, se não souber responder a uma pergunta, pode colocar a sua opinião da seguinte forma:

Não sabe	Não responde
X	

Dados iniciais

1. Indique se é Homem ou Mulher:

   ☐ Homem
   ☐ Mulher

Não sabe	Não responde

2. Qual é o seu estado civil?

   ☐ Casado/a
   ☐ Viúvo/a
   ☐ Divorciado/a
   ☐ Solteiro/a

Não sabe	Não responde

Parte A – Características Sociodemográficas do Participante

1. Em que ano nasceu?

Resposta: _____

Não sabe	Não responde

2. Com quem vive atualmente?

- ☐ Esposo/a
- ☐ Outros Familiares
- ☐ Sozinho/a
- ☐ Outro: _____

Não sabe	Não responde

3. No seu entendimento, vive numa zona que é mais campo ou mais cidade?

- ☐ Campo
- ☐ Cidade

Não sabe	Não responde

3.1. (Se respondeu "Campo" na pergunta 3) Alguma vez foi trabalhar ou morar para a cidade? Se sim, durante quantos anos?

- ☐ Sim
- ☐ Não

Anos: _____

Não sabe	Não responde

4. No seu dia-a-dia consegue fazer as coisas sozinho ou precisa de ajuda de outras pessoas?

- ☐ Sozinho/a
- ☐ Preciso de ajuda

Não sabe	Não responde

4.1. (Se respondeu "Preciso de ajuda" à pergunta 4) Quem o ajuda?

- ☐ Família
- ☐ Amigos
- ☐ IPSS
- ☐ Outro: _____

Não sabe	Não responde

5. Quantos medicamentos toma por dia?

Resposta: _____

Não sabe	Não responde

6. Até quando estudou?

- ☐ Não andou na escola
- ☐ Primeira Classe
- ☐ Segunda Classe
- ☐ Terceira Classe
- ☐ Quarta Classe
- ☐ Outro: _____

Não sabe	Não responde

6.1. Na sua infância, até quando estudou a sua mãe?

- ☐ Não andou na escola
- ☐ Primeira Classe
- ☐ Segunda Classe
- ☐ Terceira Classe
- ☐ Quarta Classe
- ☐ Outro: _____

Não sabe	Não responde

6.2. Na sua infância, até quando estudou o seu pai?

- ☐ Não andou na escola
- ☐ Primeira Classe
- ☐ Segunda Classe
- ☐ Terceira Classe
- ☐ Quarta Classe
- ☐ Outro: _____

Não sabe	Não responde

7. Quando tem jornais e/ou revistas em casa, costuma lê-los?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

8. Consegue escrever um recado ou uma carta?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

9. Sabe usar a Internet?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

10. Como é o seu dia-a-dia? Faz muitas tarefas em casa ou na horta? Indique quais.

Resposta: _____

Não sabe	Não responde

10.1. O que faz quando não está a trabalhar?

Resposta: _____

Não sabe	Não responde

11. Quantas vezes come por dia?

- ☐ Duas ou mais vezes
- ☐ Três vezes
- ☐ Quatro vezes
- ☐ Cinco ou mais vezes

Não sabe	Não responde

12. Costuma comer fruta? Quantas vezes por dia?

- ☐ Uma vez
- ☐ Duas vezes
- ☐ Três vezes
- ☐ Quatro ou mais vezes
- ☐ Não come fruta

Não sabe	Não responde

12.1. E vegetais, costuma comer? Quantas vezes por dia?

- ☐ Uma vez
- ☐ Duas vezes
- ☐ Três ou mais vezes
- ☐ Não come vegetais

Não sabe	Não responde

13. Bebe bebidas alcoólicas?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

13.1. (Se respondeu "Sim" à pergunta 14) Qual a quantidade que bebe, por dia?

Resposta: _____

Não sabe	Não responde

14. Que tipo de coisas tem em casa para comer?

- ☐ Doces
- ☐ Bolachas
- ☐ Enchidos
- ☐ Queijo
- ☐ Fruta
- ☐ Pão
- ☐ Iogurte
- ☐ Hortaliças
- ☐ Outro: _____

Não sabe	Não responde

15. Qual a quantidade de água que bebe, por dia?

- ☐ Meio litro ou menos
- ☐ 1 Litro
- ☐ 1,5 Litros
- ☐ 2 Litros ou mais
- ☐ Outro: _____

Não sabe	Não responde

16. Onde costuma comer?

- ☐ Casa
- ☐ IPSS
- ☐ Restaurante
- ☐ Outro: _____

Não sabe	Não responde

16.1. (Se respondeu "Casa" na pergunta 16) Quem faz a comida?

- ☐ Eu
- ☐ Familiar
- ☐ IPSS
- ☐ Outro: _____

Não sabe	Não responde

17. Alguma vez fumou na vida?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

17.1. (Se respondeu "Sim" à pergunta 17) Durante quanto tempo? Quantos cigarros por dia?

Resposta: _____

Não sabe	Não responde

18. Como classifica o estado da sua saúde?

- ☐ Muito boa
- ☐ Boa
- ☐ Razoável
- ☐ Má
- ☐ Muito má

Não sabe	Não responde

Bloco B – Informações de Saúde e Estilo de Vida

1. Alguma vez mexeu num computador?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

1.1. (Se respondeu "Não" à pergunta 1) Gostava de saber usar um computador?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

2. Tem telefone e/ou telemóvel?

- ☐ Tenho telefone
- ☐ Tenho telemóvel
- ☐ Não tenho nenhum

Não sabe	Não responde

2.1. (Se respondeu "Tem telemóvel" na pergunta 2) O que faz com o telemóvel?

- ☐ Receber e/ou fazer chamadas
- ☐ Enviar mensagens
- ☐ Outro: _____

Não sabe	Não responde

3. Durante a semana, quantas horas de televisão vê por dia?

- ☐ Menos de duas horas
- ☐ Duas a quatro horas
- ☐ Mais de quatro horas
- ☐ Não vejo televisão

Não sabe	Não responde

4. Durante a semana, quantas horas de rádio ouve por dia?

- ☐ Menos de uma hora
- ☐ Uma a duas horas
- ☐ Mais de duas horas
- ☐ Não ouço rádio

Não sabe	Não responde

5. Recorda-se de alguma informação sobre saúde ou estilo de vida?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

5.1. (Se respondeu "Sim" à pergunta 5) O que diziam essas informações?

Resposta:

_____

Não sabe	Não responde

5.2. (Se respondeu "Sim" à pergunta 5) Onde encontrou as informações de saúde e estilo de vida?

- ☐ Internet
- ☐ Televisão
- ☐ Rádio
- ☐ Revista e/ou Jornal
- ☐ Informações afixadas e/ou Publicidade
- ☐ Médico/a
- ☐ Enfermeiro/a
- ☐ IPSS
- ☐ Família
- ☐ Amigos
- ☐ Outro: _____

Não sabe	Não responde

6. Quando tem um problema de saúde procura informações que o ajudem?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

6.1. (Se respondeu "Sim" à pergunta 7) Onde procura as informações?

- ☐ Internet
- ☐ Jornal/Revista
- ☐ Televisão
- ☐ Amigos
- ☐ Família
- ☐ Médico/a
- ☐ Hospital
- ☐ Outro: _____

Não sabe	Não responde

7. Conhece o Programa Nacional de Saúde?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

8. Conhece algum Programa de Saúde? Qual?

- ☐ Sim
- ☐ Não

Resposta: _____

Não sabe	Não responde

9. Se precisar, tem alguém que o ajude a procurar informações na Internet? Quem?

- ☐ Sim
- ☐ Não

Resposta: _____

Não sabe	Não responde

10. Conhece o serviço SNS 24 (808 24 24 24)?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

10.1. (Se respondeu "Sim" à pergunta 11) Sabe usar o serviço SNS 24?

- ☐ Sim
- ☐ Não

Não sabe	Não responde

10.2. (Se respondeu "Sim" à pergunta 11.1.) Quantas vezes usou o serviço SNS 24?

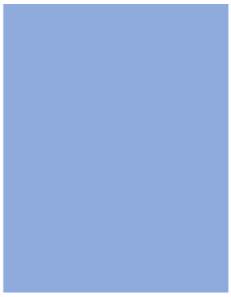
- ☐ Nunca usei
- ☐ Uma a duas vezes
- ☐ Três a quatro vezes
- ☐ Mais do cinco vezes

Não sabe	Não responde

Fim do Inquérito

Muito obrigado pelo seu contributo!

Appendix F – Questionnaire Survey Guide



MANUAL DE APLICAÇÃO DE INQUÉRITO

CONTRIBUTOS DA COMUNICAÇÃO NA MEDIÇÃO DE NÍVEIS DE LITERACIA EM SAÚDE – ESTUDO PILOTO EM POPULAÇÕES IDOSAS RURALIZADAS

Manual desenvolvido no âmbito de dissertação apresentada à Universidade Católica Portuguesa para obtenção de grau de Mestre em Ciências da Comunicação

Por

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Faculdade de Ciências Humanas

Fevereiro 2019

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Mapa de Controlo de Edições

Edição	Descrição	Data
01	Versão final do inquérito com base nas respostas recebidas na versão pré-teste	25/02/2019

Índice

Introdução

O Manual de Aplicação do Inquérito visa a orientação do processo de recolha de dados primários para suporte da dissertação intitulada "Contributos da Comunicação na Medição de Níveis de Literacia em Saúde – Estudo Piloto em Populações Idosas Ruralizadas".

No presente documento são apresentadas X perguntas, divididas pelas seguintes baterias:

Em cada questão são apresentadas as opções de resposta, esclarecimentos do que se procura obter e chamadas de atenção para aspetos relevantes que possam suscitar dúvidas.

Nota: Em cada pergunta é dada a possibilidade aos participantes de indicar com um X (num quadro disponibilizado para o efeito), as seguintes opções:

- "Não sabe" – Se não souber responder à pergunta;
- "Não responde" – Se não quiser responder à pergunta.

Por exemplo, se não souber responder a uma pergunta, pode colocar a sua opinião da seguinte forma:

Não sabe	Não responde
X	

Perguntas do Inquérito

Dados Iniciais

P1. Indique se é Homem ou Mulher.

- ☐ Homem
- ☐ Mulher

Esta pergunta visa apurar qual o gênero do participante. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P2. Qual é o seu estado civil?

- ☐ Casado/a
- ☐ Viúvo/a
- ☐ Divorciado/a
- ☐ Solteiro/a

Esta pergunta visa apurar qual o estado civil do participante. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

Parte A – Caracterização do Entrevistado

P1. Em que ano nasceu?

Resposta: _____

Esta pergunta visa apurar o ano de nascimento do entrevistado. Esta pergunta permite registar os quatro dígitos referentes ao ano mencionado pelo entrevistado, ou em alternativa, registar a idade referida pelo participante.

P2. Com quem vive atualmente?

- ☐ Esposo/a
- ☐ Outros Familiares
- ☐ Sozinho/a
- ☐ Outro: _____

Esta pergunta visa apurar com quem vive atualmente o entrevistado. Atenção que esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTROS,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P3. No seu entendimento, vive numa zona que é mais campo ou mais cidade?

- ☐ Campo
- ☐ Cidade

Esta pergunta visa apurar o local de residência do entrevistado. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P3.1. (Se respondeu "Campo" na pergunta 3) Alguma vez foi trabalhar ou morar para a cidade? Se sim, durante quantos anos?

- ☐ Sim
- ☐ Não

Anos: _____

Esta pergunta visa apurar se o participante trabalhou ou morou em ambiente urbano e, caso se verifique essa situação, registar o número de anos em que viveu no contexto enunciado. Esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P4. No seu dia-a-dia consegue fazer as coisas sozinho ou precisa de ajuda de outras pessoas?

- ☐ Sozinho/a
- ☐ Preciso de ajuda

Esta pergunta visa apurar se o entrevistado é dependente ou independente na realização das suas tarefas diárias. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P4.1. (Se respondeu "Preciso de ajuda" à pergunta 4) Quem o ajuda?

- ☐ Família
- ☐ Amigos
- ☐ IPSS
- ☐ Outro: _____

Esta pergunta visa apurar quais os agentes sociais que apoiam o participante na realização das tarefas no dia a dia. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P5. Quantos medicamentos toma por dia?

Resposta: _____

Esta pergunta visa o número de medicamentos que o participante toma por dia.

P6. Até quando estudou?

- ☐ Não andou na escola
- ☐ Primeira Classe
- ☐ Segunda Classe
- ☐ Terceira Classe
- ☐ Quarta Classe
- ☐ Outro: _____

A pergunta visa apurar o grau mais elevado de escolaridade completo do participante. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P6.1. Na sua infância, até quando estudou a sua mãe?

- ☐ Não andou na escola
- ☐ Primeira Classe
- ☐ Segunda Classe
- ☐ Terceira Classe
- ☐ Quarta Classe
- ☐ Outro: _____

A pergunta visa apurar o grau mais elevado de escolaridade completo pela mãe do participante. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P6.2. Na sua infância, até quando estudou o seu pai?

- ☐ Não andou na escola
- ☐ Primeira Classe
- ☐ Segunda Classe
- ☐ Terceira Classe
- ☐ Quarta Classe
- ☐ Outro: _____

A pergunta visa apurar o grau mais elevado de escolaridade completo pelo pai do participante. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P7. Quando tem jornais e/ou revistas em casa, costuma lê-los?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado lê, ou não, jornais e/ou revistas. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P8. Consegue escrever um recado ou uma carta?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado consegue escrever um recado ou uma carta, se necessário. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P9. Sabe usar a Internet?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado sabe utilizar a Internet. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P10. Como é o seu dia-a-dia? Faz muitas tarefas em casa ou na horta? Indique quais.

Resposta: _____

Especificar as atividades mencionadas pelo entrevistado relativas ao seu dia-a-dia.

P10.1. O que faz quando não está a trabalhar?

Resposta: _____

Especificar as atividades mencionadas pelo entrevistado.

