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PERCEIVED SERVICE QUALITY AND HEALTH-RELATED QUALITY OF LIFE IN LONG-TERM CARE

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Abstract

Due to rapid population ageing, long-term care has emerged as a range of services that assure mental, physical and social stability to those with chronic diseases. With a growing importance, the institutions providing care in this sector must assure and enhance the quality of care provided, by evaluating their services based on the patient' perspective, who have an essential opinion on the assessment of the health services quality. In this sense, the present investigation aims to evaluate the quality of the long-term care provision in Portugal, as well to understand how it is associated with the patients' health-related quality of life. Considering the existing gap in this field, this research was developed in the Medium Duration and Rehabilitation Unit of *Santa Casa da Misericordia* in *Alhos Vedros*. The SERVPERF and the EQ-5D-3L instruments were used to collect the data and its analysis was performed based on descriptive analysis, hypotheses testing and correlations.

The results showed that there is an association, although non-significant, of the overall perceived service quality with the improvement of the patients' health-related quality of life. Additionally, the Responsiveness dimension has reported the highest level of perceived quality, while the Empathy has reported the lowest. The overall perception of service quality provided is good (5 points). On the other hand, the 30 days treatment improved the patients' capability to walk, to take care of themselves, to perform their usual activities, to feel less anxious/depressed and, thus, the majority of the patients have rated their own health state above 70 points.

Keywords: EQ-5D-3L**,** Health-Related Quality of Life, Perceived **S**ervice Quality, SERVPERF

JEL Classification:

I31 General Welfare, Well-Being

Y40 Dissertations

Resumo

Com o envelhecimento da população, os cuidados continuados surgiram como um conjunto de serviços que asseguram estabilidade mental, física e social a pacientes com doenças crônicas. Devido à sua crescente importância, as instituições deste sector devem assegurar e potencializar a qualidade do serviço, procurando avaliar estes serviços com base na perspetiva do paciente, sendo que a opinião destes é extremamente importante na avaliação da qualidade dos serviços de saúde. Assim, esta investigação tem como objetivo avaliar a qualidade da prestação de cuidados continuados em Portugal, bem como compreender como está associado à qualidade de vida relacionada com a saúde dos pacientes. Considerando a lacuna existente neste campo, esta pesquisa desenvolveu-se na Unidade de Média Duração e Reabilitação da Santa Casa da Misericórdia em Alhos Vedros. Os instrumentos SERVPERF e EQ-5D-3L foram utilizados na recolha de dados, sendo que a sua análise foi realizada com base em análise descritiva, testes de hipóteses e correlações.

Os resultados mostraram que existe uma associação, embora não significativa, entre a qualidade geral percebida pelo paciente relativamente ao serviço e a melhoria da sua qualidade de vida relacionada à saúde. Adicionalmente, a dimensão *Responsividade* demonstrou ter a melhor avaliação em termos da qualidade percebida pelo paciente, enquanto a *Empatia* teve a pior avaliação. A perceção geral da qualidade do serviço prestado é boa (5 pontos). Por outro lado, o internamento de 30 dias permitiu melhorar a capacidade dos pacientes para caminhar, realizar as suas atividades habituais/pessoais e para se sentirem menos ansiosos/deprimidos, pelo que a maioria dos pacientes classificou ter um estado de saúde acima 70 pontos.

Palavras-Chave: EQ-5D-3L, Qualidade de Saúde relacionada à Saúde, Qualidade do Serviço Percebida, SERVPERF.

JEL Classification:

I31 General Welfare, Well-Being

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List of Abbreviations

ADL – Activities of Daily Living

CRSsNPs – Chronic Rhinosinusitis without Nasal Polyps

DALY – Disability-Adjusted Life-Year

EU – European Union

EQ-5D – EuroQol Five-Dimensional Questionnaire

EQ VAS – EuroQol Visual Analogue Scale

HRQOL – Health-Related Quality of Life

HYE - Healthy Years Equivalent

ICECAP – Investigating Choice Experiments Capability

ICECAP-A – Investigating Choice Experiments Capability for Adults

ICECAP-O – Investigating Choice Experiments Capability for Older People

ICECAP-SCM – Investigating Choice Experiments Capability for Supportive Care Measure

INE – Instituto Nacional de Estatística

LTC – Long-Term Care

LVT – Lisboa e Vale do Tejo

MISSOC – Mutual Information System on Social Protection

MoU – Memorandum of Understanding

NHS – National Health Service

NICE – National Institute of Health and Care Excellence

RNCCI – National Network for Long-Term Care (Rede Nacional de Cuidados Continuados Integrados)

QALYs – Quality-Adjusted Life-Years

QOL – Quality of Life

SCMAV – Santa Casa da Misericordia in Alhos Vedros

SERVPERF – SERvice PERFormance

SERVQUAL – SERVice QUALity

SPSS – Statistical Package for Social Sciences

UC – Urgent Care

UDPA – Day Care and Autonomy of Promotion

UK – United Kingdom

ULDM – Long Term and Maintenance Unit

UMDR – Medium Duration and Rehabilitation Unit

US – United States

WHO – World Health Organization

1. Introduction

In this first chapter, the topic of the dissertation will be presented, as well as an analysis of the problem context under study that, in turn, led to the objectives of this investigation. Therefore, this section will be divided into the analysis of the problem context, research questions, general and specific objectives, methodology, scope and structure of the dissertation.

1.1. Analysis of the Problem Context

In 2008, the financial crisis unleashed in the United States had repercussions at international level, particularly in the economies of the European Union. This crisis and the subsequent crisis of the national public debt aggravated the economic situation Portugal was facing. Thus, in 2011, Portugal embarked on a recovery process, having applied for external financial assistance, designed by the European Union Commission, the International Monetary Fund and the European Central Bank (Simões *et al.*, 2017). In this way, a Memorandum of Understanding (MoU) was established, in which the Portuguese government undertook to comply with an austerity plan, which led to structural reforms in several public sectors (Simões *et al.*, 2017). The health sector was one of those sectors and it experienced a reduction in government expenditure of almost two thirds (64,7%) (Expresso, 2017a). The reforms implemented in the healthcare sector aimed at "*increasing cost-containment, improving systems' efficiency and increasing regulation*" (Simões *et al.*, 2017: 137). For this, the *Grupo Técnico para a Reforma Hospitalar* was created and designed to "*improve access to and quality of health services, improve hospital efficiency, ensure economic sustainability improving the governance and performance of professionals at the hospital's service, and to reinforce the role and duty to inform citizens*" (Ribeiro *et al.*, 2011: 11). Thus, the hospital network reorganization within the scope of the National Health Service (NHS) seeks to improve the efficiency, effectiveness, quality, and productivity of the service provided (Moreira, 2016). Consequently, according to the same author, these improvements lead to a greater proximity to the patient and to a fight against waste. However, the reality is that the implemented budgetary restrictions, such as cost-containment, result in consequences on the patients' accessibility to health care and on the quality of the services provided (Almeida, 2014), as demand for the same limited recourses is increasing (European Commission, 2008).

Over the years, Portugal has been facing considerable changes on its population structure: low fertility rate (1,23 children per woman in 2014) followed by the reduction of the

population aged between 0 and 14 years old (15,4% in 2005 to 14.1% in 2015); low mortality rates and high life expectancy (78.2 years in 2005 to 81.3 years in 2014), which lead to the increase of the population aged 65 or old (17.2% in 2005 to 20.8% in 2015) (INE, 2016; Eurostat, 2016). In this situation, it is possible to verify a demographic transition from "*the predominance of children and young adults, to one in which all age groups are represented more or less equally, up to the age of 70–80 years old*" (WHO, 2002: 1). In fact, in 2050, the Portuguese population is expected to have 32% of people aged above 65 or older (Joel *et al*., 2010) and, between 2017 and 2080, the number of older people in Portugal will increase from 2.1 to 2.8 million (INE, 2016). Furthermore, together with the above-mentioned decrease in the young population, it is expected to have 317 elderlies to 100 young people by 2080 (Expresso, 2017b).

The rapidly ageing of the population is translated into the loss of abilities, such as the physical autonomy, and into a higher propensity to acquire diseases (WHO, 2018), which, in turn, increase the need for care (Duarte *et al.*, 2014). In 2007, it was estimated that, in a near future, about 600 000 elderly people will need support to perform their activities of daily living (ADL) (Duarte *et al.*, 2014) and, thus, be functionally dependent on the long-term (European Commission, 2008). In 2011, 62.3% of the Portuguese population aged 65-74 had a long-term illness or a health condition; for the 75-84 age group this percent was 71.9% and for people over 85 years old it was 69.5% (Boto *et al*., 2014).

Within this setting, the long-term care (LTC) emerges as a range of services that assure mental, physical and social stability to those with chronic diseases and not able to live independently (WHO, 2004; SNS, 2017). Its provision has become an important topic of debate that is currently on the health policy agenda (Joel *et al*., 2010).

Due to the impact that the budgetary restrictions had on the accessibility and quality of the service, as well as the estimated growth of the provision of LTC services, it becomes important to assure and enhance the quality of care to the patients that continuously seek for their well-being (WHO, 2018). In this sense, and by analysing the literature available in this field, it is possible to recognise that there is a lack of studies in the health literature devoted to the analysis of the service quality delivery and how it influences the health-related quality of life (HRQOL) in the LTC sector. Therefore, it becomes relevant to develop studies in this particular sector and topic.

1.2. Research Questions

From the previous context two main research questions emerge for this dissertation:

1) How does the perceived quality of service delivery influence the health-related quality of life of the patients in long-term care units?
2) Which measures should be followed to improve the perceived quality of service delivered and the perceived health-related quality of life in long-term care units?

1.3. General Objectives

The present dissertation aims at evaluating the quality of the long-term care provision in Portugal, as well as the health-related quality of life as perceived by patients. Additionally, it also intends to explore the association between the service's quality and health-related quality of life, from the patients' perspective.

The research developed in this dissertation has the intention to leave both practical and scientific contributions to the health sector. This study leaves a scientific contribution by inputting to fill the gap in the long-term care literature and a practical contribution by making recommendations to service managers that, if considered, will help them to improve the service provided in the long-term care units and the patient's perception of service quality and their perception of their health-related quality of life.

1.4. Specific Objectives

Aiming to achieve the main goals of this dissertation, specific objectives were defined:

1. Evaluate the patients' perception of service quality in Portuguese long-term care units;
2. Evaluate the perceived improvement of the health-related quality of life of the patients that are in Portuguese long-term care units;
3. Analyse the association between the perceived service quality and the improvement of the health-related quality of life of long-term care patients;
4. Develop managerial recommendations to improve the perceived quality of service delivered and the perceived health-related quality of life of patients at long-term care units.

1.5. Methodology

According to the settled research questions and objectives, it is necessary to define the most appropriate methodology to answer to the research questions. As a contemporary and poorly explored field, where there is no influence of the researcher over the phenomena and where "how" or "why" questions are being placed, Yin (2009) argues that the most suitable methodology to follow in this investigation is the application of a case study research. After the selection of the specific tools in Chapter 2 (Literature Review), in detriment of other instruments used in the healthcare area, this research will assess the perceived service quality and the patients' health-related quality of life. Furthermore, hypotheses are identified and will be tested by using hypotheses testing and correlations, with the IBM Statistical Package for Social Sciences (SPSS).

1.6. Scope

By considering the specific objectives established previously and the most suitable methodology identified in the previous section, the case study research will be conducted in the Medium Duration and Rehabilitation Unit of the Long-Term Care of *Santa Casa da Misericordia* in *Alhos Vedros,* in the district of *Setúbal*, Portuguese region of *Lisboa e Vale do Tejo* (LVT) as this was the unit that showed availability to embrace this research.

1.7. Structure of the Dissertation

In order to meet the topic of discussion in this investigation and to achieve the respective objectives, this dissertation will be divided in the following six chapters:

- **Chapter 1 – Introduction:** in this chapter, the context of this dissertation was presented and, therefore, it supported the formulation of the research questions and of the general and specific objectives. Finally, it was presented the methodology adopted, the scope of application of this study and the structure of this dissertation;

- **Chapter 2 – Literature Review:** this chapter presents the conceptual foundations that sustain the development of the subject under study. Firstly, the concepts related to the quality of services and to the quality of life, both applied in the healthcare area, are defined and then specific measuring instruments are exposed. Lastly, the applications of the SERVPERF and EQ-5D instruments, in the field, are analysed;

- **Chapter 3 – The Long-Term Care System:** this chapter addresses the concept of long-term care as well as its application at national and international levels. The objectives, principles, and typologies of the LTC services are presented, followed by its functioning and availability in the different regions of Portugal.

- **Chapter 4 – Methodology:** this chapter begins with an explanation of the use of a case study in this dissertation. Next, the hypotheses are formulated and conceptualized in a theoretical model. It is also addressed the population and sample, the data collection instruments, the implementation of the pre-test, how the data was collected and, lastly, the data analysis instruments;

- **Chapter 5 – Results:** this chapter characterizes the data collected and its respective analysis, using different statistical techniques to test the hypotheses. The results are then discussed and its implications drawn;

- **Chapter 6 – Conclusions:** after analysing the results, the research questions are answered, some recommendations are suggested to the institution managers based on the results obtained, the limitations found are presented, and possible topics are suggested for future studies.

2. Literature Review

2.1. Introduction

In order to answer to the objectives and research questions of this dissertation, it is necessary to have a theoretical basis of the concepts that are adjacent and support the subject under study, but also an overview of the empirical studies available in the field. Firstly, a small sub-chapter addresses the concept of Service Management, how it is produced and how value is created. Secondly, Service Quality is defined and then the differences between Healthcare Quality and Long-term Quality are highlighted. Service quality measurements, namely SERVQUAL and SERVPERF, are presented, along with empirical studies using these tools. Thirdly, a sub-chapter that emphasizes the Quality of Life and Health-related Quality of Life concepts, the tools used to measure it and previous studies conducted about this matter is presented. Lastly, there is a discussion of the association between the SERVPERF and the EQ-5D to assess the service quality and the health-related quality of life, respectively, and the gap in the Long-Term Care Literature.

2.2. Service Management Concept

The traditional management of focusing in the organization individually, with the economies of scale, the decrease of production costs and the constant investment in product development, tend to deteriorate the company's internal environment, customer relations, product quality and, eventually, the business profitability (Normann, 1982; Grönroos, 1982). This, paired with the continuous growth of the service industry, led to the necessity to shift to a service management perspective (Grönroos, 1993). Service management is seen "*as an overall management perspective that gives high priority to the external efficiency of the firm, how customers perceive the quality of the core products and the total performance of a firm*" (Grönroos, 1993: 9), where the total performance comes from the efficient management of all internal areas (Gummesson *et al.*, 2010): marketing, operations, human resources, finance, quality, etc. Service management is customer oriented (Grönroos, 1993), since its perspective is successfully implemented when consumers' expectations are met and when the workforce interacts positively with the customer, due to an investment in workforce' training and motivation (Osborne, 2010).

According to Grönroos (2000), a service is an activity or benefit that results from the interaction of the client with the company, where the company detects the needs of the customer and combines different types of resources that offer a solution to the customer's

problem. The same author argues that it can incorporate several areas, such as healthcare, education, tourism, insurance and finance.

2.2.1. Co – Production vs. Co – Creation

Some authors argue that there is a need to "*transition from a definition of value as enclosed in the product or service to one where value in fact means empowering the customer to customize*" (Denegri-Knott *et al*., 2006: 965). In order to enable the customer to customize and improve his perceptions of value, a shift towards co-production is required (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004).

Co-production, as White *et al.* (2009: 776) defined, emerges when consumers are "*actively involved in the production of the organization's offerings*", through the "*participation in the creation and delivery process*" (Auh *et al.*, 2007: 361). In this way, both organizations and consumers obtain gains, by interacting and cooperating to co-produce valuable products or services (Evans *et al.*, 2016), which, consequently, leads to better results and efficiency of firms (Bovaird & Loeffler, 2012).

As stated by Osborne *et al*. (2016: 643), "*co-production leads to the co-creation of value for the service user",* where co-creation results from the "*joint value creation between the service firms and customers*" (Wu, 2017: 619) from which both parties benefit (Vargo & Lusch, 2008). This value co-creation combines the firm' expertise, knowledge and skills (Farr, 2016; Trinh *et al.*, 2014) with the customer knowledge, which arises mainly from the "*impact of the service experience upon their well-being and the extent to which it meets their social, health or economic needs*" (Osborne *et al.*, 2016: 643) over time.

Healthcare is, by nature, a service where co-production exists, since there is an involvement of the patients "*at the heart of service design and delivery*" that influences how the health service system operates and on how the patients and healthcare professionals interrelate (Palumbo, 2016: 73). The same author continues arguing that this interaction allows the exchange of information that, in turn, contributes to the provision of a better health treatment according to the patient's needs and illness. This way, the ultimate goal of co-production in the healthcare services is to "*design and deliver tailored health interventions to enhance individual and collective well-being and to improve health outcomes*" (Palumbo, 2016: 82). As a co-produced service, healthcare is also a service where there is co-creation of value once the patient has "*an active role of contributor of care*" (Elg *et al.*, 2012: 330). Such

co-creation allows the patients to more easily adhere to the treatment found in the collaborative process with the healthcare professionals and, therefore, there are improved healthcare outcomes, since these are more in line with the patients' needs (Elg *et al.,* 2012; Merz *et al.*, 2013).

2.2.2. Value-in-use vs. Value-in-exchange

Zeithaml (1988: 14) argues that value is the "*customer's overall assessment of the utility of a product based on the perception of what is received and what is given by the customer*". From here different perspectives of value can be found.

On the one hand, value-in-exchange occurs in the trade-off of goods (Bruns, 2014) for its sale price (Vargo & Lusch, 2006). A more traditional perspective of value argues that it is created by the companies during the manufacturing process of the goods (Grönroos, 2008) and it is transferred to the customer at the acquisition moment. Thereby, this exchange for money confers to the consumers the possibility of accessing that output at any time and place (Akaka, 2007) to meet their different requirements.

On the other hand, in value-in-use, the provider has a passive role and the customer is the one who attributes value to the product or service (Grönroos & Voima, 2013) through its own value creation processes (Grönroos, 2008). The process of creation of value begins with the collection of information, before the purchase, of what the consumer considers valuable (Akaka, 2007), followed by the monetary exchange during the process of acquisition (Holbrook 1987). The continuous consumption of the product and interaction of the resources provided in the acquisition allow the consumer to continuously extract value until the end-of-life disposal of the product (Akaka, 2007; Bruns, 2014; Grönroos & Voima 2013; Holbrook 1987).

Although in the healthcare area there is service delivery for the exchange of money, in which value is transferred from the healthcare providers to the patient (value-in-exchange), the healthcare area is, by nature, a service where the patients intervene in the service process not only as co-producers (Grönroos, 1978), but also as co-creators of value jointly with the healthcare professionals (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004). In this way, value is created simultaneously through the cooperation between patients and the healthcare professionals. The sharing of patients' needs and experiences combined with the skills and

knowledge of healthcare professionals makes it possible to deliver a unique and personalised service to each patient (Kim, 2018).

From the management service perspective, the co-creation of value-in-use is essential to consumers and suppliers, since it enables to improve the relationship outcome and the service quality (Macdonald *et al.*, 2011).

2.3. Service Quality

The growth of the information technology and the higher education level of customers made them more critical regarding the standards of service provided by organizations, but also more aware of the available options from the competitors (Grönroos, 1993; Antonacopoulou & Kandampully, 2000). Therefore, the main challenge of service companies is the continuous growth of both competing companies and consumer expectations (Grönroos, 1993; Kandampully & Butler, 2001). To Kandampully & Butler (2001) and Zeithaml (2000), the approval of service quality of companies by its consumers became crucial and a topic of study, as higher levels of service quality enables companies to be more successfully positioned in the marketplace (Brown & Swartz, 1989; Parasuraman *et al*., 1988) and, thus, to gain competitive advantage (Gronroos, 1993).

To better define and measure service quality, firstly, it is necessary to understand the four main service characteristics (Parasuraman *et al.*, 1985; Kotler & Armstrong, 2010):

- **Intangible:** is the main characteristic that differs goods from services and it means that services cannot be seen, touched or tasted before the exchange;
- **Heterogeneous:** it means that the interaction between the service provider and the consumer results in a service outcome that will be different for different customers;
- **Inseparable:** the service production and the service consumption happen simultaneously, at the same time and location;
- **Perishable:** the service cannot be stored and sold afterward, due to its intangibility, and it is consumed while produced by consumers.

Later, the services were characterized for two more components (Fitzsimmons *et al*., 2014), which are linked to the previously shown:

- **Non-transferable ownership:** since the service cannot be owned or stored, it cannot also be given to another person;

- **Customer participation:** the service cannot be separated from its user, since the customer is always involved in the production of the service.

Due to the intangibility of services, the customer has difficulties to evaluate the service received and its respective quality (Parasuraman *et al*., 1985). First, it is necessary to understand that the interaction between service provider and the customers influences the quality of the service delivered (Parasuraman *et al*., 1985; Lewis, 1993), since this interaction in the service encounter has a high impact on consumers and on how they perceived the quality of a service (Lewis, 1993). In this sense, service quality can be defined as an overall assessment of the company service performance and excellence (Parasuraman *et al*., 1988) that "*results from a comparison of the customers' expectations and with actual service performance*" (Parasuraman *et al*., 1985: 42). The provision of a quality service enables the companies to achieve a better performance, but also to attract new customers (Lewis, 1993). To deliver a quality service to its customers, companies need to make sure that there is a match between the expected service and the service that is actually delivered to the consumer (Grönroos, 1984), in order to reduce the gap between the customer's perceptions and expectations.

2.3.1. Service Quality Measurement

Due to the increasing importance of service quality and its impact on the organizations' performance (Buttle, 1996), it became crucial to measure and assess how customers perceive and receive the service. Over the years, several authors developed tools to measure service quality and, among them, the SERVQUAL (SERVice QUALity) and the SERVPERF (SERvice PERFormance) have been frequently applied (Sliwa & O'Kane, 2010). These tools will be disclosed next.

2.3.1.1. SERVQUAL (Service Quality)

In 1985, Parasuraman *et al*. developed a measurement tool called SERVQUAL that, initially, was based on ten dimensions which determined service quality: reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customers, and tangibles. Subsequently, in 1988, the SERVQUAL model was developed and the ten dimensions proposed by Parasuraman *et al.* (1985) were reformulated into five specific ones:

1. **Tangibles**: is linked to the physical appearance, in proper conditions, of the facilities, of the equipment and materials, and of the working staff;
2. **Reliability**: is related to the capability of delivering a precise and reliable service to the customer;
3. **Responsiveness**: is allied with the readiness to provide the service and to attend and help the customers;
4. **Assurance**: is linked to the employees' kindness and knowledge and to their ability to inspire confidence;
5. **Empathy**: is associated with the capacity to provide an individualized and personalized attention to each customer.

These five dimensions are assessed by a total of twenty-two pairs of Likert-type items, where the first twenty-two items measure the overall expectations of the individual regarding the service and the other twenty-two items assess the perceptions of the individual concerning the service that was actually provided by the firm (Parasuraman *et al*.,1985).

The SERVQUAL instrument aims to evaluate the perceptions and expectations of the customers regarding the quality of the service, to increase the performance levels of the firm based on the customer perspective (Parasuraman *et al*., 1985), and it is *"measured by the difference in scores between the perceived level and the expected level of service provided*" (Lam, 1997: 146).

According to Ladhari (2009), this tool allows the company to diagnose the areas with quality shortfalls, but also the areas where there are quality strengths. Based on Cronin & Taylor (1992, 1994) approaches, one of the criticisms made to the SERVQUAL instrument mention that this tool needs to be personalized to each service (Carman; 1990), in terms of the wording of twenty-two pairs of Likert-type items (Parasuraman *et al*., 1985; Curry & Bryland, 2001), particularly in the healthcare sector (Babakus & Mangold, 1992).

Another critique made to the SERVQUAL model referred that the main focus of this instrument should be the outcomes of the service encounter and not the process of service delivery (Buttle, 1996; Gronroos, 1988). Once the customer influences the service process, the result of the service encounter should not be ignored as this includes the experience and involvement of the customer, but at the same time the results of the process (Johnston *et al*., 2012).

2.3.1.2. SERVPERF (Service Performance)

The critiques made to the SERVQUAL method lead Cronin & Taylor (1992) to develop an alternative model named SERVPERF, which only considers and measures the service performance.

To Parasuraman *et al*. (1985, 1988), the service quality was conceptualized as similar to the customers' attitude. Thus, for Cronin & Taylor (1992), its operationalization should not be measured by the difference between the expectation and performance, but rather as a perception of performance (Salomi *et al*., 2005). Therefore, when the consumers provide their performance' perception of the service, it already is an outcome of the "*comparison between the expected and actual service*" (Babakus & Boller, 1992; Carrillat *et al*., 2007: 476).

Although, the SERVPERF instrument is based on the same dimensions as SERVQUAL, by not using the expectation scale, the number of items reduces from 44 to 22 items, which increases the efficiency of the application of the questionnaire with the reduction of 50% of the number of items (Cronin & Taylor, 1992).

Due to its conceptualization, Landrum *et al.* (2007) considers the SERVPERF instrument superior to the SERVQUAL instrument, since empirical evidences across four different industries (namely banks, pest control, dry cleaning, and fast food) show that this tool has an improved reliability and validity. Additionally, it is "*able to explain a greater variance in the overall service quality measured through the use of single-item scale*" (Jain & Gupta, 2004: 28).

2.3.2. Healthcare Quality

Due to the complex nature of healthcare services, it has become crucial to deliver an effective medical treatment and to assure the quality of the healthcare service (Friedenberg, 1997), since it is the welfare of the patient (K.P.M & Srinivasulu, 2014) and its quality of life that is at stake (Herzlinger, 1997).