P11. Quantas vezes come por dia?

- ☐ Duas ou mais vezes
- ☐ Três vezes
- ☐ Quatro vezes
- ☐ Cinco ou mais vezes

Esta pergunta visa apurar o número de refeições que o entrevistado faz por dia. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P12. Costuma comer fruta? Quantas vezes por dia?

- ☐ Uma vez
- ☐ Duas vezes
- ☐ Três vezes
- ☐ 4 ou mais vezes
- ☐ Não come fruta

Esta pergunta visa apurar o número de vezes que o entrevistado come fruta, por dia. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P12.1. E vegetais, costuma comer? Quantas vezes por dia?

- ☐ Uma vez
- ☐ Duas vezes
- ☐ Três vezes
- ☐ Não come vegetais

Esta pergunta visa apurar o número de vezes que o entrevistado come fruta, por dia. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P13. Bebe bebidas alcoólicas?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado bebe bebidas alcoólicas. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P13.1. (Se respondeu "Sim" à pergunta 14) Qual a quantidade que bebe, por dia?

Resposta: _____

Especificar a quantidade (copos 200cm3) de bebidas alcoólicas que o participante ingere, por dia.

P14. Que tipo de coisas tem em casa para comer?

- ☐ Doces
- ☐ Bolachas
- ☐ Enchidos
- ☐ Queijo
- ☐ Fruta
- ☐ Pão
- ☐ Iogurte
- ☐ Hortaliças
- ☐ Outro: _____

Esta pergunta visa apurar o tipo de alimentos que o entrevistado consome. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a altemativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P15. Qual a quantidade de água que bebe, por dia?

- ☐ Meio litro ou menos
- ☐ 1 Litro
- ☐ 1,5 Litros
- ☐ 2 Litros ou mais
- ☐ Outro: _____

Esta pergunta visa apurar a quantidade de água que o participante ingere, por dia. Atenção que esta resposta permite APENAS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P16. Onde costuma comer?

- ☐ Casa
- ☐ IPSS
- ☐ Restaurante
- ☐ Outro: _____

Esta pergunta visa apurar o local onde o entrevistado faz maior parte das suas refeições. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P16.1. (Se respondeu "Casa" na pergunta 16) Quem faz a comida?

- ☐ Eu
- ☐ Familiar
- ☐ IPSS
- ☐ Outro: _____

Esta pergunta visa apurar quem faz as refeições do entrevistado. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P17. Alguma vez fumou na vida?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado alguma vez fumou na vida. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P17.1. (Se respondeu "Sim" à pergunta 17) Durante quanto tempo? Quantos cigarros por dia?

Resposta: _____

Especificar durante quanto tempo o entrevistado fumou tabaco e a quantidade de cigarros que fumava por dia.

P18. Como classifica o estado da sua saúde?

- ☐ Eu
- ☐ Familiar
- ☐ IPSS
- ☐ Outro: _____

Bloco B – Informações de Saúde e Estilo de Vida

P1. Alguma vez mexeu num computador?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado alguma vez mexeu num computador. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P1.1. (Se respondeu "Não" à pergunta 1) Gostava de saber usar um computador?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado tem interesse em saber mexer num computador. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P2. Tem telefone e/ou telemóvel?

- ☐ Tem telefone
- ☐ Tem telemóvel
- ☐ Não tenho nenhum

Indicar se o entrevistado possui telefone ou telemóvel. Atenção que esta resposta permite PELO MENOS UMA ALTERNATIVA.

P2.1. (Se respondeu "Tem telemóvel" na pergunta 2) O que faz com o telemóvel?

- ☐ Receber e/ou fazer chamadas
- ☐ Enviar mensagens
- ☐ Outro: _____

Esta pergunta visa apurar as ações que o entrevistado realiza no seu telemóvel. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P3. Durante a semana, quantas horas de televisão vê por dia?

- ☐ Menos de duas horas
- ☐ Duas a quatro horas
- ☐ Mais de quatro horas
- ☐ Não vejo televisão

Indicar quantas horas de televisão vê o entrevistado, por dia. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P4. Durante a semana, quantas horas de rádio ouve por dia?

- ☐ Menos de uma hora
- ☐ Uma a duas horas
- ☐ Mais de duas horas
- ☐ Não ouço rádio

Indicar quantas horas de rádio ouve o entrevistado, por dia. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P5. Recorda-se de alguma informação sobre saúde ou estilo de vida?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado tem alguma recordação de informações de saúde ou estilo de vida. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P5.1. (Se respondeu "Sim" à pergunta 5) O que diziam essas informações?

Resposta: _____

Especificar quais as informações de que o participante se recorda.

P5.2. (Se respondeu "Sim" à pergunta 5) Onde encontrou as informações de saúde e estilo de vida?

- ☐ Internet
- ☐ Televisão
- ☐ Rádio
- ☐ Revista/Jornal
- ☐ Informações afixadas e/ou Publicidade
- ☐ Médico/a
- ☐ Enfermeiro/a
- ☐ IPSS
- ☐ Família
- ☐ Amigos
- ☐ Outro: _____

Esta pergunta visa apurar o meio pelo qual o entrevistado recebeu as informações de saúde e estilo de vida. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P6. Quando tem um problema de saúde procura informações que o ajudem?

- ☐ Sim
- ☐ Não

Esta pergunta visa apurar a pro-atividade do entrevistado em procurar informações de saúde quando necessário. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P6.1. (Se respondeu "Sim" à pergunta 7) Onde procura as informações?

- ☐ Internet
- ☐ Revista/Jornal
- ☐ Televisão
- ☐ Amigos
- ☐ Família
- ☐ Médico/a
- ☐ Hospital
- ☐ Outro: _____

Esta pergunta visa apurar o meio pelo qual o entrevistado procura as informações de saúde. Esta pergunta permite assinalar PELO MENOS UMA ALTERNATIVA. Atenção que esta questão permite a alternativa **OUTRO,** no caso da resposta do entrevistado não se adequar ou ir para além das outras alternativas.

P7. Conhece o Programa Nacional de Saúde?

- ☐ Sim
- ☐ Não

Indicar se o entrevistado conhece o Programa Nacional de Saúde. Atenção que esta resposta permite APENAS UMA ALTERNATIVA.

P8. Conhece algum Programa de Saúde? Qual?

- ☐ Sim
- ☐ Não

Resposta: _____

Esta pergunta visa apurar se o entrevistado conhece algum Programa de Saúde. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA. Especificar qual o programa de saúde que o entrevistado conhece.

P9. Se precisar, tem alguém que o ajude a procurar informações na Internet? Quem?

- ☐ Sim
- ☐ Não

Resposta: _____

Esta pergunta visa apurar se o entrevistado tem alguém que o possa auxiliar na procura de informações na Internet. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA. Especificar qual o agente social.

P10. Conhece o serviço SNS 24 (808 24 24 24)?

- ☐ Sim
- ☐ Não

Esta pergunta visa apurar se o participante conhece o serviço SNS 24. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P10.1. (Se respondeu "Sim" à pergunta 11) Sabe usar o serviço SNS 24?

- ☐ Sim
- ☐ Não

Esta pergunta visa apurar se o participante sabe usar o serviço SNS 24. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

P10.2. (Se respondeu "Sim" à pergunta 11) Quantas vezes usou o serviço SNS 24?

- ☐ Nunca usei
- ☐ Uma a duas vezes
- ☐ Três a quatro vezes
- ☐ Mais do que cinco vezes

Esta pergunta visa apurar o número de vezes que o participante utilizou o serviço SNS 24. Atenção que esta pergunta permite assinalar APENAS UMA ALTERNATIVA.

Appendix G – Questionnaire Survey Questions, Translation and Corresponding Indicators

Table 25 - Questionnaire Survey Questions for the Starting Battery: Original and Translation

Starting Battery - Initial Data		
#	Original Question	Translated Question
1	Indique se é Homem ou Mulher	Register if you are Male or Female
2	Qual é o seu estado civil?	What is your marital status?

Source: Data organization by the author.

Table 26 - Questionnaire Survey Questions for the Second Battery: Original and Translation

Second Battery - Participant's Socio-Demographic Characteristics		
#	Original Question	Translated Question
1.	Em que ano nasceu?	What year were you born?
2.	Com quem vive atualmente?	Who are you currently living with?
3.	No seu entendimento, vive numa zona que é mais campo ou mais cidade?	In your opinion, do you live in an area that is more rural or more urban?
3.1.	(Se respondeu "Campo" na pergunta 3) Alguma vez foi trabalhar ou morar para a cidade? Se sim, durante quantos anos?	(If you answered "Rural" in question 3) Have you ever gone to work or live in the city? If yes, for how many years?
4.	No seu dia-a-dia consegue fazer as coisas sozinho ou precisa de ajuda de outras pessoas?	In your day-to-day life, can you do things yourself, or do you need help from others?
4.1.	(Se respondeu "Preciso de ajuda" à pergunta 4) Quem o ajuda?	(If you answered "I need help" to question 4) Who helps you?
5.	Quantos medicamentos toma por dia?	How many medications do you take per day?
6.	Até quando estudou?	Until when did you study?
6.1.	Na sua infância, até quando estudou a sua mãe?	In your childhood, until when did your mother study?

6.2.	Na sua infância, até quando estudou o seu pai?	In your childhood, until when did your father study?
7.	Quando tem jornais e/ou revistas em casa, costuma lê-los?	When you have newspapers and/or magazines at home, do you usually read them?
8.	Consegue escrever um recado ou uma carta?	Can you write a message or a letter?
9.	Sabe usar a Internet?	Do you know how to use the Internet?
10.	Como é o seu dia-a-dia? Faz muitas tarefas em casa ou na horta? Indique quais.	How is your day-to-day? Do you do a lot of chores at home or in the garden? Register which.
10.1.	O que faz quando não está a trabalhar?	What do you do when you are not working?
11.	Quantas vezes come por dia?	How many times do you eat a day?
12.	Costuma comer fruta? Quantas vezes por dia?	Do you usually eat fruit? How many times a day?
12.1.	E vegetais, costuma comer? Quantas vezes por dia?	And vegetables, do you usually eat them? How many times a day?
13	Bebe bebidas alcoólicas?	Do you drink beverages?
13.1.	(Se respondeu "Sim" à pergunta 14) Qual a quantidade que bebe, por dia?	(If you answered "Yes" to question 14) How much do you drink per day?
14.	Que tipo de coisas tem em casa para comer?	What kind of food do you have at home to eat?
15.	Qual a quantidade de água que bebe, por dia?	How much water do you drink per day?
16.	Onde costuma comer?	Where do you usually eat?
16.1.	(Se respondeu "Casa" na pergunta 16) Quem faz a comida?	(If you answered "Home" in question 16) Who prepares the meals?
17.	Alguma vez fumou na vida?	Have you ever smoked in your life?
17.1.	(Se respondeu "Sim" à pergunta 17) Durante quanto tempo? Quantos cigarros por dia?	(If you answered "Yes" to question 17) For how long? How many cigarettes a day?
18.	Como classifica o estado da sua saúde?	How do you rate the state of your health?

Source: Data organization by the author.

Table 27 - Questionnaire Survey Questions for the Third Battery: Original and Translation

Third Battery - Health and Lifestyle Information		
#	Original Question	Translated Question
1.	Alguma vez mexeu num computador?	Have you ever used a computer?
1.1.	(Se respondeu "Não" à pergunta 1) Gostava de saber usar um computador?	(If you answered "No" to question 1) Would you like to know how to use a computer?
2.	Tem telefone e/ou telemóvel?	Do you have a telephone and/or mobile phone?
2.1.	(Se respondeu "Tem telemóvel" na pergunta 2) O que faz com o telemóvel?	(If you answered "I have a mobile phone" in question 2) What do you do with your mobile phone?
3.	Durante a semana, quantas horas de televisão vê por dia?	During the week, how many hours of television do you watch each day?
4.	Durante a semana, quantas horas de rádio ouve por dia?	During the week, how many hours of radio do you listen to each day?
5.	Recorda-se de alguma informação sobre saúde ou estilo de vida?	Do you remember any health or lifestyle information?
5.1.	(Se respondeu "Sim" à pergunta 5) O que diziam essas informações?	(If you answered "Yes" to question 5) What was this information about?
5.2.	(Se respondeu "Sim" à pergunta 5) Onde encontrou as informações de saúde e estilo de vida?	(If you answered "Yes" to question 5) Where did you find health and lifestyle information?
6.	Quando tem um problema de saúde procura informações que o ajudem?	When you have a health problem do you look for information to help you?
6.1.	(Se respondeu "Sim" à pergunta 7) Onde procura as informações?	(If you answered "Yes" to question 7) Where do you search for information?
7.	Conhece o Programa Nacional de Saúde?	Do you know the National Health Program?
8.	Conhece algum Programa de Saúde? Qual?	Do you know any Health Program? Which one?
9.	Se precisar, tem alguém que o ajude a procurar informações na Internet? Quem?	If necessary, do you have someone to help you search for information on the Internet? Who?
10.	Conhece o serviço SNS 24 (808 24 24 24)?	Do you know the SNS 24 service (808 24 24 24)?

10.1.	(Se respondeu "Sim" à pergunta 11) Sabe usar o serviço SNS 24?	(If you answered "Yes" to question 11) Do you know how to use the SNS 24 service?
10.2.	(Se respondeu "Sim" à pergunta 11.1.) Quantas vezes usou o serviço SNS 24?	(If you answered "Yes" to question 11.1.) How many times did you use the SNS 24 service?

Source: Data organization by the author.