According to Lohr (1991: 21), the committee of the Institute of Medicine defined healthcare quality as "*the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge*". Although there have been a number of attempts to define healthcare quality over the years (Donabedian, 1980; Lohr, 1991; Øvretveit, 1992; and Schuster *et al*., 1998), to Mosadeghrad (2011: 215) the most appropriate definition of healthcare quality is "*consistently delighting the patient by providing efficacious, effective and efficient healthcare*

services according to the latest clinical guidelines and standards, which meet the patient's needs and satisfies providers". More recently, Dudin *et al.* (2017: 71) classified quality of healthcare services has "*their properties that ensure the accuracy of organization and conduct of healthcare (recreational, rehabilitation, etc.) processes, while achieving the desired result (maintenance, recovery or support of the patients' health), according to the needs of the patient*".

To Donabedian (1986) and Lam (1997), the concept of quality of health care is operationalized based on the SPO model – **structure** (relates to whether the healthcare service has the proper staff number and type, with the right qualifications, under the best possible conditions and resources to provide de service properly), **process** (linked to how the service is technically provided by the healthcare professionals, under the appropriate diagnosis to the patients' needs) and **outcome** (related to the effect that the service provided has on the patient's current health status).

2.3.3. Long-Term Care Quality

Long-term care is an influential "*attribute of health care that reflects the overall effectiveness with which health care is provided relative to its primary attributes or its objective(s) to cure, rehabilitate, assess, maintain, sustain, or palliate (patients), or to ameliorate, prevent or retard patient's problems*" (Shaughnessy *et al*., 1994: 44). Any type of healthcare service provision is to benefit its patients. So, the quality in long-term care is associated to the improvement of quality of life and physical function of patients who have permanent or aggravated problems (Wunderlich & Kohler, 2001). To assess the quality delivered in long-term care, it is needed to consider its structure, process and outcomes (explained in the previous section), but also the accessibility to the healthcare, the necessity to resort to nonmedical personal support services, and the quality of life of the long-term care patients (Wunderlich & Kohler, 2001).

2.3.4. Previous Studies

It has been proved and tested that the SERVQUAL and the SERVPERF instruments are suitable and appropriate models to be applied for the measurement of perceived service quality (Babakus & Mangold, 1992; Jain & Gupta, 2004). Table 1 presents several studies that used SERVQUAL (Babakus & Mangold, 1992; Dean, 1999; Kilbourne *et al*., 2004) and

SERVPERF (Holder & Berndt, 2011; Joonas & Wang, 2012; Qin & Prybutok, 2012; Le & Fitzgerald, 2014; K.P.M & Srinivasulu; 2014) in the healthcare context.

Table 1 - Main characteristics of studies that used the SERVQUAL and the SERVPERF instruments in the healthcare area

Authors	Country	Instrument and Sector	Main Results
Babakus & Mangold (1992)	United States (US)	SERVQUAL in a Hospital	The results showed that the used tool is adequate to evaluate the quality perceived by the patients, both in terms of their perceptions and their expectations, as well as being valid and reliable to be used in the hospital environment.
Kilbourne *et al.* (2004)	United Kingdom (UK), US	SERVQUAL in Nursing Homes	The authors concluded that the SERVQUAL instrument is useful for studies in the LTC context of both countries.
Dean (1999)	Australia	SERVQUAL in Medical care and Healthcare	In medical services, reliability was the most important dimension for patients, while in the healthcare were the assurance and empathy dimensions. This shows that the importance that patients attribute to the quality dimensions vary according to the type of healthcare.
K.P.M & Srinivasulu (2014)	India	SERVPERF in Hospitals	The assurance, responsiveness and empathy dimensions were the best ranked as regards the perceived quality, which means that the healthcare specialists' way to provide a service has a greater impact on patients than the infrastructures and the trustworthiness of the treatment received.
Joonas & Wang (2012)	Taiwan	SERVPERF in a Hospital	Of the five dimensions, the responsiveness and assurance dimensions seemed to have a more significant impact on the service quality. Results also showed that the overall assessment of service quality in healthcare influence the service outcome, so the former must be monitored to guarantee the improvement of the hospital performance.
Le &Fitzgerald (2014)	Vietnam	SERVPERF in 2 Hospitals	The assurance and empathy dimensions have shown to affect the service quality of both hospitals the most. The SERVPERF tool proved to be the most suitable instrument to assess the healthcare service quality.
Holder & Berndt (2011)	South Africa	SERVPERF in Maternity of a Private Hospital	Only the tangibility, reliability and responsiveness dimensions were influenced by the changes of the physical facilities and environment of the maternity. The changes in the servicescape effect the overall perception of service quality.
Qin & Prybutok (2012)	US	SERVPERF in Urgent Care	The tangibles dimension was considered to have a greater impact on the Urgent Care (UC) service quality. Low evaluations of the UC service quality conducts patients to share their unfavorable experiences, which in turn can affect the company's financial performance.

These examples show that these instruments were used in researches conducted in several countries - in the US (Babakus & Mangold, 1992; Qin & Prybutok, 2012), in India (K.P.M & Srinivasulu, 2014), in Taiwan (Joonas & Wang, 2012), in Vietnam (Le & Fitzgerald, 2014), in

Australia (Dean, 1999), in South Africa (Holder & Berndt, 2011), in the UK (Kilbourne *et al.*, 2004) – and across different hospital units: in maternity (Holder & Berndt, 2011), in UC (Qin & Prybutok, 2012), in nursing homes (Kilbourne *et al.*, 2004), in medical care and health care (Dean, 1999).

The comparison between the studies from Dean (1999), Holder & Berndt (2011), Joonas & Wang (2012), K.P.M & Srinivasulu (2014), Le & Fitzgerald (2014) and Qin & Prybutok (2012) allowed verifying differentiated perceptions among patients in the different types of healthcare services in the five service quality dimensions.

Babakus & Mangold (1992) concluded that the SERVQUAL is an appropriate tool to evaluate the quality in the hospital environment and for Kilbourne *et al*. (2004) that same instrument has demonstrated to be a useful tool in the long-term care context for both countries under analysis.

However, the SERVQUAL instrument requires its application in two different phases, a first one where the service is evaluated before being experienced (the expected service) and a second one after the service was already experienced (the perceived service). This comparison becomes obsolete in the healthcare area due to the patients' lack of expectations before receiving the service, since they always expect the best treatments and possible results (Qin & Prybutok, 2012).

On the other hand, the SERVPERF has half of the items to be applied and, therefore, it only has to be applied once. In addition, this instrument assumes that the perfection of the service delivered is the limit and that the gap is always in relation to the 7-point in the Likert-like scale. Accordingly, Le & Fitzgerald (2014) have proved that the SERVPERF tool is the most suitable instrument to assess the healthcare service quality.

Through the table of studies presented previously, it is possible to apprehend that there are few studies that use SERVPERF to assess perceived service quality in the LTC area (Kilbourne *et al.*, 2004).

2.4. Quality of Life

The Quality of Life (QOL) concept is difficult to define since it is a broad notion and it varies according to different cultures, social and historical environments (Ardila, 2003). Nonetheless, Guyatt *et al*. (1993: 622) proposed a definition of quality of life and defended

that it is "*a multidimensional concept, comprising important elements of a patient's physical, emotional, social, functional, and spiritual well-being*". More recently, Tonon (2015: 5) defined quality of life as "*the perception each person has of his/her own place in life, within a cultural context and the system of values he/she conforms to, as related to expectations, interests, and achievements*". While the QOL notion encompasses different aspects, the HRQOL concept is a more targeted approach to the health area, as explained below.

The HRQOL was initially specified by Patrick & Erickson (1988: 53) as "*a value given to life expectation and its modification by impairment, functional status, perception and social opportunities influenced by disease, injury, treatment or policies*". However, throughout the years, there were several attempts to define HRQOL, once the scientific community has not been able to unanimously reach a theoretical model of this concept (Tonon, 2015). In recent years, Tonon (2015: 6) referred health-related quality of life as "*a subjective, multidimensional concept that the individual perceives about their level of physical, emotional and social well-being to understand the influence of the health condition in their life closely related to the context and the time determined where the subject is found*".

The HRQOL concept is gaining recognition as a health indicator whose purpose is to provide information on the public health needs, which enables the health promotion and education by implementing preventive measures through outcomes analysis (Tengland, 2006; Hennessy *et al*., 1994).

The HRQOL varies based on the patient own perceptions and subjective evaluations (Namjoshi & Buesching, 2001). Its improvement encompasses the supply of the best available treatments during the medical interventions (Namjoshi & Buesching, 2001). In this context, health-related quality of life contributes to the quality of life of the patient (Tengland, 2016).

The HRQOL can be measured using different metrics such as QALYs (Quality-Adjusted Life-Years), HYE (Healthy Years Equivalent), DALY (Disability-Adjusted Life-Year), etc., where the QALYs measure is the most used (Normand, 2009). The QALYs metric is defined as a "*measure of health outcome that simultaneously capture gains from reduced morbidity (quality gains) and reduced mortality (quantity gains), and combine these into a single measure*" (Drummond *et al.*, 2015: 127), and its outcomes are "*expressed healthy in years or QALYs gained* (Drummond *et al.*, 2015: 51). This metric allows the comparison of the health status of patients with different diseases and in a wide range of health conditions (Normand, 2009).

2.4.1. Tools for Assessing Quality of Life

Once the HRQOL is becoming an important matter to assess healthcare interventions (Noyes & Edwards, 2011), several tools were developed to measure the patients' quality of life, such as the EQ-5D questionnaire and the ICECAP (Investigating Choice Experiments Capability) instrument.

2.4.1.1. ICECAP Instrument

Different ICECAP instruments exist: the ICECAP-A for Adults and the ICECAP-O for Older People, which have an identical structure. Each instrument has five attributes/items of evaluation (which are different for ICECAP-A and ICECAP-O, as described below) and each attribute has four levels of response options: "all, a lot, a little, and none" (Leeuwen *et al*., 2015: 36), where the 'top' level ('all'; full capability for an attribute) has the value '4', and the bottom level ('none'; no capability) has the value '1' (University of Birmingham, 2018). Thus, the code "11111" represents the state designated by no capability in all five attributes. To obtain answers to the questionnaire, the adult/elder person is asked to tick the box that describes his overall quality of life at the moment (University of Birmingham, 2018).

The ICECAP-O is a measure of capability for people above 65 years old (University of Birmingham, 2018). According to the same source, the ICECAP-O questionnaire encompasses five attributes: attachment (love and friendship); security (thinking about the future without concern); role (doing things that make you feel valued); enjoyment (enjoyment and pleasure) and control (independence).

The ICECAP-A is a measure of capability for the adult population (+18 years old) (University of Birmingham, 2018). The ICECAP-A questionnaire encompasses five attributes: attachment (an ability to have love, friendship and support); stability (an ability to feel settled and secure); achievement (an ability to achieve and progress in life); enjoyment (an ability to experience enjoyment and pleasure) and autonomy (an ability to be independent) (University of Birmingham, 2018).

Recently, the ICECAP-SCM for Supportive Care Measure has been developed as measure of capability for use in the end of life care (University of Birmingham, 2018). According to the same source, this questionnaire encompasses the following attributes: choice, love and affection, physical suffering, emotional suffering, dignity, being supported and preparation.

Due to previous investigations that have shown that the "*quality of older people's lives was limited by a reduction in their ability to pursue the different attributes of quality of life*" (Coast *et al.*, 2008a: 968), the ICECAP instrument was developed as a measure of quality of life, rather than HRQOL. This results from the construction of this tool to evaluate not only the intervention that healthcare area has in the patient' quality of life, but also the interference of the area of social care (Coast *et al.,* 2008b). In this sense, when there is a need to quantify the HRQOL, the usage of the EQ-5D instrument is more suitable.

2.4.1.2. EQ-5D (EuroQol Five-Dimensional) Questionnaire

The EuroQol Group developed an instrument named EuroQol five-dimensional questionnaire (EQ-5D) to measure the health-related quality of life within a wide range of different health circumstances and medical treatments (EuroQol, 2018). As mentioned by Jhita *et al.* (2014), the UK's National Institute of Health and Care Excellence (NICE) selected this questionnaire as the preferred generic measure to evaluate the HRQOL. The EQ-5D has 2 versions, the EQ-5D-3L and the EQ-5D-5L, and both are structured by two measurement components: a descriptive system and the EQ VAS (visual analogue scale) (Reenen & Oppe, 2015).

The descriptive system evaluates health-related quality of life in five dimensions: "mobility (problems in walking about), self-care (problems with washing or dressing), usual activities (problems with performing usual activities – e.g. work, study, housework, family or leisure activities), pain/discomfort and anxiety/depression". The EQ VAS is a visual analogue scale that records the patient's current health status, measured on a vertical scale from 0-100, where 0 corresponds to the worse imaginable health state and 100 corresponds to the best imaginable health state (Reenen & Oppe, 2015). In this questionnaire, the patients are asked to classify their "own health state today" on the vertical scale, so it characterizes the evaluation of their health state.

Both versions of the EQ-5D are applied in face-to-face interviews and are ideally designed for the respondents to complete it (Reenen & Oppe, 2015). However, and according to the same source, the application of this instrument ends up by being mainly used in patients that cannot read or write or that are institutionalized.

For the EQ-5D-3L, the five dimensions of HRQOL have three response options: no problem, some/moderate problem or extreme problem/unable to perform (Brettschneider *et*

al., 2013: 2). From this evaluation derives an EQ-5D-3L self-reported health state, which contains a five-digit code that specifies a precise health status (e.g. 12131 = no problems in "mobility", some problems in "self-care", no problems in "usual activities", extreme pain/discomfort in "pain/ discomfort", no problems in "anxiety/depression") (Reenen & Oppe, 2015). This way, there are 243 (3x3x3x3x3) possible health status that can be defined by using the EQ-5D descriptive system.

The EQ-5D-5L was constructed as a method to "*improve the instrument's sensitivity and reliability while maintaining feasibility and potentially reducing ceiling effects*" (Reenen and Janssen, 2015: 5). In the descriptive system, this new version maintains the five dimensions, however it includes five levels of response to each dimension: "no problems, slight problems, moderate problems, severe problems, and extreme problems" (Reenen & Janssen, 2015: 5). This way, there are 3125 (5x5x5x5x5) possible health status that can be defined by using the EQ-5D descriptive system. In the EQ VAS the instructions were shortened in order to simplify the task for the patient, by making it easier to score (Reenen & Janssen, 2015).

The EQ-5D "*has become one of the valuation approaches recommended by several reimbursement authorities and academic bodies in European countries"* (Szende *et al.*, 2007: 13) to calculate the QALYs. By using the Portuguese EQ-5D value, built using the time-trade off (TTO) technique, the five-code digit obtained from the descriptive system is converted "*into a single summary index using utility (preference) weights, attached to each health state*" (Noyes & Edwards, 2011: 1127). In this sense, the health states are generated from the EQ-5D instrument, reason why this instrument became the most commonly used to measure it (Brettschneider *et al*., 2013).

2.4.2. Previous Studies

In the healthcare area, studies have been made over the years to assess the QOL and the HRQOL in particular, by resorting to a diverse type of instruments, such as the EQ-5D and ICECAP tools. Table 2 shows studies that assessed the QOL using the ICECAP (Mitchell *et al*., 2017; Flynn *et al*., 2011) and the HRQOL using the EQ-5D (Suhonen *et al*., 2008; Lidgren *et al*., 2007; Solli *et al*., 2010; Stochl *et al*., 2013, Bewick *et al*., 2017).

Table 2 - Main characteristics of the studies in the healthcare area by resorting to the ICECAP and the EQ-5D instruments

Authors	Country	Instrument and Disease	Main Characteristics
Suhonen *et al.* (2008)	Finland	EQ-5D-3L in day-case surgery	Through the provision of the surgery, it was possible to acknowledge that the pain/discomfort item improved from 17% (no pain/discomfort before surgery) to 40% after). The self-care and usual activities aspects have worsened after surgery. Patients with chronic illness reported a lower perception of HRQOL compared to the rest.
Lidgren et al. (2007)	Sweden	EQ-5D-3L in different breast cancer disease stages	The metastatic disease (the worst level considered) reported the lowest HRQOL score, which means that the HRQOL reduction is associated with the progression of breast cancer disease and it is mainly driven by the pain/discomfort and anxiety/depression dimensions.
Solli et al. (2010)	Norway	EQ-5D-3L in Diabetes (Type 1 and 2)	For both diabetes types, the pain/discomfort and anxiety/depression dimensions represented those where patients had more problems. The EQ-5D-3L showed to be a suitable instrument to capture the impact that the diabetes-related complications have on the HRQOL dimensions.
Stochl *et al.* (2013)	UK	EQ-5D-3L in first-episode psychosis	The lower scores were registered in the usual activities and the anxiety/depression dimension, as expected since the latter is one of the main psychiatric symptoms diagnosed. The study confirmed EQ-5D as a reliable tool to measure all levels of HRQOL, regardless of the patient's state of health.
Bewick *et al.* (2017)	UK	EQ-5D-5L in chronic rhinosinusitis without nasal polyps (CRSsNPs)	69% of the patients have no problems regarding the mobility dimension, 90% have no problems in the self-care item and 60% have no problems in doing the usual activities, while the remaining dimensions verified more “level 2” (slight problems) and “level 3” (moderate problems) answers. The authors concluded that there is a lack of studies in the UK using the EQ-5D-5L version.
Mitchell *et al.* (2017)	Australia Canada UK US	ICECAP-A in individuals with depression	18,8% represents the individuals that were unable to feel settled and secure in any areas of life (stability dimension) and 12% characterizes the individuals that could not achieve and progress in any aspects of life (achievement dimension). This sample demonstrated a higher number of responses in the two lowest levels of capability in all ICECAP-A dimensions. This instrument was proved suitable to differentiate and collect the outcomes of the diverse types of depression severity.
Flynn *et al.* (2011)	UK	ICECAP-O in broad areas	QOL was reduced in 4-7% when residents had a low state of physical and psychological health, in 2,5% when they lived alone or had low interaction with others and in 10-15% when they were disabled or had a limited long-term illness. The ICECAP-O was shown as a valid instrument to evaluate the QOL.

The overall QOL assessment with the ICECAP includes not only the analysis of the health variable, but it also encompasses the evaluation of the individual's attitudes and the variables of sociodemographic characterization (Flynn *et al*., 2011). In this way, this broad instrument could also be implemented in the HRQOL evaluation. However, the ICECAP

scale of conversion of the health states was tested and adapted for the UK context, but not yet to the Portuguese context. Given this, the EQ-5D becomes a better and reliable tool to measure all different levels of HRQOL, regardless of the health status of the individual, as the Stochl *et al*. (2013) has also confirmed.

Considering the different versions of the EQ-5D questionnaire, the EQ-5D-5L has a greater number of dimensions per item when compared to the EQ-5D-3L, which creates a bigger subjectivity and difficulty for the respondent to choose the option that better suites his health status, mainly when respondents that are mostly elderly people. In this sense, and as Bewick *et al.* (2017) verified, there is a lack of studies using the new version of the EQ-5D-5L. In this way, the EQ-5D-3L appears as the most tested version to be implemented in comparison with the EQ-5D-5L. Additionally, the EQ-5D-3L tool has already been revised for the Portuguese context, while the EQ-5D-5L does not have a conversion scale properly calibrated for the Portuguese scenario.

Based on the studies previously presented, and as highlighted in Table 2, it is possible to notice that there are several studies measuring the HRQOL in the healthcare area. Nonetheless, no studies were found to focus in the long-term care area and respective units.

2.5. Conclusions

Services are by nature intangible, heterogeneous, perishable, inseparable (Parasuraman *et al*., 1985) and customer oriented (Grönroos, 1993). In this way, customers are empowered to customize services (Denegri-Knott *et al*., 2006), by being involved in the process of creating and delivering the service (Auh *et al.*, 2007; White *et al.*, 2009). Customers co-produce valuable services with firms, where the latter benefits by gaining efficiency (Bovaird & Loeffler, 2012; Evans *et al.*, 2016). Thus, evaluating how the customers perceive the service quality (Grönroos, 1993) becomes important to assess the efficiency of the service provided by firms.

In healthcare services, there is an involvement of the patients "*at the heart of service design and delivery*" (Palumbo, 2016: 73) that influences how the health service system operates and on how the patients and healthcare professionals interrelate (Palumbo, 2016). As co-producers in this type of service, patients are also co-creators of value jointly with the healthcare professionals (Prahalad & Ramaswamy, 2004; Vargo & Lusch, 2004). Therefore, the co-creation of value-in-use is essential to consumers and suppliers, since it enables to

improve the relationship outcome and the service quality (Macdonald *et al.*, 2011). The heterogeneity and complexity of the services, particularly in the healthcare area, made it difficult to measure the quality of the service (Ladhari, 2009; Mosadeghrad, 2011). However, its increasing importance led to the development of the following instruments: SERVQUAL (Parasuraman *et al*., 1985) and SERVPERF (Cronin & Taylor, 1992). After several critiques made to the SERVQUAL tool, further studies in the field proved the superiority of the SERVPERF over the SERVQUAL. In this way, the SERVPERF is considered the most suitable instrument to assess the healthcare service quality (Jain & Gupta, 2004; Le & Fitzgerald, 2014). However, this tool has not yet been adequately tested in the LTC, and respective units, as it was possible to observe previously.

On the other hand, the HRQOL has become a crucial concept, once it assesses the perception that the individual has of their "*level of physical, emotional and social well-being*" (Tonon, 2015: 6), and how it influences their life health conditions. Hence, as a topic of growing importance, tools to measure the patients' HRQOL were developed, namely the ICECAP and the EQ-5D. The EQ-5D (3L) was proved to be a better and reliable tool to measure all different levels of HRQOL, regardless of the health status of the individual and of the type of treatment needed (Stochl *et al*., 2013). However, the analysis of previous studies also proved that there is a lack of research in the long-term care area and respective units.

As mentioned before, to assess service quality in the LTC, it is also needed to consider, among other things, the QOL of the long-term care patients (Wunderlich & Kohler, 2001), once the patients influence the service process and also the results of the service encounter (Johnston *et al*., 2012). Thus, and accordingly with the aim of assessing how the perceived quality delivered in the long-term care sector is associated with the HRQOL of its patients, it is necessary to combine the SERVPERF and the EQ-5D instruments. A lack of studies in the long-term care context was found individually for each of the instruments, and the same applied for studies proposing the combination of both. This emphasizes the gap that exists in the long-term care literature as a whole.

3. The Long-Term Care System

3.1. Introduction

This chapter intends to give a short contextualization of the field of application, namely the Long-Term Care System, by starting to present its definition, how it works at both European and national level, its objectives, principles and the different typologies that constitutes it. To finalize, some statistics are analysed in terms of the accessibility to the LTC services in Portugal and how the network has expanded.

3.2. Long-term Care Concept

As stated by the World Health Organization (WHO) (2004: 38), the LTC care is "*a range of health care, personal care and social services provided to individuals who, due to frailty or level of physical or intellectual disability, are no longer able to live independently"* and its provision *"varies by periods of time and may be provided in a person's home, in the community or in residential facilities (e.g. nursing homes or assisted living facilities)*".

The LTC provision helps people in need, to perform "*the ADL, such as eating, bathing, dressing, getting in and out of bed or using the toilet, combined with basic medical services, such as help with wound dressing, pain management, medication, health monitoring, prevention, rehabilitation or services of palliative care*" (Lipszyc *et al.*, 2012: 8).

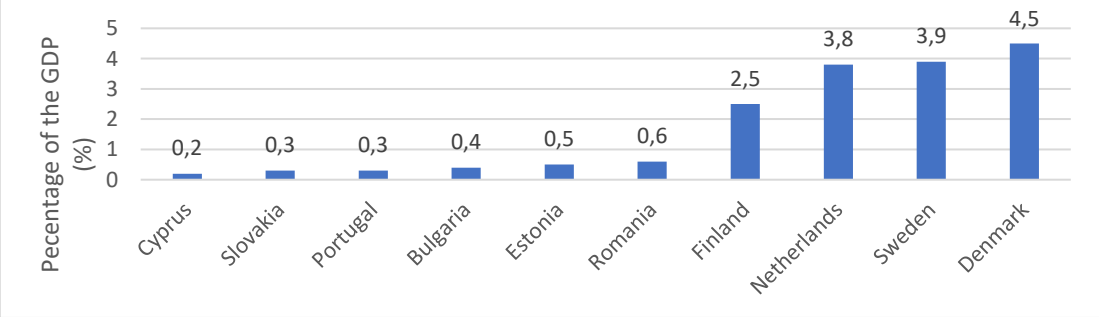
3.3. Long-Term Care in Europe

Due to the ageing population across Europe, in 2006, the Member States of the European Union (EU) have submitted to the European Commission a report with common "*policies towards social inclusion, pensions, healthcare and long-term care*" (European Commission, 2008: 2). It aimed at providing suggestions to protect citizens against the risk of illness or dependency, by delivering good quality at the long-term care services and by allowing an affordable and universal access to those in need (European Commission, 2008).

The WHO (2018) recognizes that the LTC system needs to be submitted to adaptations in order to be suitable to the specific health system applied in each of the country, according with the different cultural and economic contexts (European Commission, 2008; Lipszyc *et al.*, 2012). In this way, through the EU's Mutual Information System on Social Protection[5] (MISSOC) updated reports, it is possible to verify that each EU country made the necessary

adaptations to the model established at the European level (European Commission, 2008; Lipszyc *et al.*, 2012).

According to the European Commission (2008), public resources spent in health and LTC represent the second largest expenditure in terms of social protection, and this financial scenario tends to worsen, since the age group of 80 years or more has been increasing more than any other age group, in all countries across Europe (Lipszyc *et al.*, 2012). The Graphic 1 shows that a lower LTC public expenditure occurs mainly in the peripheral countries, while the north countries tend to expend more in LTC (Lipszyc *et al.*, 2012), this is, above the EU-27 average of 1,8% for 2010. Portugal is in the list of countries with one of the lowest values regarding the expenditure in LTC.



Graphic 1 - Public LTC Expenditure in Europe in 2010

3.4. Long-Term Care in Portugal

Initially, the provision of formal LTC services in Portugal was assured by *Misericórdias* and by non-governmental organizations, but informal care was also provided by the families (Joël *et al.*, 2010; Simões *et al.*, 2017). The *Misericórdias* are "*independent non-profit-making institutions with a charitable background*" (Simões *et al.*, 2017: 25) that have no connection with the public sector. The other independent charitable organizations englobe "*day centres, nursing homes and residences for the elderly that offer several services that include activities, laundry services meals, food to take home, bathing and even assistance obtaining medication and attendance at primary care centres*" (Simões *et al.*, 2017: 129).