Table 28 - Distribution of Questionnaire Survey Questions for the Sociodemographic Data Concept

Sociodemographic Data	
Question	Indicators
Register if you are Male or Female	Gender
What year were you born?	Age
What is your marital status?	Marital Status
Who are you currently living with?	With whom do participants live
Until when did you study?	Education Level
In your childhood, until when did your mother study?	Levels of education attained by participants' parents (Mother)
In your childhood, until when did your father study?	Levels of education attained by participants' parents (Father)
Have you ever gone to work or live in the city? If yes, for how many years?	Participant's background related to living/working in urban environments, in years
How do you rate the state of your health?	Participants' self-assessment about their health status
How many medications do you take per day?	Daily use of medications
Have you ever smoked in your life?	History of smoking
For how long? How many cigarettes a day?	History of smoking, measured by pack-year

Source: Data organization by the author.

Table 29 - Distribution of Questionnaire Survey Questions for the Daily Activities Concept

Daily Activities	
Question	Indicators
In your day-to-day life, can you do things yourself, or do you need help from others?	Autonomy in performing daily activities
Who helps you?	Social agents providing support to participants in daily activities
How is your day-to-day? Do you do a lot of chores at home or in the garden? Register which.	Daily activities performed by participants
What do you do when you are not working?	Daily leisure activities practised by the participants
How many times do you eat a day?	Daily meal frequency
Do you usually eat fruit? How many times a day?	Daily consumption of fruit pieces
And vegetables, do you usually eat them? How many times a day?	Daily consumption of vegetables
How much water do you drink per day?	Daily water intake
Do you drink beverages?	Consumption history of alcoholic beverages
How much do you drink per day?	Daily consumption of alcoholic beverages
Where do you usually eat?	Places where participants usually have their meals
Who prepares the meals?	Figure responsible for preparing daily meals
What kind of food do you have at home to eat?	Most commonly consumed food at home

Source: Data organization by the author.

Table 30 - Distribution of Questionnaire Survey Questions for the Literacy and Digital Inclusion Concept

Literacy and Digital Inclusion	
Question	Indicators
When you have newspapers and/or magazines at home, do you usually read them?	Reading Habits
Can you write a message or a letter?	Ability to write letters/messages
Do you know how to use the Internet?	Ability to use the Internet
If necessary, do you have someone to help you search for information on the Internet? Who?	Support in searching information on the Internet
	Social agent who supports the search for information on the Internet
Have you ever used a computer?	History of computer use
Would you like to know how to use a computer?	Interest in knowing how to use a computer
Do you have a telephone and/or mobile phone?	Participants owing a telephone and/or mobile phone
What do you do with your mobile phone?	Mobile phone usage
During the week, how many hours of television do you watch each day?	Exposure time to television content, in hours
During the week, how many hours of radio do you listen to each day?	Exposure time to radio content, in hours

Source: Data organization by the author.

Table 31 - Distribution of Questionnaire Survey Questions for the Knowledge of Health Information Concept

Knowledge of Health Information	
Question	Indicators
Do you remember any health or lifestyle information?	Participants recall about health information
What was this information about?	Content of the recalled health information
Where did you find health and lifestyle information?	Sources that transmitted the health information
When you have a health problem do you look for information to help you?	Interest in searching for health information
Where do you search for information?	Used sources for the search of health information
Do you know the National Health Program?	Knowledge about the National Health Plan
Do you know any Health Program? Which one?	Knowledge about Health Programmes
	Which Health Programmes is the participant knowledgeable about
Do you know the SNS 24 service (808 24 24 24)?	Knowledge about the SNS 24
Do you know how to use the SNS 24 service?	Does the participant know how to use the SNS 24?
How many times did you use the SNS 24 service?	Use of the SNS 24

Source: Data organization by the author.

Appendix H – Authorization for the Questionnaire Survey Application in the Three Day Care Centers

1. Authorization from "Centro de Dia da Associação de Socorros da Freguesia da Carvoeira"

RE: Autorização para Entrevistas no âmbito de Dissertação

A.S.F.Carvoeira <geral@associacaocarvoeira.pt>
qua, 20/02/2019 18:54
Para: 'diogo franco' <diogofranco553@hotmail.com>
Cc: servicosocial@associacaocarvoeira.pt <servicosocial@associacaocarvoeira.pt>
Boa tarde

No seguimento do seu pedido, informo que estamos disponíveis para colaborar no que for necessário para o sucesso do trabalho final, desta forma todo o processo vai passar para o nosso Departamento do Apoio Social da responsabilidade da Dra Margarida Livramento (servicosocial@associacaocarvoeira.pt) que estará disponível para combinar datas e horários.

atenciosamente,
António Franco

Ass. Socorros da Freguesia da Carvoeira – IPSS
Estrada Nacional N.9 2565-145 Carvoeira – Torres Vedras
Tlm: 966396665 **Tlf:** 261748001 **Fax:** 261748002
e-mail: geral@associacaocarvoeira.pt

ASF
CARVOEIRA

De: diogo franco [mailto:diogofranco553@hotmail.com]
Enviada: terça-feira, 19 de fevereiro de 2019 20:48
Para: geral@associacaocarvoeira.pt
Assunto: Autorização para Entrevistas no âmbito de Dissertação

Exmo. Sr. Presidente da Associação de Socorros da Freguesia da Carvoeira,
O meu nome é Diogo de Sousa Rebelo Franco, sou estudante de mestrado em Ciências da Comunicação na Faculdade de Ciências Humanas da Universidade Católica Portuguesa de Lisboa. Estou atualmente no 2º ano de curso, pelo que de momento estou a trabalhar na minha dissertação, sob orientação do Professor Doutor Henrique Lopes e Professor Doutor Fernando Ilharco, tendo como tema "Contributos da comunicação como ferramenta de promoção da saúde do idoso".
Venho solicitar a V. Exa autorização para realizar entrevistas no Centro de Dia da Associação de Socorros da Freguesia da Carvoeira, com o objetivo de recolher dados empíricos junto das pessoas com 65+ anos inscritas na sua organização com previsão de duração máxima entre os 6 a 7 meses. As entrevistas serão conduzidas por mim, e têm como objetivo a análise de características sociodemográficas, do papel do Centro de Dia na vida do entrevistado, a sua familiaridade com informações de saúde e estilos de vida e sobre o seu conhecimento do Serviço Nacional de Saúde. Durante as entrevistas irei também aplicar duas ferramentas de recolha de dados, traduzidas para português, relativos ao nível de literacia em saúde de cada entrevistado – *European Health Literacy Survey*, *METER* e *Newest Vital Sign*.
A cada participante do estudo será distribuído uma declaração de consentimento informado, explicitando os objetivos do estudo, assegurando a confidencialidade dos dados recolhidos e o seu anonimato.

De antemão, agradeço a atenção dispensada.

Com os melhores cumprimentos,
Diogo Franco

2. Authorization from “Centro de Dia da Associação de Socorros da Freguesia de Turcifal”

Re: Autorização para Entrevistas no âmbito de Dissertação

aturcifal@sapo.pt <aturcifal@sapo.pt>
ter, 26/02/2019 16:35
Para: diogo franco <diogofranco553@hotmail.com>

Boa tarde,

Caro Diogo,

Após análise do seu e-mail, informo-o que a Associação de Socorros da Freguesia de Turcifal tem todo o gosto em colaborar consigo na sua dissertação, pelo que sugiro que me contacte para que possamos acordar a melhor forma da realização das entrevistas.

Deixo o meu contacto 968087368.

Com os melhores cumprimentos,
A Diretora Técnica/ Assistente Social,
Lígia Sinógas

Exmo. Sr. Presidente da Associação de Socorros da Freguesia de Turcifal,

> O meu nome é Diogo de Sousa Rebelo Franco, sou estudante de mestrado em Ciências da Comunicação na Faculdade de Ciências Humanas da Universidade Católica Portuguesa de Lisboa. Estou atualmente no 2º ano de curso, pelo que de momento estou a trabalhar na minha dissertação, sob orientação do Professor Doutor Henrique Lopes e Professor Doutor Fernando Ilharco, tendo como tema “Contributos da comunicação como ferramenta de promoção da saúde do idoso”.
>
> Venho solicitar a V. Exa autorização para realizar entrevistas no Centro de Dia da Associação de Socorros da Freguesia de Turcifal, com o objetivo de recolher dados empíricos junto das pessoas com 65+ anos inscritas na sua organização com previsão de duração máxima entre os 6 a 7 meses.
>
> As entrevistas serão conduzidas por mim, e têm como objetivo a análise de características sociodemográficas, do papel do Centro de Dia na vida do entrevistado, a sua familiaridade com informações de saúde e estilos de vida e sobre o seu conhecimento do Serviço Nacional de Saúde.
>
> Durante as entrevistas irei também aplicar duas ferramentas de recolha de dados, traduzidas para português, relativos ao nível de literacia em saúde de cada entrevistado – *European Health Literacy Survey*, *METER* e *Newest Vital Sign*.
>
> A cada participante do estudo será distribuído uma declaração de consentimento informado, explicitando os objetivos do estudo, assegurando a confidencialidade dos dados recolhidos e o seu anonimato.
>
> De antemão, agradeço a atenção dispensada.
>
> Com os melhores cumprimentos,
>
> Diogo Franco

3. Authorization from “Centro de Dia da Freguesia de Dois Portos”

Re: Autorização para Entrevistas no âmbito de Dissertação

Telma Mota <telmota.asfdoisportos@gmail.com>
ter, 12/03/2019 11:38
Para: diogofranco553@hotmail.com <diogofranco553@hotmail.com>
Cc: Centro de Dia - Dois Portos - Carmões DPC <centrodedia-dpc@hotmail.com>

Bom Dia.

Venho por este meio na qualidade de Presidente da Associação de Socorros de Dois Portos - IPSS, a informar que temos todo o gosto em colaborar consigo.

Mais informo que irei passar a mensagem à Dra. Técnica da Instituição Dra. Sofia Filipe, para ela colaborar no que estiver ao nosso alcance.

Com os melhores cumprimentos.

Telma Mota

Ass Socorros Freg Dois Portos <asfdoisportos@gmail.com> escreveu no dia quinta, 21/02/2019 à(s) 15:27:

---------- Forwarded message ---------
From: **diogo franco** <diogofranco553@hotmail.com>
Date: quinta, 21/02/2019 à(s) 15:13
Subject: Autorização para Entrevistas no âmbito de Dissertação
To: asfdoisportos@gmail.com <asfdoisportos@gmail.com>

Exmo. Sr. Presidente da Associação de Socorros da Freguesia de Dois Portos,

O meu nome é Diogo de Sousa Rebelo Franco, sou estudante de mestrado em Ciências da Comunicação na Faculdade de Ciências Humanas da Universidade Católica Portuguesa de Lisboa. Estou atualmente no 2º ano de curso, pelo que de momento estou a trabalhar na minha dissertação, sob orientação do Professor Doutor Henrique Lopes e Professor Doutor Fernando Ilharco, tendo como tema “Contributos da comunicação como ferramenta de promoção da saúde do idoso”.

Venho solicitar a V. Exa autorização para realizar entrevistas no Centro de Dia da Associação de Socorros da Freguesia de Dois Portos, com o objetivo de recolher dados empíricos junto das pessoas com 65+ anos inscritas na sua organização com previsão de duração máxima entre os 6 a 7 meses.

As entrevistas serão conduzidas por mim e têm como objetivo a análise de características sociodemográficas, do papel do Centro de Dia na vida do entrevistado, a sua familiaridade com informações de saúde e estilos de vida e sobre o seu conhecimento do Serviço Nacional de Saúde.

Durante as entrevistas irei também aplicar duas ferramentas de recolha de dados, traduzidas para português, relativos ao nível de literacia em saúde de cada entrevistado – *European Health Literacy Survey*, *METER* e *Newest Vital Sign*.

A cada participante do estudo será distribuído uma declaração de consentimento informado, explicitando os objetivos do estudo, assegurando a confidencialidade dos dados recolhidos e o seu anonimato.

De antemão, agradeço a atenção dispensada.

Com os melhores cumprimentos,

Diogo Franco

--

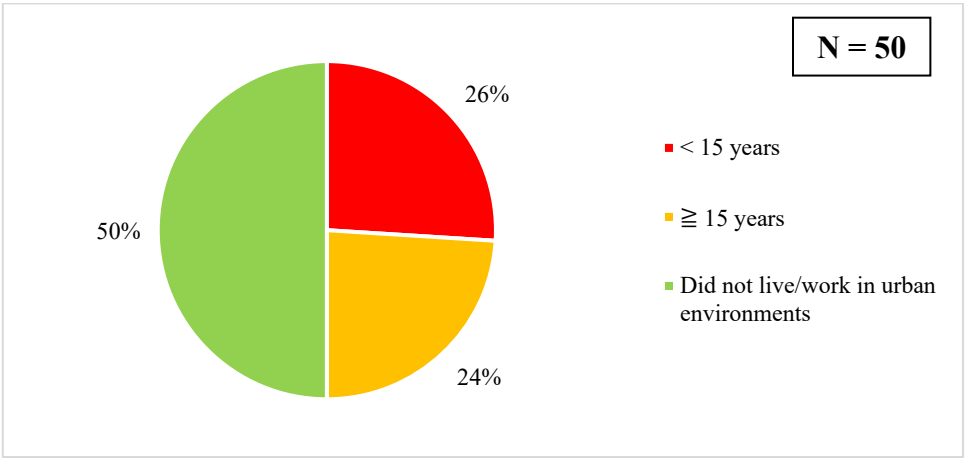
Sem outro assunto de momento, encontramo-nos ao inteiro dispor para qualquer esclarecimento adicional, subscrevemo-nos,
Atentamente,

Associação de Socorros da Freguesia de Dois Portos, IPSS
261 712 700

Appendix I – Data Presentation of the Questionnaire Survey Application in the Research