Due to the increasing number of elderly people and of people incapacitated by chronic diseases, the National Network for Long-Term Care (*Rede Nacional de Cuidados Continuados Integrados*, RNCCI) was created in 2006 within the scope of the Ministry of Health and the Ministry of Labour, Solidarity and Social Solidarity to fulfil the gap of the long-term care in the public sector (Simões *et al.*, 2017). Within the scope of the RNCCI, the

Social Security and the Ministry of Health and the Ministry of Labour and Social Solidarity share the financial responsibilities of the patients (Simões *et al*., 2017).

The RNCCI was created with the intention of providing care at the patients' home when there is no need of institutionalization, or in specific institutions, with properly equipped facilities, when the patients need institutionalization (SNS, 2017).

Nowadays, the RNCCI is constituted by a group of public and private institutions that provide LTC services, which are characterized by convalescence care, recovery, and reintegration of people with chronic diseases and/or with dependency (SNS, 2017). With this in view, it seeks to readapt and rehabilitate patients and, finally, reinserting them into their family and social environment, by promoting their autonomy and functionality (SNS, 2017). Therewith, it aims at providing a global recovery of the dependent patient and maximizing his quality of life (Segurança Social, 2017).

The mentioned integrated health and social support interventions are focused on citizens of all ages with chronic illness, with an advanced incurable disease and/or in a terminal phase and with functional dependency (SNS, 2017). However, the oldest age groups are the key recipients of these services, once these people are more predisposed to have long duration chronic diseases, which in turn can cause physical or mental disabilities (OECD, 2005). In fact, in 2011, more than 85% of the RNCCI institutionalizations were from people aged above 65 (Boto *et al.,* 2014). In Portugal, each type of institution, public or private, can have inpatients and/or outpatient units that provide palliative and LTC services and assure social support to its patients (Simões *et al*., 2017). The different typologies of LTC and its main objectives will be further disclosed.

3.4.1. Long-term Care Objectives and Principles

Considering the LTC concept, the main objective of the RNCCI is to "*improve the living and well-being of the patients that are in situations of dependency, with the provision of quality LTC services and social support*" (Cuidados Continuados, 2016: 18). However, it also aims to improve care delivery by providing training and qualifications to the family members/informal providers, and by assuring an equal network care distribution, and respective equipment, in the national territory (Segurança Social, 2017).

On the basis of the services provided, the RNCCI has the principles of delivering an individualized and humanized care, a complete evaluation of the patient' needs with the

establishment of new functional and autonomous improvement goals, and an efficient care delivered (Segurança Social, 2017).

3.4.2. Long-term Care Typologies

With the aim of providing a service adjusted to patients' specific conditions (Simões *et al.*, 2017), the RNCCI has defined several types of long-term care service (SNS, 2017; Segurança Social, 2017):

- Inpatient units: convalescence care, medium duration and rehabilitation, long-term care and maintenance, and palliative care.
- Outpatient units: unit of day and autonomy promotion;
- Hospital care teams: discharge management teams, inpatient support teams in palliative care;
- Home care teams: integrated care teams and community support teams in palliative care.

The inpatient units require the institutionalization of the patient, however, the type of institutionalization differs according to the number of days that each patient is institutionalized (Segurança Social, 2017).

The Convalescence Care is focused on inpatient episodes where the patient was in a hospital due to an "*acute clinical situation, reoccurrence of or imbalance in a chronic condition*" (Simões et al., 2017: 130). Although the hospital care is no longer needed, the patient condition lead to the necessity of care that cannot be provided at home, due to its frequency, duration or complexity (Segurança Social, 2017). The institutionalization has a maximum period of 30 days, and during this period the healthcare providers seek to stabilize the patient, who lost the autonomy, but which is recoverable (Simões et al., 2017).

In the Medium Duration and Rehabilitation Units (UMDR), institutionalization can last between 30 and 90 days. It is focused on people who need to recover from "*an acute condition or imbalance in a chronic pathological condition to people with a temporary loss of autonomy, which is potentially recoverable*" (Simões *et al*., 2017: 128). The UMDR guarantees the stabilization of the patients' clinical condition through the "*daily medical care, permanent nursing care, physiotherapy and occupational therapy, prescription and administration of pharmaceutical products, psychosocial support, hygiene, comfort, nutrition, socialization and leisure*" (Simões *et al*., 2017: 128).

Long Term and Maintenance Units (ULDM) is for institutionalizations of more than 90 days in a row. It is focused on people with chronic diseases, with different levels of dependency (Segurança Social, 2017), and it intends to favour the comfort and quality of life of the patient, through the provision of healthcare maintenance that prevents and delays the degree of dependency (Simões *et al*., 2017).

In the Palliative Care Units there is no limit for the duration of the institutionalization, since it encompasses patients with a serious and/or advanced, incurable and progressive disease, situation in which it is difficult to make temporal perspectives due to its complexity (Segurança Social, 2017). This medical care is provided to the patients, but also to their relatives, since it "*promotes their well-being and quality of life, by preventing and relieving physical, psychological, social and spiritual suffering*" (ERS, 2015: 117).

The outpatient units, also called ambulatory units, do not imply any institutionalization. It represents the Day Care and Autonomy of Promotion (UDPA), which is directed for people with different levels of dependency, who need integrated health care and social support (Segurança Social, 2017). These medical care treatments are focused on people that do not have the possibility to receive it at home, but that have the conditions to move to a healthcare institution to receive the care and then go back home (Segurança Social, 2017).

Regarding the hospital care teams, the discharge management teams are responsible to take care of the patients' discharge to their homes or to units of convalescence, medium or long-term, existing in the area of the hospital influence (Ministry of Health, 2006). The main function of the inpatient support teams in palliative care is to provide direct care and/or differential guidance to the hospital services in relation to the palliative care patients (Ministry of Health, 2006).

Concerning the home care teams, the integrated care teams are addressed to people who are in circumstances of prolonged dependence or terminal illness, that do not need institutionalization, but that cannot move autonomously to receive it (Segurança Social, 2017). In this sense, the provision of integrated continuous care is delivered at home. On the other hand, the community support team in palliative care is responsible to provide differentiated guidance, with regard to the palliative care, to the integrated care teams, but also to the medium and long-term units (Ministry of Health, 2006).

3.4.3. Inpatient Units

The RNCCI mission is to expand the network's responsiveness to the population' needs, by giving priority to the regions and areas most in need (Cuidados Continuados, 2016). Through the Table 3, it is possible to verify that this expansion was translated in the increase of the number of beds within the different typologies of care:

Table 3 - Number of Beds in the LTC Network

	2007	2010	2013	2014	2015
Convalescence Care	423	682	860	860	764
Medium Duration and Rehabilitation	646	1.497	1.895	2.021	2.306
Long-Term Care and Maintenance	684	2.286	3.692	4.094	4.411
Palliative Care	55	160	195	185	278
Number of LTC Beds	1.808	4.625	6.642	7.160	7.759

(Source: Lopes *et al.*, 2018)

Between 2007 and 2015, the number of beds had risen 429%, mostly in the UMDR and ULDM. Table 4 presents the number of existing beds by typology and region and the distribution of the population with 65 years old by region, both in 2015.

Table 4 – Number of Beds in the RNCCI and of the Population over 65 years old distributed by region

	North	Centre	LVT	Alentejo	Algarve	Total
Population (resident) with ≥ 65 years	682.902	526.014	587.299	179.222	92.217	2.140.824
Convalescence Care	157	236	167	135	69	764
UMDR	619	719	673	186	109	2.306
ULDM	1.360	1.247	1.041	425	338	4.411
Palliative Care	41	69	139	19	10	278
Total	2.177	2.271	2.020	765	526	7.759

(Source: ACSS, 2017; INE, 2015)

The unit with the highest number of beds was the Long-Term Care and Maintenance Care, whereas the lowest number of available beds was found in Palliative Care units. In relation to the population distribution, it is possible to observe that the North and LVT regions had the highest number of people over 65 years old. However, the Centre region had the higher number of places available to be institutionalized in the LTC, followed by the North and LVT regions. Algarve region had the lowest number of people aged above 65 years old, but also of available places in the LTC network. In this sense, the coverage of the LTC network agrees with the needs of each region of the country.

The latest data collected, in a report of January of 2018, shows that the RNCCI offered 8.224 inpatient responses (WHO, 2018), which enables to perceive the continuous growth of the network and the ability to respond to patients' requests.

In line with the introductory note concerning the high number of people needing the LTC services nowadays, Table 5 allows to perceive that, as of October of 2015, there was a great demand of this type of services for the supply available in the RNCCI:

Table 5 - Welfare movement accumulated in October 2015

	North	Centre	LVT	Alentejo	Algarve	Total
Number of Signalled Patients	33.346	11.695	14.671	4.093	2.825	66.630
Number of Referenced Patients	10.518	7.624	10.138	3.006	2.362	33.648
Number of Admitted Patients	5.847	5.909	5.063	2.044	1.674	20.537
Number of Discharges	5.670	5.825	4.732	2.051	1.645	19.923
Number of Cancelled Episodes	16.597	4.637	2.917	1.313	302	25.766

(Source: Cuidados Continuados, 2016)

In agreement with the distribution of the population aged 65 years old or above, the North and the LVT regions had the highest number of signalled and referenced patients. Out of the 66.630 signalled patients, only 33.648 patients were referenced by being submitted to a medical, psychological and social assessment by the local coordinating team of the hospital or health centre. From the 33.648 referenced patients that were waiting for a vacancy, only 20.537 were admitted in RNCCI facilities. On the other hand, it is perceptible that the number of people signalled and referenced in the North and LVT regions, in October of 2015, agrees with the distribution of the population, with 65 years or above, in these regions. In addition, the Centre region, which showed the greatest capacity for institutionalization/admission in 2015, had the larger number of patients admitted in the same year.

In this sense, it is possible to verify that the demand for the LTC services was higher than the volume of services offered by the RNCCI. Table 6 shows the number of users waiting for a vacancy, in October of 2015, per type of desired unit.

Table 6 - Number of users waiting for vacancies in October 2015

	North	Centre	LVT	Alentejo	Algarve	Total
Convalescence Care	55	52	57	28	4	196
Medium Duration and Rehabilitation	94	78	75	60	10	317
Long-Term Care and Maintenance	251	137	313	145	22	868
Palliative Care	20	8	118	6	1	153
Total	420	275	563	239	37	1.534

(Source: Cuidados Continuados, 2016)

Table 6 shows that, in October of 2015, the most deprived region was LVT, followed by the North region. This might be influenced by the large concentration of people aged 65 or

older in these two regions, as shown in Table 4. In addition, the large number of referenced patients for LTC, as shown in Table 5, is also related to the deprivation in these two regions. It is also possible to conclude that ULDM was the type of unit with the highest lack of capacity when compared to demand.

3.5. Conclusions

As mentioned before, to the World Health Organization (WHO) (2004: 38), the LTC care is "*a range of health care, personal care and social services provided to individuals who, due to frailty or level of physical or intellectual disability, are no longer able to live independently"*. At the European level, there are "*policies towards social inclusion, pensions, healthcare and long-term care*" (European Commission, 2008: 2), however, these policies need to be adapted to each country, culture and economy. Among the EU countries, Portugal had one of the lowest values regarding the LTC public expenditure in 2010.

In Portugal, the RNCCI is constituted by a group of public and private institutions that provide LTC services focused on readapting and rehabilitating patients and, finally, reinserting them into their family and social environment, by promoting their autonomy and functionality (SNS, 2017). Each type of institution can have outpatient (UDPA) and/or inpatients (Convalescence Care, UMDR, ULDM and Palliative Care), where the selection of each type of the inpatient unit varies according with the period of institutionalization.

As a mission of the RNCCI to expand the network regarding the population' needs, by giving priority to the regions and areas most in need (Cuidados Continuados, 2016), between 2007 and 2015, the number of beds had risen 429%. In relation to the population distribution, the North and LVT regions had the highest number of people over 65 years old, but also one of the largest number of places available for institutionalization, which demonstrates that the coverage of the LTC network agrees with the needs of each region. However, these two regions have showed to be deprived, might due to the large concentration of aged people and by the large number of LTC patients referred, who do not have a place to be institutionalized.

To conclude, it is perceptible that there is still room to improve, since the demand for LTC is currently higher than the supply of services offered by the RNCCI. To continuously expand the RNCCI by responding to the growing population needs, it is necessary to assess how patients perceive the quality of the service provided and if the service meets the patients' needs to improve their HRQOL.

4. Methodology

4.1. Introduction

Based on the objectives established for the present dissertation and on the Literature Review support, this chapter seeks to set the procedures used in the research process, by firstly explain the application of a case study in the present dissertation. Secondly, the hypotheses are formulated and conceptualized in a theoretical model. Thirdly, the characterization and selection of the data collection instruments are detailed. Fourthly, the population and sample are characterized. Lastly, the application of the pre-test, the data collection and the instruments used to analyse the data are disclosed.