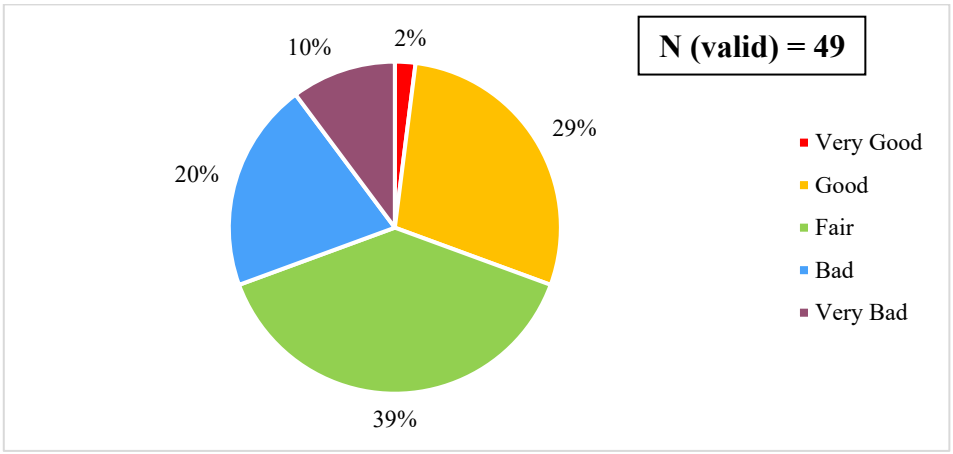
1. Sociodemographic data

Graphic 15 – Participant's declared background regarding living/working in urban environments, in years



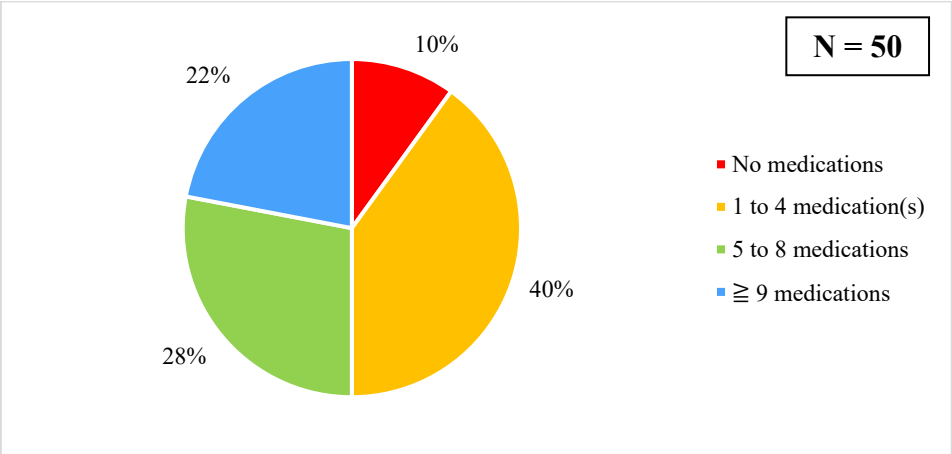
Source: Data organization by the author.

Graphic 16 – Participants' self-assessment regarding their health status



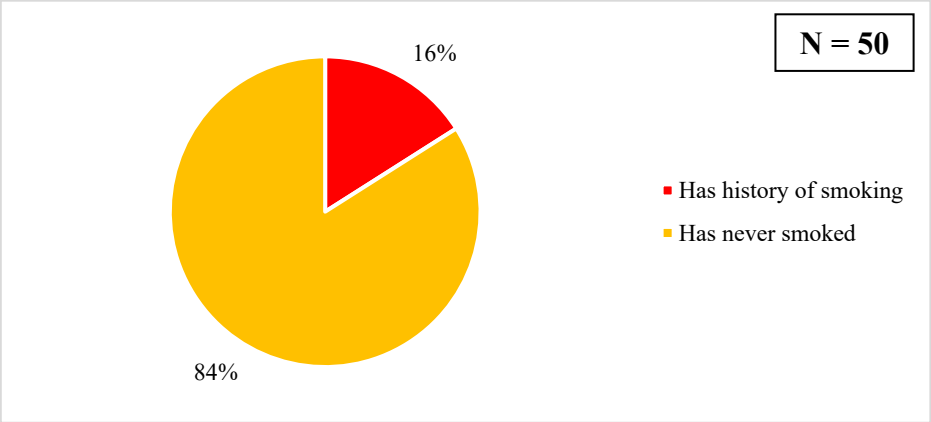
Source: Data organization by the author.

Graphic 17 – Declared daily use of medications



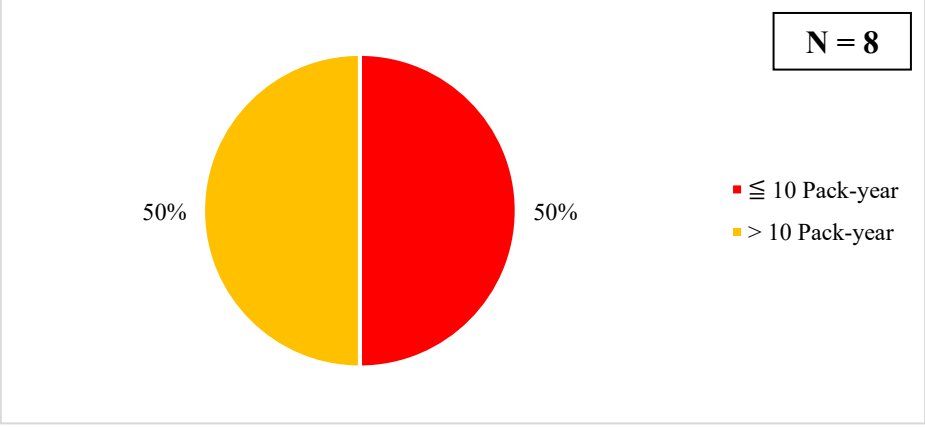
Source: Data organization by the author.

Graphic 18 – Declared history of smoking



Source: Data organization by the author.

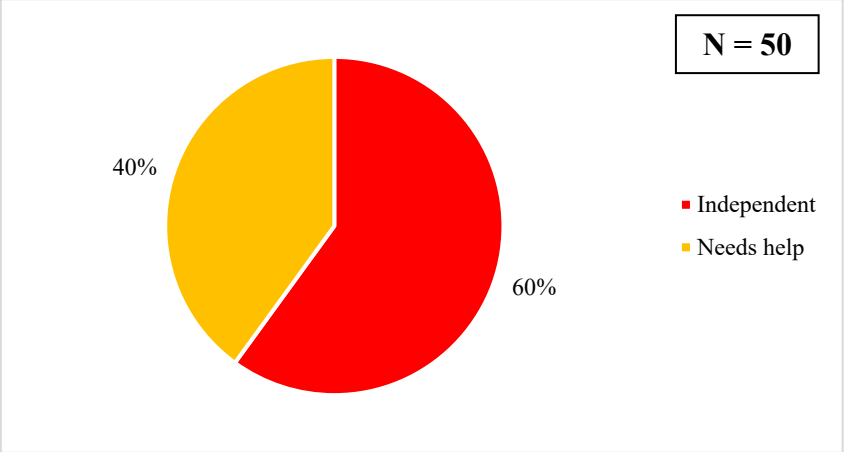
Graphic 18.A – Declared history of smoking, by pack-year



Source: Data organization by the author.

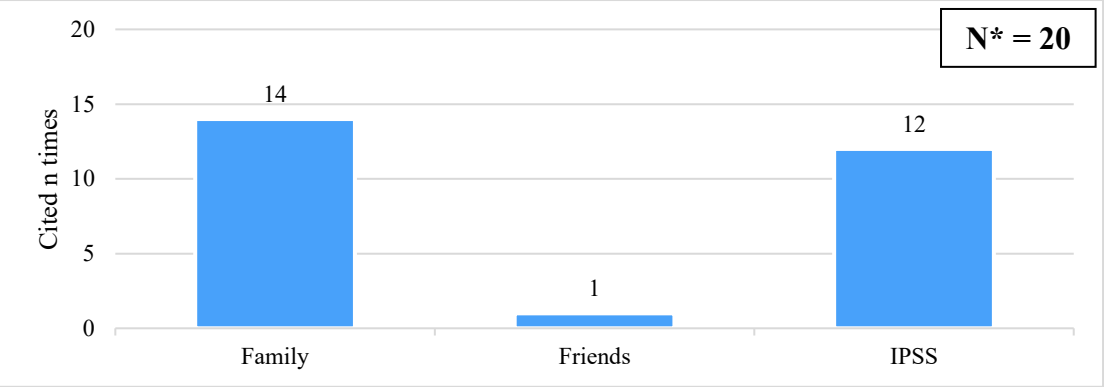
2. Daily activities

Graphic 19 – Participants' self-perception regarding their autonomy in performing daily activities



Source: Data organization by the author.

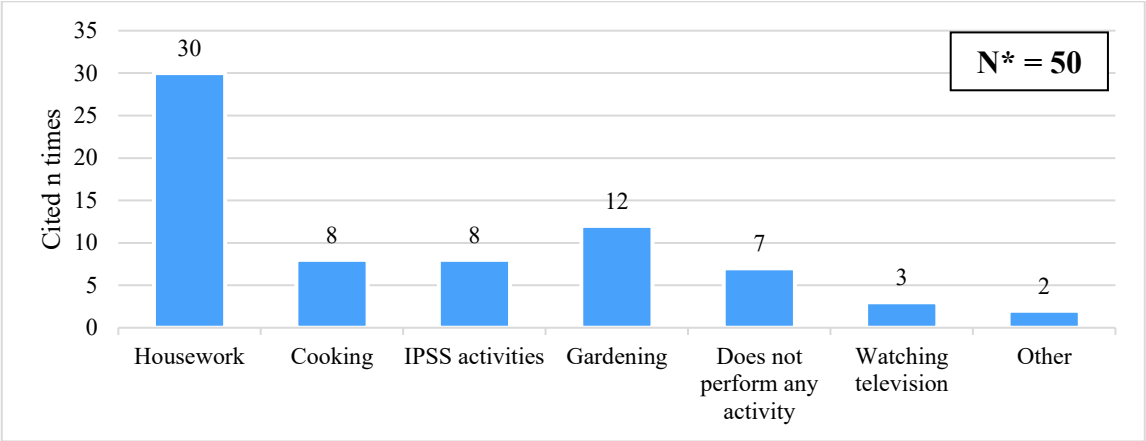
Graphic 19.A – Declared social agents providing support to participants in daily activities



Source: Data organization by the author.

***Note:** N = number of participants

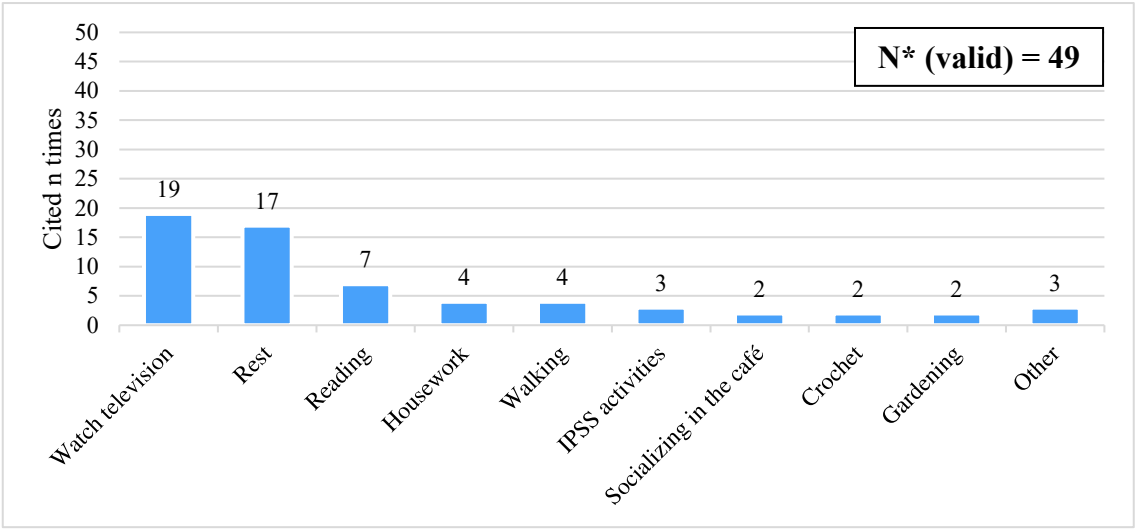
Graphic 20 – Declared daily activities performed by participants



Source: Data organization by the author.

***Note:** N = number of participants

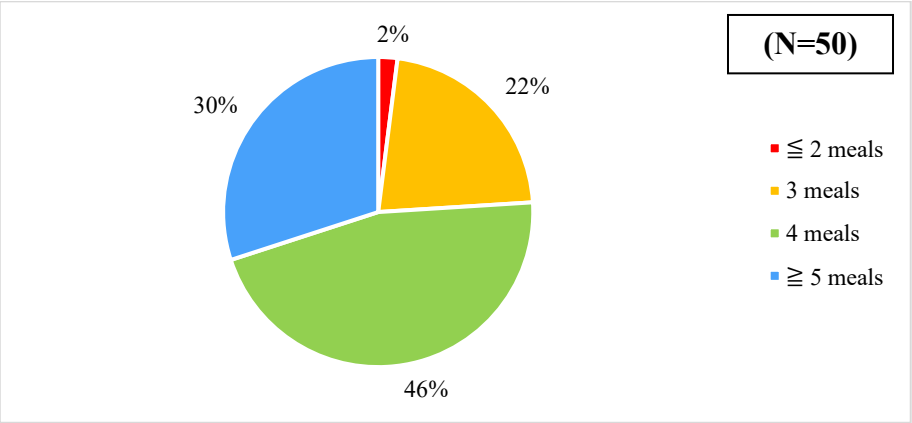
Graphic 21 – Declared daily leisure activities practised by the participants



Source: Data organization by the author.

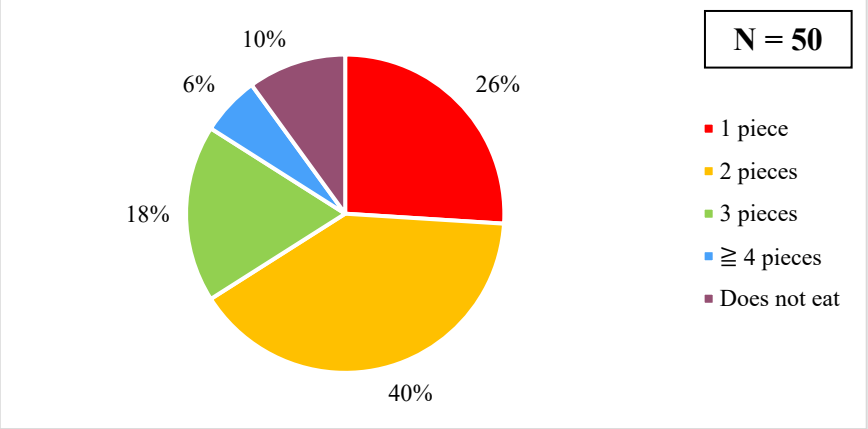
***Note:** N = number of participants

Graphic 22 – Declared daily meal frequency



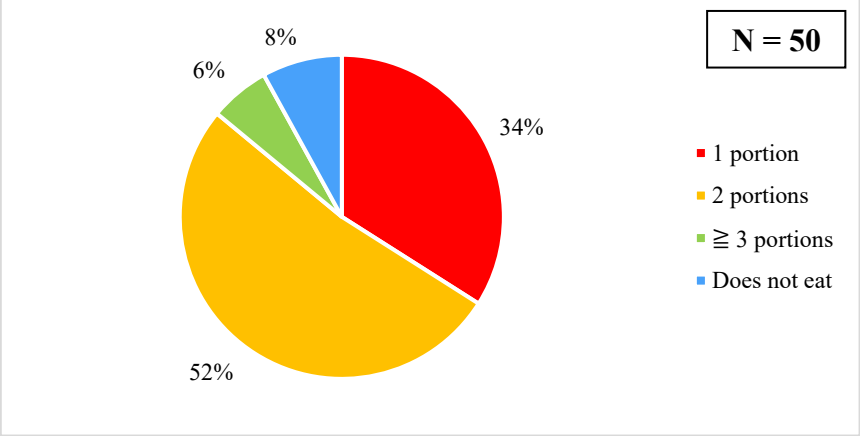
Source: Data organization by the author.

Graphic 23 – Declared daily consumption of fruit pieces



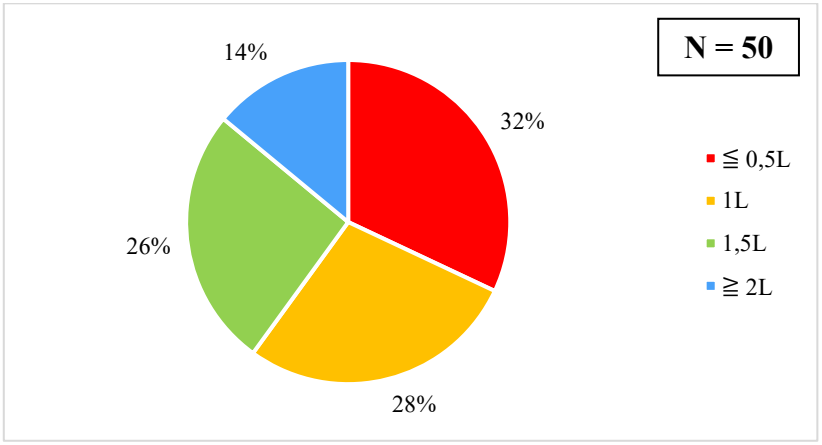
Source: Data organization by the author.

Graphic 24 – Declared regularity of daily consumption of vegetables, by intake frequency



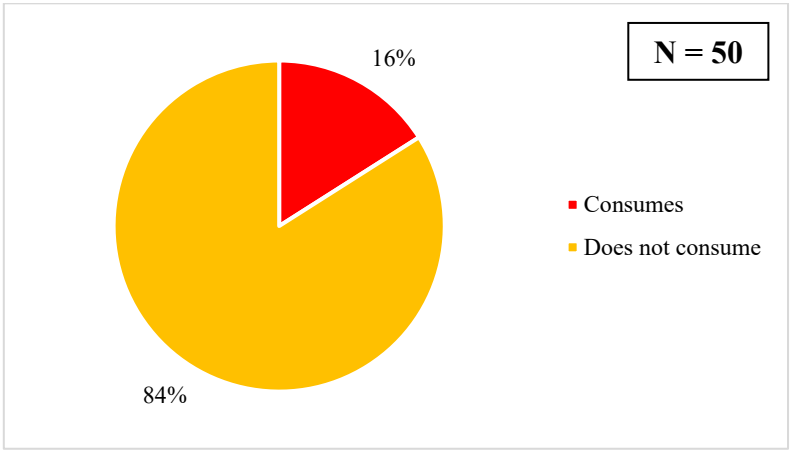
Source: Data organization by the author.

Graphic 25 – Participants' self-assessment of daily water intake



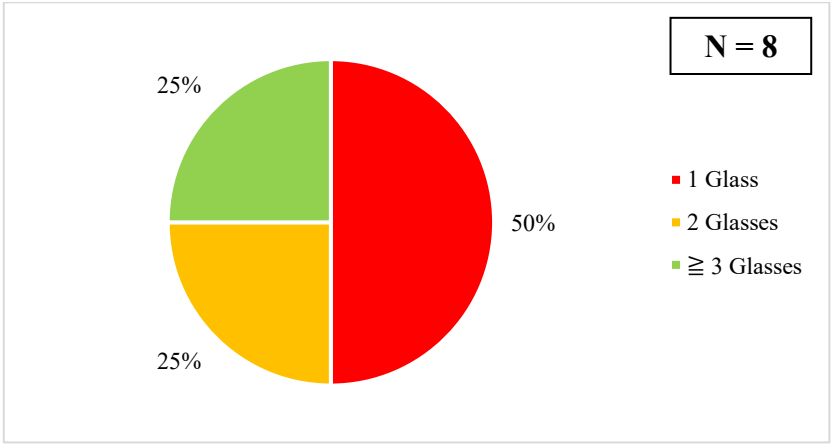
Source: Data organization by the author.

Graphic 26 – Declared consumption history of alcoholic beverages



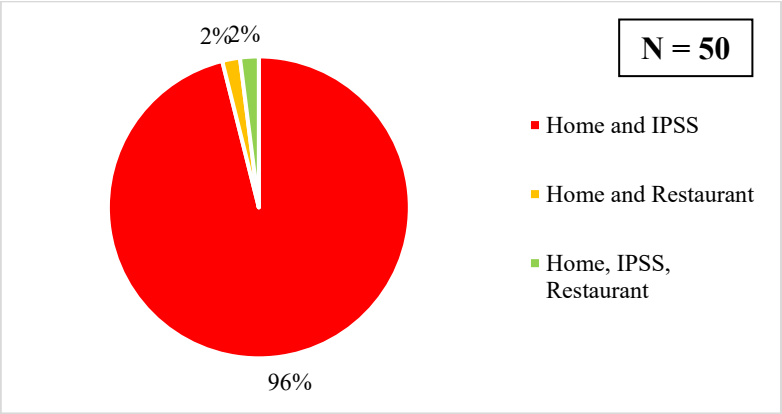
Source: Data organization by the author.

Graphic 26.A – Declared daily consumption of alcoholic beverages



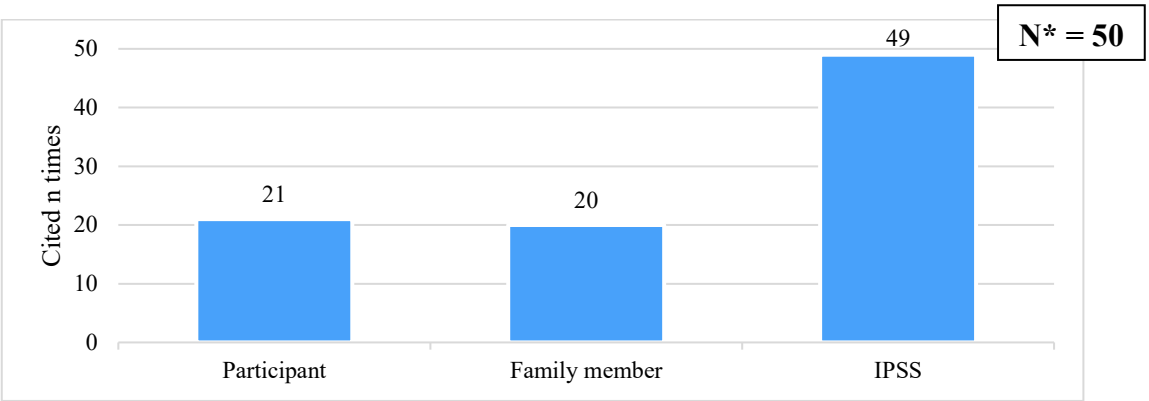
Source: Data organization by the author.

Graphic 27 – Declared places where participants usually have their meals



Source: Data organization by the author.

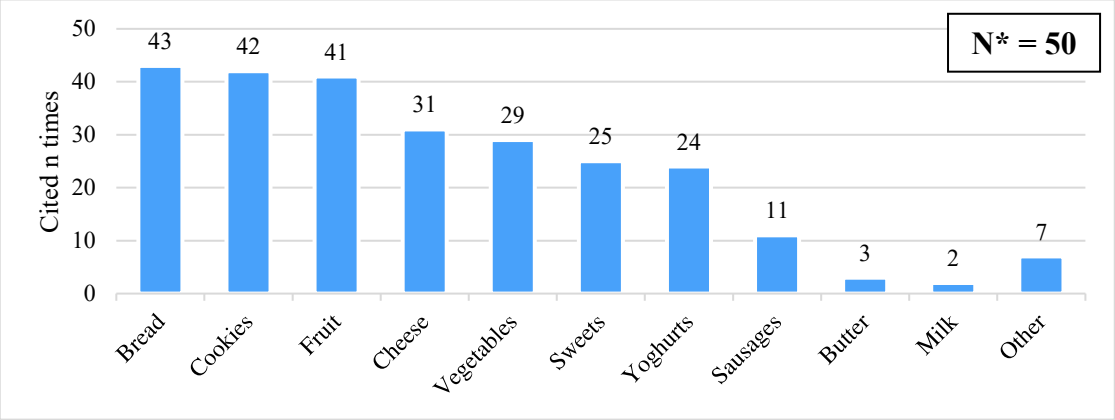
Graphic 28 – Declared responsible figure for cooking daily meals



Source: Data organization by the author.

***Note:** N = number of participants

Graphic 29 – Declared most commonly consumed food at home

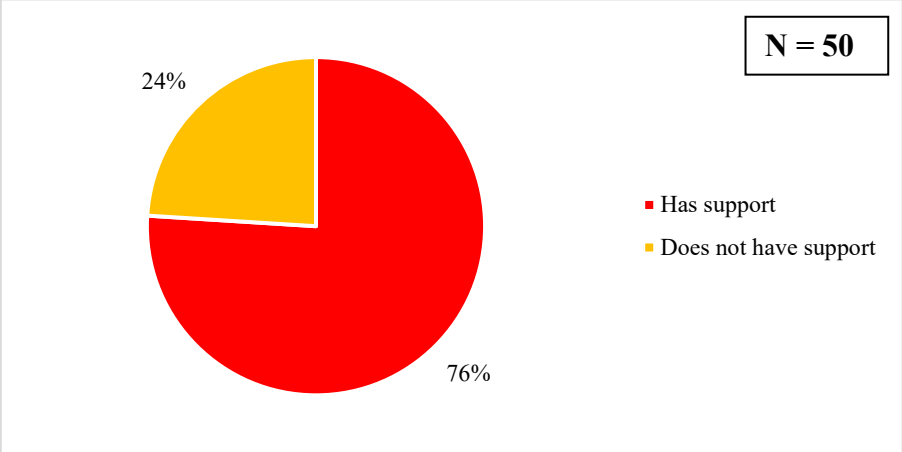


Source: Data organization by the author.

***Note:** N = number of participants

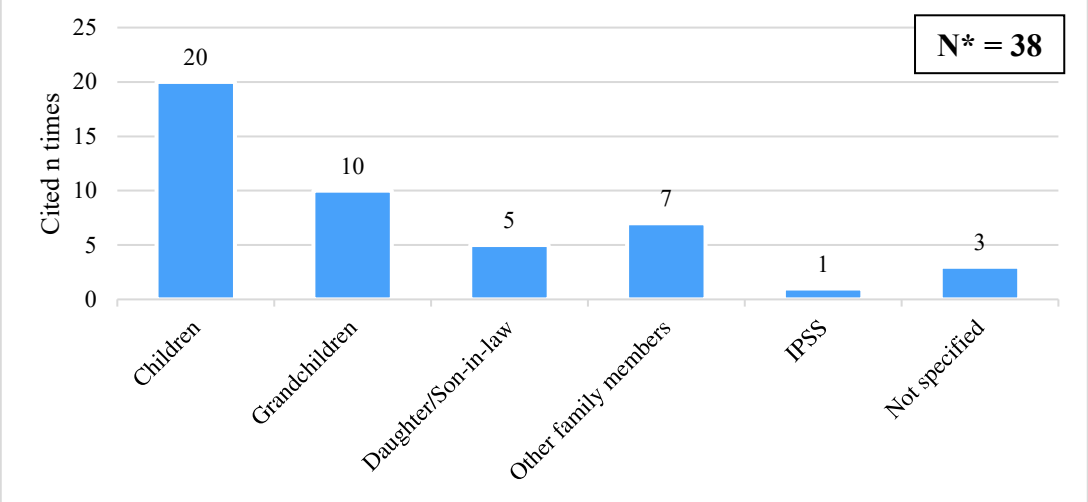
3. Literacy and Digital Inclusion

Graphic 30 – Declared support in searching information on the Internet



Source: Data organization by the author.