4.2. Case Study

Due to the existing lack of studies in the LTC, this research promotes the evaluation of service quality, of the HRQOL, and of both combined in a specific unit of the LTC of a certain facility: Medium Duration and Rehabilitation Unit of the *Santa Casa da Misericordia* in *Alhos Vedros*. Given the existing gap in the LTC literature, the type of research question presented in this study and since this is a contemporary phenomenon where behaviors are not manipulated, Yin (2009) defends that the most suitable research method to achieve the objectives of this dissertation is the case study.

A case study is "*an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident*" (Yin, 2009: 18). It is applied in several situations, in order to gather information about the individuals, a certain group or organization, or about a social and political phenomenon (Yin, 2009).

Case study is recommended when "how" and "why" questions are formulated and when the behavioral events are not controlled or manipulated by the researcher (Yin, 2009), since the researcher's role is limited to directly observing the events and interviewing the people involved in them (Yin, 2009).

Since the LTC area is poorly explored, this investigation becomes exploratory in the field and, as Yin (2009) supported, the use of case study allows exploring the UMDR, where its quality and impact on the HRQOL of the patient have not been analysed.

As a single case study, the objective is to examine the conditions in which the service is delivered to the patient in the specific facility mentioned. This way, the results about the

experiences are descriptive about the performance of the institution, reason why it cannot be replicated or generalized to other facilities with the same LTC unit. Therefore, this limitation makes this case study "*generalizable to theoretical propositions, but not to populations or universes*" (Yin, 2009: 10).

4.3. Hypotheses of Investigation

Hypotheses of investigation are necessary to identify the pertinent information that needs to be collected from the individuals (Yin, 2009) so that the goal of the research is met. Based on the research objectives, the hypotheses are formulated and detailed below.

Several authors (see, for instance, Joonas & Wang, 2012; K.P.M & Srinivasulu, 2014; Qin & Prybutok, 2012) have developed studies in the healthcare area, where the effects of the personal characteristics of the patients were examined. Some of these studies have shown that gender and age (Qin & Prybutok, 2012; K.P.M & Srinivasulu, 2014; Holder & Berndt, 2011; Dean, 1999; Joonas & Wang, 2012; Kilbourne, 2004), region of residence (K.P.M & Srinivasulu, 2014), illness and education (Qin & Prybutok, 2012) have a considerable impact on the perceived overall quality of a service and in each of the five dimensions proposed by Parasuraman *et al.* (1988).

Considering the context under analysis, the LTC area, and due to the fact that these services can be received for different periods of time and following different waiting periods, which are always periods of anguish, it becomes necessary to perceive whether the service characteristics, such as the duration of the institutionalization or waiting time for the institutionalization, have impact on the perceived overall quality and in each of the five dimensions proposed by Parasuraman *et al.* (1988), although no studies have been found concerning this subject.

In this sense and in the context of this research, it will also be analysed if the mentioned personal characteristics – Gender, Age, Education, Residence, Pathology, Living Alone or with Family before Institutionalization, and Need for assistance from family members or healthcare professionals before Institutionalization – and the service characteristics – Duration of Institutionalization, Previous Institutionalization, Time of Previous Institutionalization, Duration of Previous Institutionalization and Waiting time for Institutionalization – influence the perceived quality of the UMDR service provided by the SCMAV. Thus, the following hypotheses for this study are formulated:

H1: The personal characteristics of the patients and the service characteristics of the UMDR influence the perception of quality in each of the service quality dimension proposed by Parasuraman *et al.* (1988);

H1.1: The UMDR patients' personal characteristics influence the perception of quality in each of the service quality dimension proposed by Parasuraman *et al.* (1988);

H1.2: The service characteristics of the UMDR influence the perception of quality in each of the service quality dimension proposed by Parasuraman *et al.* (1988);

H2: The personal characteristics of the patients and the service characteristics of the UMDR influence the overall perception of the service quality delivered;

H2.1: The personal characteristics of the UMDR patients influence the overall perception of the service quality delivered;

H2.2: The service characteristics of the UMDR influence the overall perception of the service quality delivered.

As mentioned in the Literature Review, the SERVQUAL instrument has five dimensions that measure service quality. However, the instrument SERVPERF has an added item (P23), which allows an aggregated evaluation of the perception of service quality. Through the Dabholkar *et al.* (1996) research, additional dimensions, beyond the five proposed by Parasuraman *et al.* (1988), have shown to influence the overall assessment of service quality. In this sense and in order to verify if there are additional aspects affecting the patients' overall perception of UMDR service quality delivered in the SCMAV, the following hypothesis is formulated:

H3: The global perception of service quality resulting from the aggregation of the five quality dimensions proposed by Parasuraman *et al.* (1988) is associated with the overall perception of service quality.

Under the context previously explained, i.e., the possibility of existing additional dimensions, beyond the five proposed by Parasuraman *et al.* (1988), also explain the overall perceived service quality, it becomes relevant to assess whether the personal and service characteristics have an influence on it, whereby the following hypotheses arise:

H4: The personal characteristics of the patients and the service characteristics of the UMDR influence the global perception of service quality resulting from the aggregation of the five quality dimensions proposed by Parasuraman *et al.* (1988);

H4.1: The personal characteristics of the UMDR patients influence the global perception of service quality resulting from the aggregation of the five quality dimensions proposed by Parasuraman *et al.* (1988);

H4.2: The service characteristics of the UMDR influence the global perception of service quality resulting from the aggregation of the five quality dimensions proposed by Parasuraman *et al.* (1988).

Several investigators have verified that gender and age (Flynn *et al*., 2011; Mitchell *et al*., 2017; Suhonen *et al*., 2008; Solli *et al*., 2010), residence (Mitchell *et al*., 2017; Solli *et al.*, 2010), education (Mitchell *et al*., 2017; Suhonen *et al*., 2008; Lidgren *et al.*, 2007), disability (Flynn *et al*., 2011; Suhonen *et al*., 2008), living alone (Flynn *et al*., 2011; Mitchell *et al*., 2017; Lidgren *et al.*, 2007), receiving help from others (Solli *et al.*, 2010) and previous treatment (Bewick *et al.*, 2017; Suhonen *et al*., 2008) impact each patient's perceived HRQOL. In order to assess if an identical situation is verified in this research, the following hypotheses are formulated.

H5: The personal characteristics of the patients and the service characteristics of the UMDR influence the patients' health status improvements from receiving the LTC.

H5.1: The personal characteristics of the UMDR patients influence their health status improvements from receiving the LTC;

H5.2: The service characteristics of the UMDR influence the patients' health status improvements from receiving the LTC.

H6: The personal characteristics of the patients and the service characteristics of the UMDR influence the improvements in the self-rated health;

H6.1: The personal characteristics of the UMDR patients influence the improvements in the self-rated health;

H6.2: The service characteristics of the UMDR influence the improvement of patients' self-rated health.

In their research, Suhonen *et al.* (2008) have compared the patients' HRQOL assessments, by resorting to their self-rated health status and respective improvements. The results have shown that there was a moderate association between these two aspects. Consequently, for the current investigation, it will be verified if the same phenomenon occurs. Thus, the following hypothesis is formulated:

H7: The health status improvement after receiving the LTC is associated with the improvements in the self-rated health of the analysed patients.

To assess service quality in LTC, namely in the UMDR, there is a need to consider the HRQOL of its patients, as they participate in the service process and, thus, influence the outcome of the service encounter. Therefore, by aiming to analyse the impact that the UMDR perceived service quality has on the perception of patients' HRQOL, it is relevant to assess how the perceived service quality – translated by the overall perception of service quality and by the global perception of service quality resulting from the aggregation of the five service dimensions proposed by Parasuraman *et al.* (1988) – influences the HRQOL – characterized by the health status improvements and the improvements in the self-rated health. Therefore, the association between the mentioned constructs was formulated into the following research hypotheses:

H8: The overall perception of service quality is associated with the improvements in the self-rated health of the UMDR patients.

H9: The global perception of service quality, resulting from the aggregation of the five quality dimensions proposed by Parasuraman *et al.* (1988) is associated with the improvements in the self-rated health of the UMDR patients.

H10: The overall perception of service quality is associated with the health status improvements after receiving the LTC.

H11: The global perception of service quality, resulting from the aggregation of the five service dimensions proposed by Parasuraman *et al.* (1988) is associated with health status improvements after receiving the LTC.

The aggregation of the research hypotheses obtained above are presented in the conceptual model of the investigation, as Figure 1 shows.

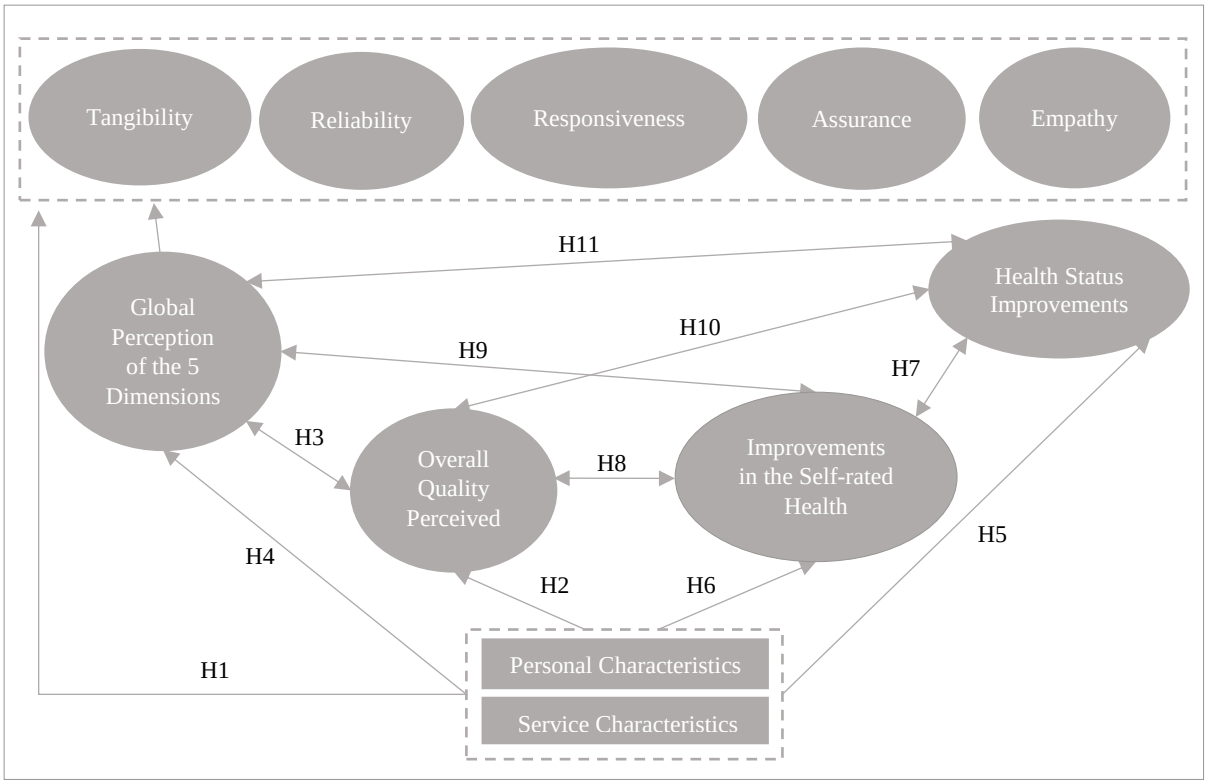


Figure 1 - Conceptual Model

4.4. Data Collection Instruments

To have a robust data collection instrument, an initial data collection was done to define which are the main pathologies of the patients institutionalized in the UMDR, but also to determine the intervals to be considered on the waiting time for institutionalization and on the time of the previous institutionalization. In Appendix 1, it is presented the interview script made to the SCMAV' hospital managers in the 5th of April of 2018.

From the instruments mentioned in the Literature Review, SERVPERF showed to be the most appropriate one to assess the perceived service quality in the LTC. As so, it will be the one used in the scope of this research to assess the UMDR. In addition, based on the conclusions of the literature review, the QALYs gained with the delivery of LTC is the most suitable metric to evaluate the LTC patients' perception of HRQOL, and therefore the EQ-5D-3L questionnaire is used as a basis to estimate these QALYs.

Data was collected in two different moments, which emerged in the application of two different questionnaires. The questionnaire applied in the first data collection moment – see Appendix 2 – is divided into three groups: group I and II aiming at gathering information about the personal and service characteristics, respectively, and group III, which contains the

EQ-5D-3L instrument. For the second moment of data collection, the questionnaire – see Appendix 3 – has only two groups: group I, with the second application of the EQ-5D instrument, and group II, with the SERVPERF tool.

The data collection in two different moments results from the necessity to perceived the HRQOL improvements felt by the UMDR' patients with the provision of the SCMAV' services. In this sense, the second moment of the data collection was made with an interval of 30 days from the first moment. Both questionnaires were applied in Portuguese taking into consideration the nationality and age of the target population. The variables used in the questionnaires are explained below.