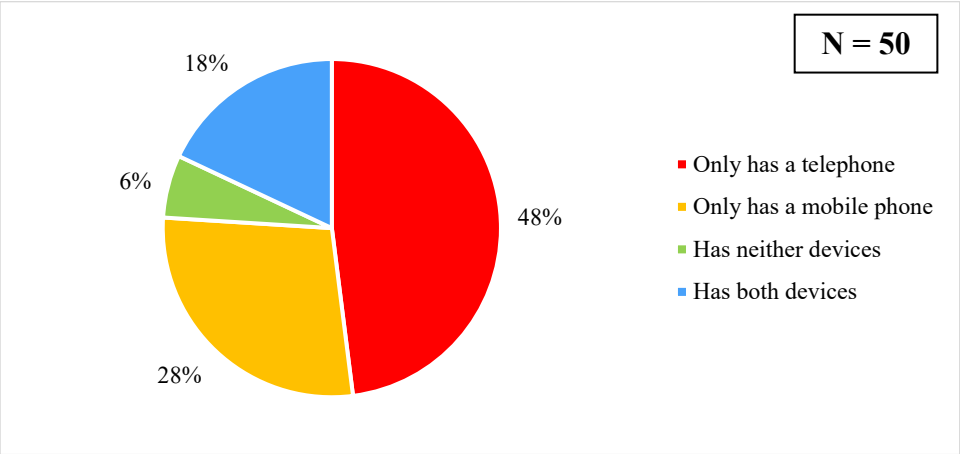
Graphic 30.A – Declared social agent who supports the search for information on the Internet



Source: Data organization by the author.

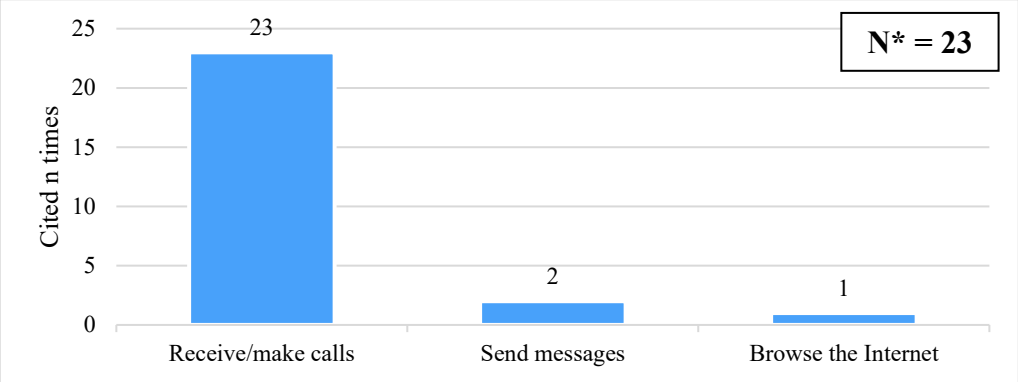
***Note:** N = number of participants

Graphic 31 – Participants declaration about owning a telephone and/or mobile phone



Source: Data organization by the author.

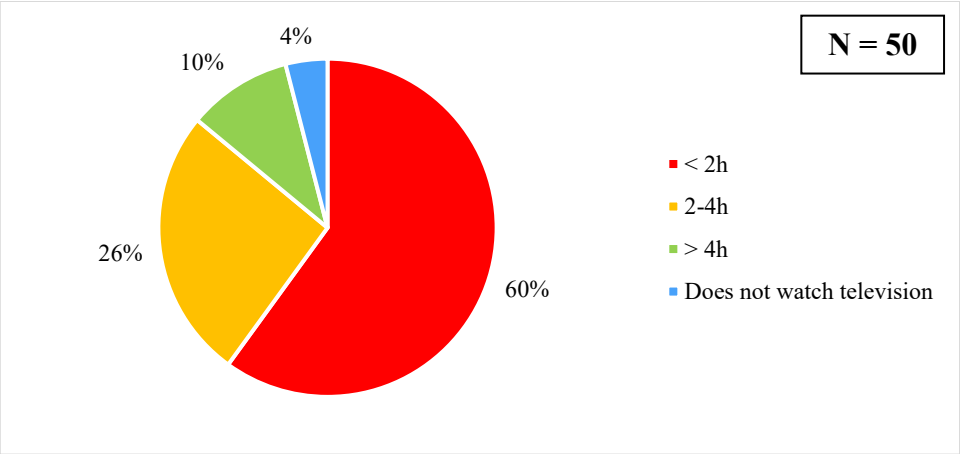
Graphic 31.A – Declared mobile phone usage



Source: Data organization by the author.

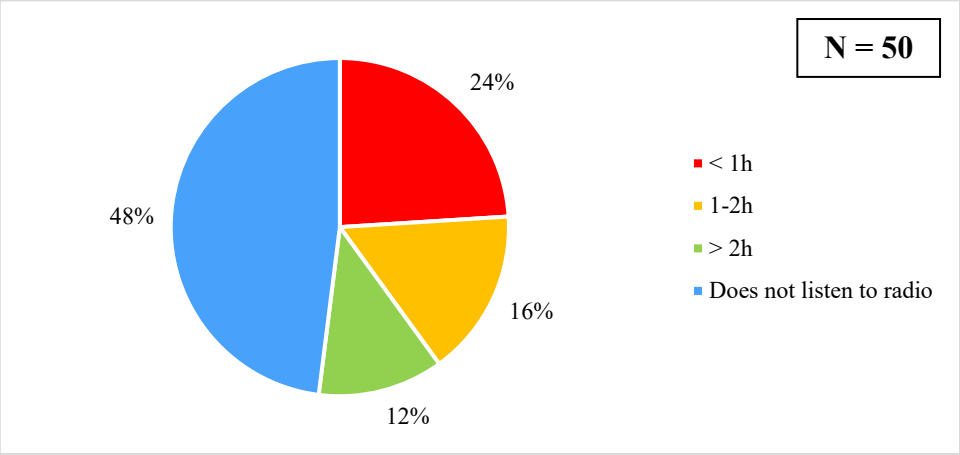
***Note:** N = number of participants

Graphic 32 – Declared exposure time to television content, in hours



Source: Data organization by the author.

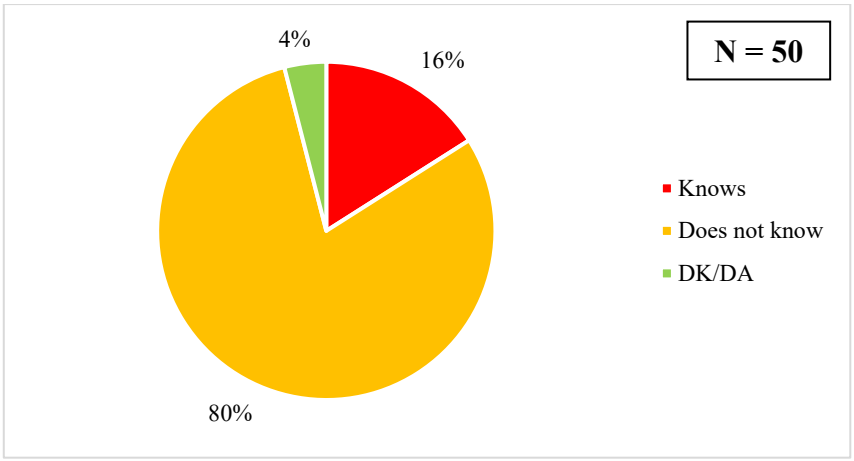
Graphic 33 – Declared exposure time to radio content, in hours



Source: Data organization by the author.

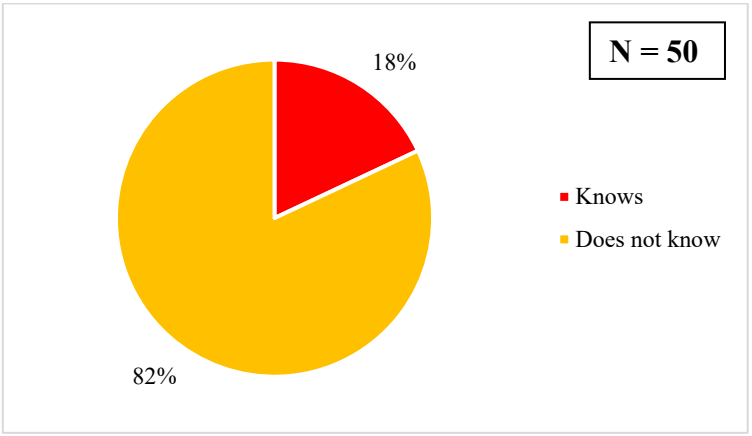
4. Knowledge of health information

Graphic 34 - Declared knowledge about the National Health Plan



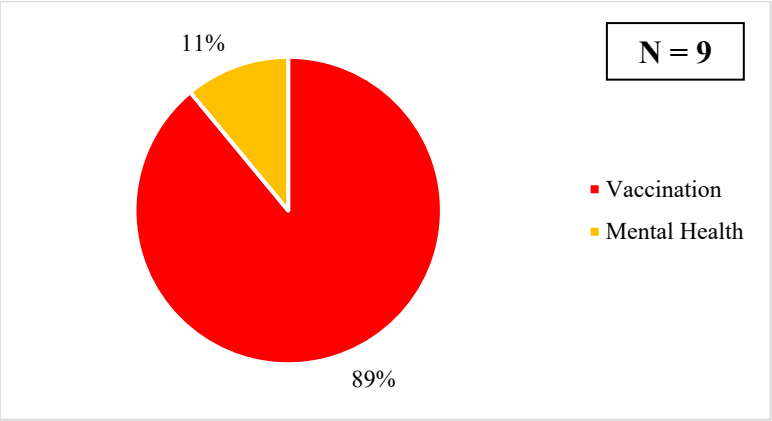
Source: Data organization by the author.

Graphic 35 – Declared knowledge about Health Programmes



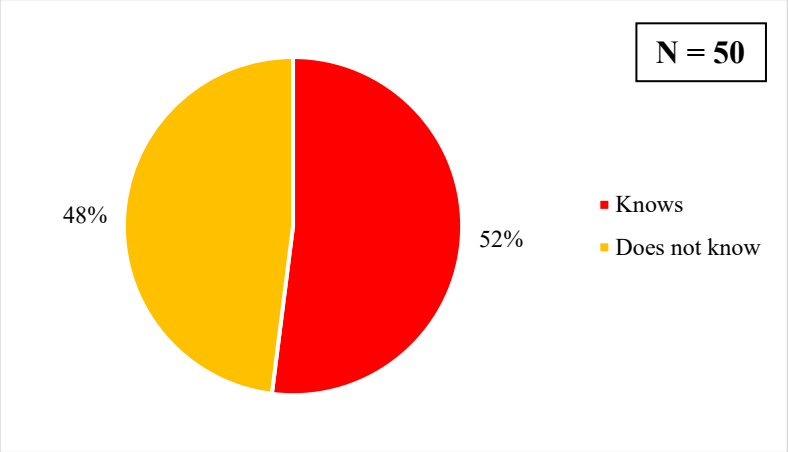
Source: Data organization by the author.

Graphic 35.A – Declared Health Programmes known by participants



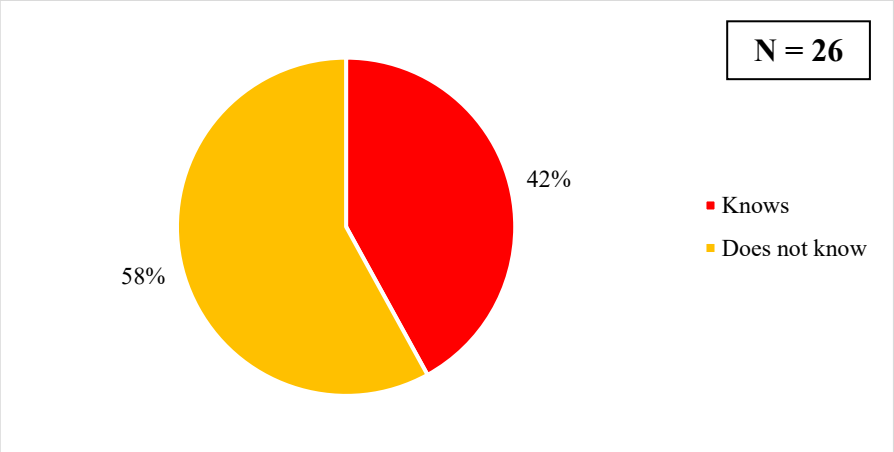
Source: Data organization by the author.

Graphic 36 – Declared knowledge about the SNS 24



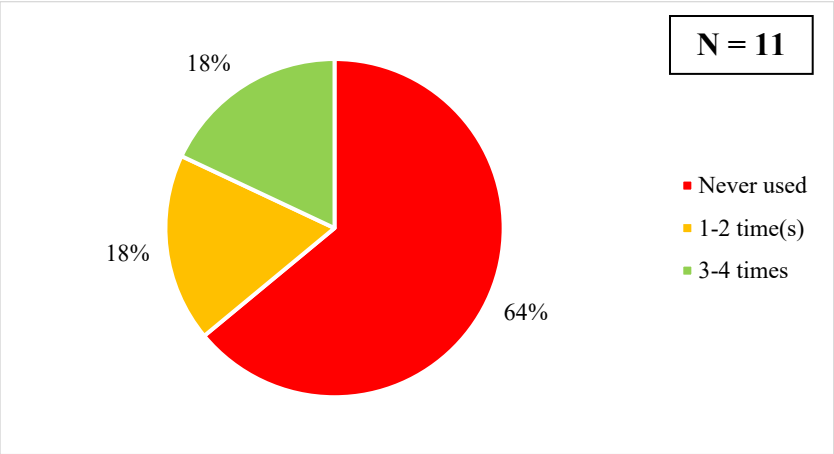
Source: Data organization by the author.

Graphic 36.A – Participants' declaration on knowing how to use the SNS 24



Source: Data organization by the author.

Graphic 36.B – Declaration of SNS 24 use



Source: Data organization by the author.