4.4.1. Personal and Service Characteristics

As referred, the personal characteristics that are used to characterize the patient are gender, age, education, region of residence and pathology. The categorization of the variables is defined according to the classification of the *Instituto Nacional de Estatística* (INE, 2016) Portuguese database: gender (male and female), age (18 to 24 years old, 25 to 34 years old, 35 to 44 years old, 45 to 64 years old and 65 years old or more), education (Cannot read or write, 1st Cycle of Basic Education (incomplete), 1st Cycle of Basic Education (4th year of Schooling), 2nd Cycle of Basic Education (6th year of Schooling), 3rd Cycle of Basic Education (9th year of Schooling), Secondary Education (12th year of Schooling), Bachelor's degree, Post-Graduate Studies, Master's degree or higher) and region of residence (Norte, Centro, Lisboa e Vale do Tejo, Alentejo, Algarve, RA da Madeira and RA dos Açores). The categorization of the pathologies is based on the most frequent pathologies in this type in LTC units, information that was provided by the managers of SCMAV.

Variables concerning the service characteristics are categorized as follows: duration of institutionalization (Less than 1 week, from 1 to 2 weeks (inclusive), from 2 to 3 weeks (inclusive), from 3 to 30 days (inclusive), from 30 to 45 days (inclusive), from 45 to 60 days); duration of the previous institutionalization (15 days, 30 days, 45 days, 60 days, 75 days, 90 days), where the latter was based on the maximum time of institutionalization of 90 days in UMDR. The former was considered only in a maximum period of 60 days once the greatest improvement of the patients is recorded in the first two months of institutionalization, but also because people who was institutionalized for more than 60 days was not included in the sample due to the risk of abandonment of the facilities. The categories for variable waiting time for institutionalization are (Less than 1 week, between 1 and 2 weeks (inclusive),

between 2 and 1 month (inclusive), between 1 and 3 months, between 4 and 6 months, more than 6 months) and for the variable time of the previous institutionalization (In the last month, between 1 and 3 months (inclusive), between 3 and 6 months (inclusive), more than 6 months). The categories for these last two variables were established based on information provided by SCMAV's hospital managers.

4.4.2. EQ-5D-3L

The EQ-5D-3L is a standardized instrument for the healthcare environment, which implies that no adaptions were needed. In this way, and as explained in detail in Chapter 2 (Literature Review), both applications of this instrument are divided into two parts: the first part includes the descriptive system, which evaluates the HRQOL in five dimensions (mobility, self-care, usual activities, pain/discomfort and anxiety/depression) with three levels of response, and the second one with the EQ VAS measured on a horizontal scale (and not vertically in order to minimize the size of the questionnaire).

4.4.3. SERVPERF

The second questionnaire applied is based on the SERVPERF tool. It has a basic frame, namely the 22 items, which were adapted to the healthcare environment in order to have a common linguistic content and to have answers focused on the same aspects. This questionnaire has considered the items shown in Table 7.

Table 7 - Dimensions of the SERVPERF instrument and respective items in the questionnaire

Dimension	Main Characteristics
Tangibles 4 items	The items **P1 to P4** contain the appearance of the facilities, of the medical equipment, of the healthcare professionals and of the support equipment necessary to provide the service.
Reliability 5 items	The items **P5 to P9** demonstrate the ability of the long-term care doctors to perform the promised service dependably and accurately, by providing the service correctly when promised. It also includes the maintenance of up-to-date records without flaws and the doctors' determination to solve problems.
Responsiveness 4 items	The items **P10 to P13** reveal the medical professionals' willingness to help customers and to provide a prompt service. It includes the provision of information concerning the deadlines of the service delivery and the availability to promptly respond to the patients' doubts.
Assurance 4 items	The items **P14 to P17** englobe the long-term care doctors' knowledge, competence, and courtesy, but also their ability to inspire trust and safety, during the process of providing the service.
Empathy 5 items	The items **P18 to P22** include the suitability of the service schedules for different patients, but also the ability of the long-term doctors to provide an individualised and careful attention to its patients.

To evaluate the items shown in Table 7, in the survey, the Likert-like scale of 7 points proposed by Cronin and Taylor (1992) is used and it varies between 1 – "Totally Disagree" and 7 – "Totally Agree". As proposed by Cronin and Taylor (1992, 1994), an additional question was added to this questionnaire to evaluate the global perception (P23) that the UMDR patients from the service delivered at SCMAV. Item 23 is measured using a Likert-like scale, which varies from 1 – "Very Weak" and 7 – "Excellent". This scale is suitable for interviews and its utilization has the advantage of being easy for the researcher to elaborate and administer this scale, but also for the respondent to understand (Malhotra & Peterson, 2006).

In the previous sections and sub-sections, the instruments used – the SERVPERF and the EQ-5D – were detailed and the constructs of the conceptual model under analysis were referred. In this sense, Table 8 demonstrates how, which of these constructs, were computed and how these will be mentioned throughout the analysis of the results.

Table 8 - Computations and Designations used for the Constructs of the Conceptual Model

Constructs of the Conceptual Model	Computed Using	Designation Used in the Investigation
Global Perception of the 5 Dimensions	Average of the five dimensions (SERVPERF)	Mean of the Dimensions' average
Overall Quality Perceived	Item 23 of the SERVPERF	P23
Improvements in the Self-Rated Health	EQ-5D VAS value after LTC provision - EQ-5D VAS value before	VAS differential
Health Status Improvements	EQ-5D value after LTC provision – EQ-5D value before	QALYs gained

4.5. Population and Sample

According to Hill & Hill (2005) and Marôco (2010), the theoretical population is represented by the set of all elements from which conclusions can be drawn. The population in study, on the other hand, is confined to "*restricted groups of the theoretical population that can truly be accessed*" (Marôco, 2010: 28). From the population in study, it is necessary to identify which subjects or objects will be selected to constitute or categorize the sample (Marôco, 2010), where a sample represents "*part of the cases that constitute the population*" (Hill & Hill, 2005: 41).

Generally, a sample is constituted with the intention that "*its conclusions, drawn from its categorization, can be generalized to the population*" and, this way, the sample should be "*representative of the theoretical population in study*" (Marôco, 2010: 28).

This investigation occurs in the UMDR of the LTC unit of *Santa Casa da Misericordia* in *Alhos Vedros*. In this sense, the theoretical population of this investigation englobes all patients who were institutionalized in this unit of SCMAV facilities. Since the UMDR of SCMAV can accommodate 30 people from the RNCCI and 4 users at a private level, all at the same time, the theoretical population is constituted by the 34 patients plus the patients that might enter the unit more than 30 days before data collection is concluded.

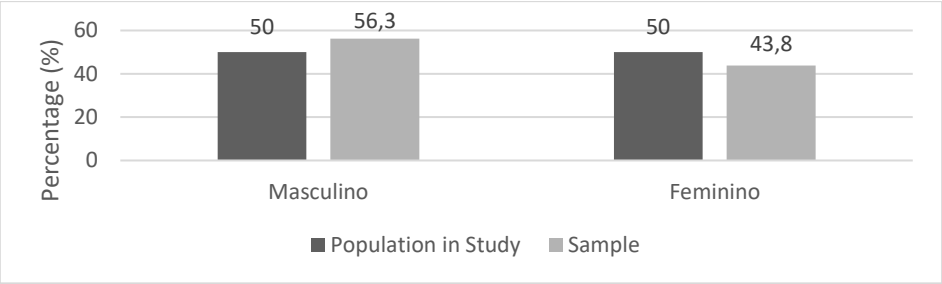
According to the data provided by the SCMAV and its social worker, only a fraction of the patients institutionalized had the physical and/or mental capacity to collaborate in this investigation. In addition, the patients that were institutionalized more than 60 days were not considered, as explained previously. Therefore, the study population only includes the patients who were mentally and physically capable to be interviewed and who were institutionalized for less than 60 days. Both of these conditions have influenced the study population, which was set at 18 people. In addition, the period of institutionalization in the UMDR from 30 to 90 days, in which the vast majority of the patients tend to remain the full 90 days institutionalized, have also influenced the patients' turnover in the facilities and, thus, the study population.

From all patients who were considered valid to participate in this investigation, all of them were interviewed. However, only 16 completed both questionnaires, which, according to Vicente *et al.* (1996), represents the sample dimension that it was possible to gather.

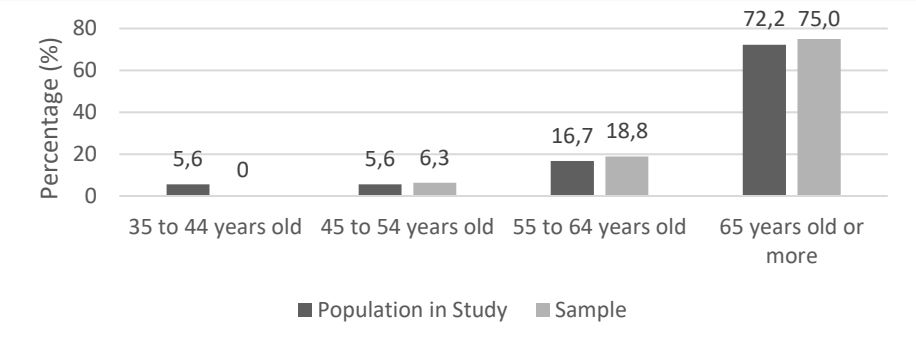
Since the sample of this research was induced by the SCMAV' staff, by taking into consideration the health status of the patients and their period of institutionalization, it cannot be considered representative of the theoretical population. The sample was not chosen randomly, but rather by indication/convenience, and therefore, the "*probability of a patient belonging to the sample is not equal to the probability of the remaining patients*" (Marôco, 2010: 31).

The Graphics 2, 3 and 4 present, in percentage, the distribution of the study population and the sample, by gender, age and pathology.

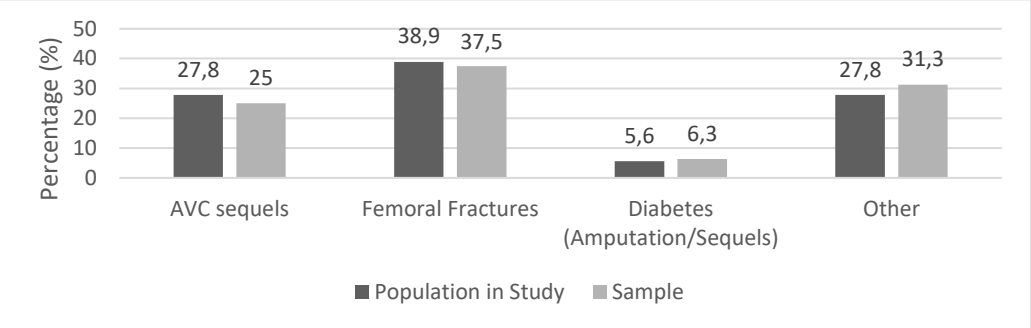
By the comparison of the patients' gender, age and pathology, it is possible to verify the study population profile and the sample profile have very strong similarities.



Graphic 2 - Distribution of the study population and the sample by gender



Graphic 3 - Distribution of the study population and the sample by age



Graphic 4 - Distribution of the study population and the sample by pathology

4.6. Pre-Test

Following Vicente *et al.* (1996: 23) recommendations, a pre-test of the two questionnaires was conducted to assess whether the respondents were able to fully comprehend it or whether the patients would have difficulties of interpretation. Based on this pre-test, the necessary adjustments were made so that the questionnaires were appropriately adapted to the context in study.

The pre-test was performed on March 10th and 12th of 2018, to 8 patients who were institutionalized at *Centro Social Paroquial Nossa Senhora do Cabo – Lar Pedro Dehon*, in

Linda-a-Velha, a similar unit to the one under analysis. Modifications were made in order to facilitate the understanding of the respondents on a non-misleading basis, which included simplifying the vocabulary, introducing examples that clarified the statements and some structural adjustments.

4.7. Data Collection

The data collection was performed between April 5th and June 15th of 2018. The length of the data collection period was due to the need for patients' rotation to cover more respondents in the sample. The patients were interviewed in two stages, as describes in section 4.4, with 30 days of interval between stages, in which the behavioral events and its results could not be controlled. The questionnaires were not filled by the patients due to their advanced age or due to their motor difficulties.

Due to the low patient turnover in the SCMAV, one visit per week to the facilities was suitable enough to collect all the necessary data from the institutionalized patients and new entrants. However, the days of the week were variable, but always after lunch, since it was the calmer period to talk to patients, regarding the schedules of their treatments and activities.

4.8. Data Analysis Instruments

After the data collection, this will be treated and analysed based on different statistical techniques. Firstly, a characterization of the analysed patients from the UMDR will be conducted, resorting to a descriptive analysis of the sample collected. Secondly, to test the investigation hypotheses H1, H2, H4, H5 and H6 hypotheses testing will be performed. Third and lastly, the investigation hypotheses H3, H7, H8, H9, H10 and H11 will be tested using correlations.

The data analysis will be supported on SPSS, version 25. In the following sections, the mentioned statistical techniques are detailed.

4.8.1. Hypotheses Testing

As stated by Pedrosa & Gama (2004: 442), hypotheses testing is "*a statistical process used to draw a yes or no type of conclusion on one or more populations from one or more samples of those populations*".