Appendix J – Data Presentation of the HLS-EU-PT and NVS Application in the Research

Table 32 - Statistical results for the different HL indices of the HLS-EU-PT

	N (valid)	N (missing)	Min.	Max.	Mean	SD	SK	K
Gen-HL Score								
Male	14	0	18,8	44,9	28,6	5,9	1.352	4.375
Female	36	0	14,8	48,9	29,1	8,1	.125	.094
Total	50	0	14,8	48,9	28,9	7,5	.291	.514
HC-HL Score								
Male	13	1	14,5	39,6	28,2	6,5	-.425	1.559
Female	35	1	6,3	46,9	28,2	9,6	-.167	-.329
Total	48	2	6,3	46,9	28,2	8,8	-.192	-.041
DP-HL Score								
Male	14	0	16,7	48,9	28,7	7,6	1,113	3.464
Female	34	2	11,1	50,0	29,4	8,7	.010	.227
Total	48	2	11,1	50,0	29,2	8,4	.232	.555
HP-HL Score								
Male	14	0	20,8	42,2	29,2	5,5	.739	1.343
Female	36	0	5,2	50,0	29,7	9,1	-.159	1.126
Total	50	0	5,2	50,0	29,6	8,2	-.070	1.541

Source: Data organization by the author.

Abbreviations: N – Number; Min – Minimum; Max – Maximum; SD – Standard Deviation; SK – Skewness; K - Kurtosis

For the Gen-HL index, obtained scores in the total sample were comprised between 14,8 and 48,9, both being achieved by the female participants. The average index score mean was of 28,9 for the entire sample, being slightly higher for female participants (29,1) when compared to male participants (28,6). The average standard deviation for this index in the

total sample was 7,5, also being higher for female participants (8,1) than for male participants (5,9).

As for the HC-HL index, scores in the sample varied between 6,3 and 46,9, both achieved by female participants, which represents differences when compared to the scores obtained by male participants, between 14,5 and 39,6. The average score for this index in the total sample was of 28,2, with both genders registering the same value. The overall sample average SD for this index was equal to 8,8, being higher for female participants (9,6) than for male participants (6,5).

In the DP-HL index, the sample registered scores between 11,1 and 50,0, both achieved by female participants. In contrast, male participants registered scores between 16,7 and 48,9. The average score was registered to be 29,2, with female participants registering a slightly higher value (29,4) than the one obtained by male participants (28,7). The SD for the total sample was equal to 8,4, being higher for female participants (8,7) when compared to male participants (7,6).

For the HP-HL index, obtained scores were between 5,2 and 50,0, both values achieved by female participants. In contrast, male participants registered values between 20,8 and 42,2. For the total sample, the average score was registered as 29,6, with female participants registering a slightly higher average (29,7) than male participants (29,2). The SD for the total sample was equal to 8,2, also being higher for female participants (9,1) than for male participants (5,5).

In summary, female participants registered both the lowest and highest scores in all HL indices, with average scores being very similar in both genders. Therefore, the indices with the lowest average scores were HC-HL (28,2) and Gen-HL (28,9), and the highest scores corresponding to DP-HL (29,2) and HP-HL (29,6). If this were set to be defined as an HL level, it would fit in the “Problematic” level. The total SD is also very similar, with the greatest differences being found between genders, with female participants registering higher SD than male participants in the four indices.

Table 33 - Distribution of HLS-EU-PT responses for the Health Care HL dimension

On a scale from 1 (Very Easy), 2 (Easy), 3 (Difficult), 4 (Very Difficult) how easy would you say it is to:	1 Very Easy	2 Easy	3 Difficult	4 Very Difficult	5 DK/DA
	%				
Q.1. “find information about symptoms of illnesses that concern you?”	6%	40%	40%	12%	2%
Q.2. “find information on treatments of illnesses that concern you?”	4%	42%	44%	8%	2%
Q.3. “find out what to do in case of a medical emergency?”	14%	46%	32%	6%	2%
Q.4. “find out where to get professional help when you are ill?”	14%	50%	26%	8%	2%
Q.5. “understand what your doctor says to you?”	16%	52%	28%	4%	0%
Q.6. “understand the leaflets that come with your medicine?”	14%	34%	34%	18%	0%
Q.7. “understand what to do in a medical emergency?”	16%	38%	32%	10%	4%
Q.8. “understand your doctor’s or pharmacist’s instruction on how to take a prescribed medicine?”	22%	52%	16%	8%	2%
Q.9. “judge how information from your doctor applies to you?”	12%	38%	32%	12%	6%
Q.10. “judge the advantages and disadvantages of different treatment options?”	8%	36%	40%	10%	6%
Q.11. “judge when you may need to get a second opinion from another doctor?”	6%	48%	26%	16%	4%
Q.12. “judge if the information about illness in the media is reliable?”	10%	38%	26%	14%	12%
Q.13. “use information the doctor gives you to make decisions about your illness?”	20%	48%	26%	0%	6%
Q.14. “follow the instructions on medication?”	20%	66%	8%	4%	2%
Q.15. “call an ambulance in an emergency?”	28%	44%	18%	8%	2%
Q.16. “follow instructions from your doctor or pharmacist?”	18%	62%	12%	6%	2%

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Abbreviations: DK/DA – Does not know / Does not answer

Table 34 - Distribution of HLS-EU-PT responses for the Health Care HL dimension. Aggregated results according to the categories "Very easy + Easy" and "Very difficult + Difficult"

On a scale from 1 (Very Easy), 2 (Easy), 3 (Difficult), 4 (Very Difficult) how easy would you say it is to:	1 + 2 Very Easy + Easy	3 + 4 Very Difficult + Difficult
	%	
Q.1. "find information about symptoms of illnesses that concern you?"	47%	53%
Q.2. "find information on treatments of illnesses that concern you?"	47%	53%
Q.3. "find out what to do in case of a medical emergency?"	61%	39%
Q.4. "find out where to get professional help when you are ill?"	65%	35%
Q.5. "understand what your doctor says to you?"	68%	32%
Q.6. "understand the leaflets that come with your medicine?"	48%	52%
Q.7. "understand what to do in a medical emergency?"	56%	44%
Q.8. "understand your doctor's or pharmacist's instruction on how to take a prescribed medicine?"	75%	25%
Q.9. "judge how information from your doctor applies to you?"	53%	47%
Q.10. "judge the advantages and disadvantages of different treatment options?"	47%	53%
Q.11. "judge when you may need to get a second opinion from another doctor?"	56%	44%
Q.12. "judge if the information about illness in the media is reliable?"	54%	46%
Q.13. "use information the doctor gives you to make decisions about your illness?"	72%	28%
Q.14. "follow the instructions on medication?"	88%	12%
Q.15. "call an ambulance in an emergency?"	73%	27%
Q.16. "follow instructions from your doctor or pharmacist?"	82%	18%

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Table 35 - Distribution of HLS-EU-PT responses for the Disease Prevention HL dimension

	1	2	3	4	5
On a scale from 1 (Very Easy), 2 (Easy), 3 (Difficult), 4 (Very Difficult) how easy would you say it is to:	Very Easy	Easy	Difficult	Very Difficult	DK/DA
	%				
Q.17. "find information about how to manage unhealthy behaviour such as smoking, low physical activity and drinking too much?"	18%	30%	22%	22%	8%
Q.18. "find information on how to manage mental health problems like stress or depression?"	8%	36%	26%	22%	8%
Q.19. "find information about vaccinations and health screenings that you should have?"	10%	50%	28%	8%	4%
Q.20. "find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?"	14%	50%	30%	6%	0%
Q.21. "understand health warnings about behaviour such as smoking, low physical activity and drinking too much?"	16%	64%	8%	12%	0%
Q.22. "understand why you need vaccinations?"	20%	62%	16%	0%	2%
Q.23. "understand why you need health screenings?"	16%	66%	8%	8%	2%
Q.24. "judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?"	12%	54%	18%	8%	8%
Q.25. "judge when you need to go to a doctor for a check-up?"	22%	36%	38%	4%	0%
Q.26. "judge which vaccinations you may need?"	12%	54%	24%	10%	0%
Q.27. "judge which health screenings you should have?"	20%	52%	16%	12%	0%
Q.28. "judge if the information on health risks in the media is reliable?"	10%	44%	34%	6%	6%
Q.29. "decide if you should have a flu vaccination?"	34%	52%	10%	2%	2%
Q.30. "decide how you can protect yourself from illness based on advice from family and friends?"	20%	54%	18%	4%	4%
Q.31. "decide how you can protect yourself from illness based on information in the media?"	14%	40%	30%	12%	4%

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Abbreviations: DK/DA – Does not know / Does not answer

Table 36 - Distribution of HLS-EU-PT responses for the Disease Prevention HL dimension. Aggregated results according to the categories "Very easy + Easy" and "Very difficult + Difficult"

	1 + 2	3 + 4
On a scale from 1 (Very Easy), 2 (Easy), 3 (Difficult), 4 (Very Difficult) how easy would you say it is to:	Very Easy + Easy	Very Difficult + Difficult
	%	
Q.17. "find information about how to manage unhealthy behaviour such as smoking, low physical activity and drinking too much?"	52%	48%
Q.18. "find information on how to manage mental health problems like stress or depression?"	48%	52%
Q.19. "find information about vaccinations and health screenings that you should have?"	62%	38%
Q.20. "find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?"	64%	36%
Q.21. "understand health warnings about behaviour such as smoking, low physical activity and drinking too much?"	80%	20%
Q.22. "understand why you need vaccinations?"	84%	16%
Q.23. "understand why you need health screenings?"	84%	16%
Q.24. "judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?"	72%	28%
Q.25. "judge when you need to go to a doctor for a check-up?"	58%	42%
Q.26. "judge which vaccinations you may need?"	66%	34%
Q.27. "judge which health screenings you should have?"	72%	28%
Q.28. "judge if the information on health risks in the media is reliable?"	57%	43%
Q.29. "decide if you should have a flu vaccination?"	88%	12%
Q.30. "decide how you can protect yourself from illness based on advice from family and friends?"	77%	23%
Q.31. "decide how you can protect yourself from illness based on information in the media?"	56%	44%

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Table 37 - Distribution of HLS-EU-PT responses for the Health Promotion HL dimension

	1	2	3	4	5
On a scale from 1 (Very Easy), 2 (Easy), 3 (Difficult), 4 (Very Difficult) how easy would you say it is to:	Very Easy	Easy	Difficult	Very Difficult	DK/DA
	%				
Q.32. "find information on healthy activities such as exercise, healthy food and nutrition?"	18%	52%	18%	12%	0%
Q.33. "find out about activities that are good for your mental well-being?"	10%	62%	22%	4%	2%
Q.34. "find information on how your neighbourhood could be more health-friendly?"	12%	36%	38%	10%	4%
Q.35. "find out about political changes that may affect health?"	10%	16%	38%	26%	10%
Q.36. "find out about efforts to promote your health at work?"	12%	48%	18%	8%	14%
Q.37. "understand advice on health from family members or friends?"	22%	62%	6%	6%	4%
Q.38. "understand information on food packaging?"	16%	44%	20%	14%	6%
Q.39. "understand information in the media on how to get healthier?"	10%	52%	22%	16%	0%
Q.40. "understand information on how to keep your mind healthy?"	16%	64%	8%	12%	0%
Q.41. "judge where your life affects your health and well-being?"	20%	68%	6%	6%	0%
Q.42. "judge how your housing conditions help you to stay healthy?"	22%	66%	10%	2%	0%
Q.43. "judge which everyday behaviour is related to your health?"	14%	60%	14%	10%	2%
Q.44. "make decisions to improve your health?"	26%	60%	8%	6%	0%
Q.45. "join a sports club or exercise class if you want to?"	18%	36%	32%	14%	0%
Q.46. "influence your living conditions that affect your health and wellbeing?"	18%	54%	22%	6%	0%
Q.47. "take part in activities that improve health and well-being in your community?"	22%	46%	26%	6%	0%

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Abbreviations: DK/DA – Does not know / Does not answer

Table 38 - Distribution of HLS-EU-PT responses for the Health Promotion HL dimension. Aggregated results according to the categories "Very easy + Easy" and "Very difficult + Difficult"

	1 + 2	3 + 4
On a scale from 1 (Very Easy), 2 (Easy), 3 (Difficult), 4 (Very Difficult) how easy would you say it is to:	Very Easy + Easy	Very Difficult + Difficult
	%	
Q.32. "find information on healthy activities such as exercise, healthy food and nutrition?"	70%	30%
Q.33. "find out about activities that are good for your mental well-being?"	73%	27%
Q.34. "find information on how your neighbourhood could be more health-friendly?"	50%	50%
Q.35. "find out about political changes that may affect health?"	29%	71%
Q.36. "find out about efforts to promote your health at work?"	70%	30%
Q.37. "understand advice on health from family members or friends?"	86%	14%
Q.38. "understand information on food packaging?"	64%	36%
Q.39. "understand information in the media on how to get healthier?"	62%	38%
Q.40. "understand information on how to keep your mind healthy?"	80%	20%
Q.41. "judge where your life affects your health and well- being?"	88%	12%
Q.42. "judge how your housing conditions help you to stay healthy?"	88%	12%
Q.43. "judge which everyday behaviour is related to your health?"	75%	25%
Q.44. "make decisions to improve your health?"	86%	14%
Q.45. "join a sports club or exercise class if you want to?"	54%	46%
Q.46. "influence your living conditions that affect your health and wellbeing?"	72%	28%
Q.47. "take part in activities that improve health and well-being in your community?"	68%	32%

Source: Data organization by the author. For the table to be aligned with the English language, the presented questions were retrieved from the HLS-EU-Q47 (Sørensen et al., 2013). Respective questions in Portuguese available from the HLS-EU-PT in Appendix A.

Table 39 - Factor analysis (principal components) of the HLS-EU-PT results: Main factors – Communalities

Questions	Initial	Extraction
Q.1. “find information about symptoms of illnesses that concern you?”	1.000	.784
Q.2. “find information on treatments of illnesses that concern you?”	1.000	.764
Q.3. “find out what to do in case of a medical emergency?”	1.000	.867
Q.4. “find out where to get professional help when you are ill?”	1.000	.745
Q.5. “understand what your doctor says to you?”	1.000	.687
Q.6. “understand the leaflets that come with your medicine?”	1.000	.584
Q.7. “understand what to do in a medical emergency?”	1.000	.878
Q.8. “understand your doctor’s or pharmacist’s instruction on how to take a prescribed medicine?”	1.000	.822
Q.9. “judge how information from your doctor applies to you?”	1.000	.677
Q.10. “judge the advantages and disadvantages of different treatment options?”	1.000	.836
Q.11. “judge when you may need to get a second opinion from another doctor?”	1.000	.745
Q.12. “judge if the information about illness in the media is reliable?”	1.000	.751
Q.13. “use information the doctor gives you to make decisions about your illness?”	1.000	.798
Q.14. “follow the instructions on medication?”	1.000	.844
Q.15. “call an ambulance in an emergency?”	1.000	.815
Q.16. “follow instructions from your doctor or pharmacist?”	1.000	.818
Q.17. “find information about how to manage unhealthy behaviour such as smoking, low physical activity and drinking too much?”	1.000	.720
Q.18. “find information on how to manage mental health problems like stress or depression?”	1.000	.808
Q.19. “find information about vaccinations and health screenings that you should have?”	1.000	.832
Q.20. “find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?”	1.000	.816
Q.21. “understand health warnings about behaviour such as smoking, low physical activity and drinking too much?”	1.000	.846
Q.22. “understand why you need vaccinations?”	1.000	.823
Q.23. “understand why you need health screenings?”	1.000	.879
Q.24. “judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?”	1.000	.860
Q.25. “judge when you need to go to a doctor for a check-up?”	1.000	.790
Q.26. “judge which vaccinations you may need?”	1.000	.667
Q.27. “judge which health screenings you should have?”	1.000	.821
Q.28. “judge if the information on health risks in the media is reliable?”	1.000	.778
Q.29. “decide if you should have a flu vaccination?”	1.000	.852
Q.30. “decide how you can protect yourself from illness based on advice from family and friends?”	1.000	.832
Q.31. “decide how you can protect yourself from illness based on information in the media?”	1.000	.813
Q.32. “find information on healthy activities such as exercise, healthy food and nutrition?”	1.000	.812
Q.33. “find out about activities that are good for your mental well-being?”	1.000	.767
Q.34. “find information on how your neighbourhood could be more health-friendly?”	1.000	.736
Q.35. “find out about political changes that may affect health?”	1.000	.728
Q.36. “find out about efforts to promote your health at work?”	1.000	.812
Q.37. “understand advice on health from family members or friends?”	1.000	.824
Q.38. “understand information on food packaging?”	1.000	.811
Q.39. “understand information in the media on how to get healthier?”	1.000	.765
Q.40. “understand information on how to keep your mind healthy?”	1.000	.853
Q.41. “judge where your life affects your health and well- being?”	1.000	.860
Q.42. “judge how your housing conditions help you to stay healthy?”	1.000	.887
Q.43. “judge which everyday behaviour is related to your health?”	1.000	.828
Q.44. “make decisions to improve your health?”	1.000	.843
Q.45. “join a sports club or exercise class if you want to?”	1.000	.841
Q.46. “influence your living conditions that affect your health and wellbeing?”	1.000	.871
Q.47. “take part in activities that improve health and well-being in your community?”	1.000	.825
Means	1.000	.800

Extraction Method: Principal Component Analysis.

Source: Data organization by the author.

Table 40 - Factor analysis (principal components) of the HLS-EU-PT results: Stress Test for Differential Factor Values

Factors	Differential Factor Value
Factor #2	10,25
Factor #3	0,98
Factor #4	0,43
Factor #5	0,61
Factor #6	0,33
Factor #7	0,24
Factor #8	0,11
Factor #9	0,17
Factor #10	0,20
Factor #11	0,10
Factor #12	0,12

Source: Data organization by the author.

Table 41 - Rotated Component Matrix of the 47 questions in HLS-EU-PT[a]

HLS-EU-PT Questions	Component 1	2	3	4	5	6	7	8	9	10	11	12
Q.1. “find information about symptoms of illnesses that concern you?”	,236	,059	,020	,472	,323	,222	-,006	-,131	-,069	,041	,565	-,074
Q.2. “find information on treatments of illnesses that concern you?”	-,005	,248	,166	,326	,047	-,047	,267	,003	-,137	,266	,634	-,050
Q.3. “find out what to do in case of a medical emergency?”	,066	,862	,081	,082	,225	-,118	,117	-,089	,055	,036	-,060	,112
Q.4. “find out where to get professional help when you are ill?”	-,029	,684	,107	,275	-,081	,124	,218	-,079	,164	-,072	,282	,052
Q.5. “understand what your doctor says to you?”	-,092	,195	,424	,189	,002	,039	,593	-,018	-,065	,021	,259	,017
Q.6. “understand the leaflets that come with your medicine?”	,072	,109	,182	,608	-,098	,248	,122	-,207	,147	-,066	,090	-,046
Q.7. “understand what to do in a medical emergency?”	,141	,708	,238	,151	,137	,427	,078	-,069	,054	,241	,060	,034
Q.8. “understand your doctor’s or pharmacist’s instruction on how to take a prescribed medicine?”	-,106	,713	,011	,169	,004	,379	,265	-,038	,139	,066	,117	-,143
Q.9. “judge how information from your doctor applies to you?”	,061	,290	,057	,086	,123	,045	,642	,215	,265	,126	,125	-,019
Q.10. “judge the advantages and disadvantages of different treatment options?”	,005	,304	,332	-,049	,091	-,054	,629	,010	,035	,466	-,067	-,026
Q.11. “judge when you may need to get a second opinion from another doctor?”	-,036	,181	,317	,127	-,016	,139	,150	,443	,096	,241	,536	-,036
Q.12. “judge if the information about illness in the media is reliable?”	,223	,269	,196	-,140	,435	,169	-,115	-,120	-,176	,190	,257	,438
Q.13. “use information the doctor gives you to make decisions about your illness?”	,214	,283	,205	,195	,103	,194	,490	-,060	,353	-,025	,374	,189
Q.14. “follow the instructions on medication?”	,114	,468	,355	,296	,190	-,011	,450	,083	,284	-,226	,095	-,109
Q.15. “call an ambulance in an emergency?”	-,011	,465	,603	,095	,161	,041	,181	,056	,293	-,114	,248	,036
Q.16. “follow instructions from your doctor or pharmacist?”	,000	,280	,302	,082	,142	-,122	,298	-,064	,712	-,050	-,049	-,057
Q.17. “find information about how to manage unhealthy behaviour such as smoking, low physical activity and drinking too much?”	,394	,125	,043	,196	,185	,198	,220	,469	-,141	,347	,166	-,011
Q.18. “find information on how to manage mental health problems like stress or depression?”	,289	,052	,067	,192	,111	,008	-,007	,200	,135	,777	,075	-,033
Q.19. “find information about vaccinations and health screenings that you should have?”	,164	,011	-,043	,307	-,001	-,050	,277	,130	,115	,686	,358	,031
Q.20. “find information on how to prevent or manage conditions like being overweight, high blood pressure or high cholesterol?”	,193	,107	,116	,752	,028	,147	,027	,068	,148	,229	,266	-,125
Q.21. “understand health warnings about behaviour such as smoking, low physical activity and drinking too much?”	,203	,111	,102	,238	,728	-,003	,189	,204	,250	,057	,158	-,164
Q.22. “understand why you need vaccinations?”	,018	,068	,022	,161	,244	,279	,060	,389	,057	-,480	,069	,511
Q.23. “understand why you need health screenings?”	,335	,043	,292	,118	,725	,094	,135	,221	,152	-,121	,015	,161

Q.24. “judge how reliable health warnings are, such as smoking, low physical activity and drinking too much?”	,258	,071	,050	,074	,210	,130	,014	,125	,812	,197	,014	,070
Q.25. “judge when you need to go to a doctor for a check-up?”	-,032	,114	,249	,150	,042	,468	,338	,151	,468	-,027	-,198	,272
Q.26. “judge which vaccinations you may need?”	,113	,237	,000	,688	,227	,005	,058	,194	,058	,121	,102	,055
Q.27. “judge which health screenings you should have?”	,528	,328	-,107	,184	,269	,264	,424	,208	,030	-,126	-,044	,074
Q.28. “judge if the information on health risks in the media is reliable?”	,615	,170	-,042	,144	,108	,073	,018	,251	,415	,141	-,018	,275
Q.29. “decide if you should have a flu vaccination?”	,146	,016	-,038	-,004	-,086	-,042	,005	-,025	,081	-,018	-,078	,898
Q.30. “decide how you can protect yourself from illness based on advice from family and friends?”	,338	-,247	,119	-,187	,306	,143	,394	,090	,005	-,165	,384	,395
Q.31. “decide how you can protect yourself from illness based on information in the media?”	,765	-,120	,258	-,039	,197	,102	,054	,012	,187	,019	,084	,225
Q.32. “find information on healthy activities such as exercise, healthy food and nutrition?”	,205	,297	,194	,387	,175	,435	-,023	,173	,251	,261	,238	-,237
Q.33. “find out about activities that are good for your mental well-being?”	,204	,233	,370	,223	,229	,594	-,059	,078	,120	,088	,178	-,124
Q.34. “find information on how your neighbourhood could be more health-friendly?”	,728	,056	-,048	,303	,098	,221	,028	-,153	-,038	,136	-,070	-,047
Q.35. “find out about political changes that may affect health?”	,534	,181	,056	,320	,367	,247	-,003	-,008	,095	,287	-,023	-,126
Q.36. “find out about efforts to promote your health at work?”	,173	,280	,220	,190	,287	,619	,133	-,209	-,240	,096	-,024	-,160
Q.37. “understand advice on health from family members or friends?”	,431	,189	,586	,004	,040	,178	,173	,209	,155	-,324	,082	,126
Q.38. “understand information on food packaging?”	,087	,124	,250	,748	,241	,069	,126	,211	-,036	,114	-,052	,160
Q.39. “understand information in the media on how to get healthier?”	,739	-,062	,177	,067	-,077	-,136	-,093	,280	,001	,197	,147	,083
Q.40. “understand information on how to keep your mind healthy?”	,016	,160	,703	,196	,216	,042	-,048	,172	,330	,275	,121	-,120
Q.41. “judge where your life affects your health and well- being?”	-,055	,113	-,013	,144	,584	-,097	-,171	,491	,417	,119	-,072	,100
Q.42. “judge how your housing conditions help you to stay healthy?”	,066	-,206	,178	,096	,101	-,010	,105	,863	,151	,035	-,063	,064
Q.43. “judge which everyday behaviour is related to your health?”	,463	-,152	,233	-,068	,184	,011	,044	,664	-,050	,148	,102	-,143
Q.44. “make decisions to improve your health?”	,425	,068	,648	,191	,236	,168	,241	,111	,067	-,178	,106	,017
Q.45. “join a sports club or exercise class if you want to?”	,123	-,027	,715	,200	,002	,209	,322	,186	-,078	,288	-,030	,040
Q.46. “influence your living conditions that affect your health and wellbeing?”	,068	,323	,135	,189	,614	,432	,284	-,046	,150	,159	,081	-,080
Q.47. “take part in activities that improve health and well-being in your community?”	,115	-,005	-,001	,070	-,058	,859	-,003	,073	,030	-,169	,060	,164

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 23 iterations.

Source: Data organization by the author.

Table 42 - Statistical results for the NVS application in the research

	NVS Score		
	Male	**Female**	**Total**
N (valid)	11	30	41
N (missing)	3	6	9
Minimum	0	0	0
Maximum	6	4	6
Mean	1,0	0,8	0,9
SD	1,8	1,1	1,3
SK	2,6	1,4	2,2
K	7,1	1,5	5,6

Source: Data organization by the author.

Abbreviations: N – Number; Min – Minimum; Max – Maximum; SD – Standard Deviation; SK – Skewness; K - Kurtosis

From the forty-one respondents who completed the NVS survey, eleven were male participants and thirty were female participants. As for the individuals who did not complete the survey, three were male participants and six were female participants.

The minimum valid answers were 0 for both genders, with the maximum being 6 for male participants and 4 for female participants. The average registered score for the total sample was 0,9, being similar for both male (1,0) and female (0,8) participants. The SD for the whole sample was equal to 1,3, being slightly higher for male participants (1,8) than for female participants (1,1).

Table 43 - Factor analysis (principal components) of the NVS results: Main factors – Communalities

Questions	Initial	Extraction
Q.1. If you eat the entire container, how many calories will you eat?	1.000	.658
Q.2. If you are allowed to eat 60 g of carbohydrates as a snack, how much ice cream could you have?	1.000	.623
Q.3. Your doctor advises you to reduce the amount of saturated fat in your diet. You usually have 42 g of saturated fat each day, which includes 1 serving of ice cream. If you stop eating ice cream, how many grams of saturated fat would you be consuming each day?	1.000	.822
Q.4. If you usually eat 2500 calories in a day, what percentage of your daily value of calories will you be eating if you eat one serving?	1.000	.713
Q.5. Pretend that you are allergic to the following subs. Is it safe for you to eat this ice cream?	1.000	.958
Q.6. (Ask only if the patient responds “no” to question 5): Why not?	1.000	.966
Mean	1.000	.790

Source: Data organization by the author.

Table 44 - Rotated Component Matrix of the six questions in NVS[a]

	Component	
NVS Questions	1	2
Question 1	,811	,027
Question 2	,784	-,092
Question 3	,905	,059
Question 4	,827	,169
Question 5	-,028	,979
Question 6	,112	,977

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Source: Data organization by the author.