The hypotheses tests can be classified into two groups: parametric tests and non-parametric tests (Laureano, 2011; Marôco, 2010). The applicability of the parametric tests implies a simultaneous verification of the following conditions (Marôco, 2010):

- The dependent variable follows a normal distribution – to test its normality the tests Shapiro-Wilk and Kolmogorov-Smirnov can be used, for samples where n<50 and n ≥50 respectively;
- The population variances are homogeneous in case of comparing two populations or more – to test its homogeneity the Levene test is the most common and powerful test.

In case the population is found to meet the normality and homogeneity requirements, the t-student test is used to test hypotheses about an estimated population mean from a random sample or to compare two population means from independent random samples (Marôco, 2010; Laureano, 2011). For the comparison of means of three or more independent populations, the ANOVA on-way test is recommended, while to evaluate whether a dependent variable is influenced by more than one independent variable, the two-way ANOVA test should be used (Marôco, 2010; Laureano, 2011).

In case of failure of the verification of the previous assumptions of normality and homogeneity of variances, non-parametric tests are an alternative to the parametric ones (Laureano, 2011): the Wilcoxon test and the Mann-Whitney tests are the alternative tests to the t-student test and the Kruskal-Wallis test is the substitute to the one-way ANOVA test (Marôco, 2010; Laureano, 2011).

4.8.2. Correlations

Correlations tests are applied when it is necessary to test the relationship between two variables (Laureano, 2011: 125). According to the same author, the correlations are divided into two possible tests: a parametric test and a non-parametric test. The Pearson correlation, as the parametric test, is used when the "*two variables are normally distributed and have no outliers"* (Laureano, 2011: 125). Otherwise, the Spearman correlation test, the non-parametric one, is applied when one of the previous assumptions of normality and homogeneity of variances fails.

Through the analysis of the correlation coefficients, this coefficient is significant when Sig < 0,05 or non-significant when Sig > 0,05; direct when positive and inverse when

negative; small when varies between -0,3 and 0,3, moderate when between 0,3 and 0,5 or -0,3 and -0,5 and large when between 0,5 and 1 or -0,5 and -1.

4.9. Conclusion

In this chapter, the main methodological procedures were analysed and discussed, with the view of achieving the general and specific objectives established previously. After the hypotheses of this investigation have been formulated, some of them by resorting to the Literature Review, its aggregation in a conceptual model was elaborated.

Based on the variables to be analysed, the EQ-5D and SERVPERF questionnaires (where the latter was properly adapted to the healthcare area) were detailed, as well as the different phases of its implementation. The pre-test was performed in a similar scope to the one under study, which allowed making the necessary adaptations for the best possible understanding of the patients. Then the procedures for data collection were highlighted. Finally, the instruments used to treat and analyse the data collected were acknowledged and characterized. With the descriptive analysis, hypotheses testing and with the correlations, it is intended to provide answers to the research questions formulated. Table 9 shows the linkage between the specific objectives, the research questions and the hypotheses to be tested, emphasising the research coherence.

Table 9 - Objectives, Research Questions, Hypotheses and Statistical Analysis

Objectives	Research Questions	Hypotheses	Analysis
Evaluate the patients' perception of service quality in the Portuguese LTC units	How does the perceived quality of service delivery influence the HRQOL of the patients in long-term care units?	H1, H2, H3, H4	Descriptive Analysis + Hypotheses testing + Correlation
Evaluate the perceived improvement of the health-related quality of life of the patients that are in the Portuguese LTC units		H5, H6, H7	Descriptive Analysis + Hypotheses testing + Correlation
Analyse the strength of association between the perceived service quality in long-term care and the improvement of the health-related quality of life of the patient		H8, H9, H10, H11	Correlations
Develop managerial recommendations to improve the perceived quality of service delivered and the perceived health-related quality of life.	Which measures should be followed to improve the perceived quality of service delivered and the perceived health-related quality of life in LTC units?		Qualitative Approach

5. Results

5.1. Introduction

In the present chapter, the obtained results are reported, by firstly characterizing the UMDR of the SCMAV. Secondly, a descriptive analysis of the sample under study is performed. Thirdly, the service quality is examined by its globality and by dimension, followed by the evaluation of the internal consistency of the instrument used. Fourthly, the HRQOL is studied by the comparison between the results obtained in the first data collection and in the second. Fifthly, the investigation hypotheses are tested, using hypotheses testing and correlations. Lastly, the obtained results are discussed.

5.2. Unit Characterization

The LTC Unit under analysis is one of the units of *Santa Casa da Misericordia* in *Alhos Vedros*, also named *UCCI – Francisco Marques Estaca Júnior* and it was founded in 2011. It is integrated in the RNCCI and has three long-term care units: Medium Duration and Rehabilitation Unit, Long Duration and Maintenance Unit, and Palliative Care Unit.

Among the three LTC units, the *Santa Casa da Misericordia* in *Alhos Vedros* adopts the belief where the patients are the protagonists of their own development and, therefore, it provides a set of health care and social support to its patients, by promoting their autonomy and by improving their functionality (SCMAV, 2018). The type of support varies according to the situation of dependency of each patient and, thus, in the unit in which the patient is institutionalized.

The LTC unit under analysis is the UMDR, which has the capacity to accommodate 34 patients, as mentioned previously. The aim of this unit is to promote the patients' autonomy, through the stabilization of their clinical situation and through their integral rehabilitation, so that the patients can return home or to their families (SCMAV, 2018). The provision of this type of care is directed to people with loss of autonomy who require rehabilitation and psychosocial support (SCMAV, 2018).

Across the different units of LTC, the SCMAV provides different types of services: medical and nursing care; speech and occupational therapy; psychological and social support; prescription and administration of drugs; hygiene, comfort and food care; stimulation and maintenance activities, physiotherapy care and leisure activities (SCMAV, 2018). In the

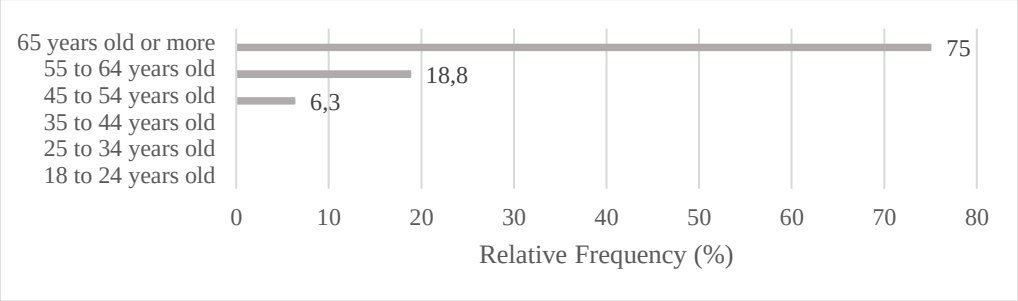
UMDR, there are 23 nurses, 5 doctors, 4 physiotherapists, 1 occupational therapist, 1 speech therapist, 1 social assistance, 1 psychologist, 14 medical assistants.

5.3. Sample Characterization

To characterize the sample, the independent variables “Gender”, “Age”, “Education Level”, “Pathology, “Need for assistance from family members or healthcare professionals before Institutionalization” and “Living Alone or with Family before Institutionalization” were used.

Regarding the independent variable “Gender”, the data collected allows to verify a relatively balanced distribution between the two categories, with 56,3% of questionnaires responded by men and 43,8% answered by women.

Graph 5 represents independent variable “Age” according to the six age groups considered. The group that englobes “65 years old or more” has the highest percentage of elements in the sample (75,0% of the answers), as expected in the LTC area. Age groups of “18 to 24 years old”, “25 to 34 years old” and “35 to 44 years old” that did not receive any responses.

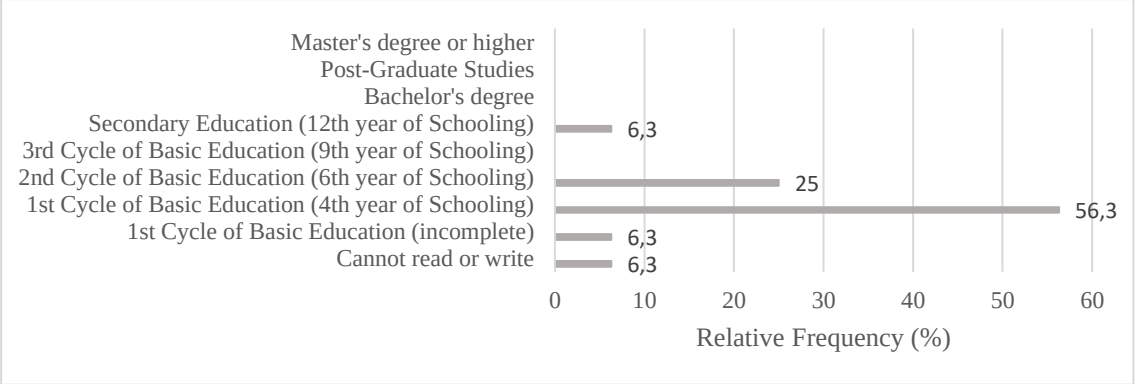


Graphic 5 – Sample characterization by Age

Due to lack of observations in some age groups and to a small number of answers in age groups “45 to 54 years old” and “55 to 64 years old”, the variable was recoded for the purpose of statistical analysis. Categories ranging from 18 years to 64 years old were aggregated in one new category named "64 years old or less". This resulted in two groups for this variable, "64 years old or less" and "65 years old or more".

The independent variable “Education Level” was exanimated in nine categories of schooling, as shown in Graph 6. Category “1st Cycle of Basic Education (4th year of Schooling)” had the highest percent of elements in the sample (56,3% of the responses) and

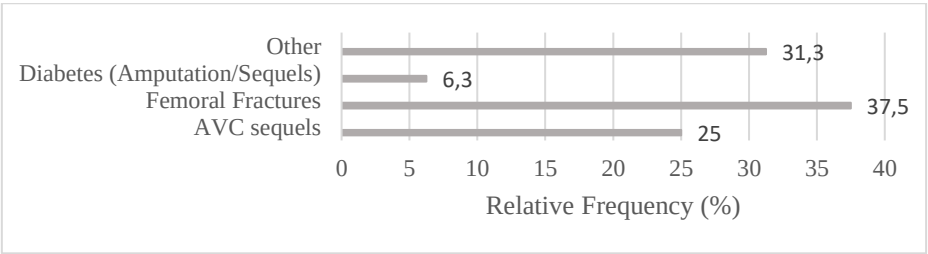
where the Groups “3rd Cycle of Basic Education (9th year of Schooling)”, “Bachelor's degree”, “Post-Graduate Studies” and “Master's degree or higher” received no answers from the elements in the sample.



Graphic 6 - Sample Characterization by Education Level

As a result of the categories without responses this variable was also recoded. The categories “Cannot read or write”, “1st Cycle of Basic Education (incomplete)” and “1st Cycle of Basic Education (4th year of Schooling)” converged in a new category denominated “1st Cycle of Basic Education (4th year of Schooling Completed) or less”. All the remaining categories were aggregated into the category “2nd Cycle of Basic Education (6th year of Schooling) or more”.

The independent variable “Pathology” was analysed in four types of diagnosis: “AVC sequels”, “Femoral Fractures”, “Diabetes (Amputation/Sequels)” and “Other”, as shown in Graph 7. “Femoral Fractures”, received the highest percent of responses, 37,5%. The diagnosis “Diabetes (Amputation/Sequels)” had only 1 answer among the total of the 16 responses, corresponding to 6,3% of the sample.



Graphic 7 - Sample Characterization by Pathology

As “Diabetes (Amputation/Sequels)” had only one answer, the variable “Pathology” was recoded. The pathologies “AVC sequels” and “Femoral Fractures” were combined in one

category, since these two pathologies are somehow associated, since a stroke can lead to a femoral fracture and vice versa. By exclusion of parts, the pathologies “Diabetes (Amputation/Sequels)” and “Other” were aggregated in a second category.

The independent variable “Living Alone or with Family before Institutionalization” was examined with two possible situations: living alone or living with family. The data collected shows that the answer “With Family” characterizes 68,75% of the sample.

The independent variable “Need for assistance from family members or healthcare professionals before Institutionalization” was evaluated in a “Yes” or “No” type of answer, where “Yes” represents 75,0% of the responses.

5.4. Perceived Service Quality Analysis

To assess the quality of the service perceived by the analysed sample from the UMDR, firstly, each item and dimension of the SERVPERF instrument was analysed. To proceed with the analysis of the investigation hypotheses, the internal consistency and reliability of the mentioned tool adapted to the healthcare environment was tested.

5.4.1. Global Analysis and by Dimension of Perceived Service Quality

The review of the data presented in Table 10 permits to affirm which aspects the patients perceive with higher and lower quality concerning to the service provided.

The results revelled that the P6, P7, P11, and P21 had the lower median values, all with 5,50 points. Therefore, the analysed sample from the UMDR do not have a totally good perception of the healthcare professional’s capacity to provide correctly the service the first time it is requested, readiness to provide a service, determination to solve problems and capacity to have their best interests at heart.

Contrarily, the items with the highest quality perception are the P14 and P18, both with 7 points. This reflects that the patients analysed from the UMDR consider that the SCMAV healthcare professionals are excellent in providing an individualized attention and that their behavior inspires confidence.

In addition, through the analysis of Table 10, it is perceptible that, for the items P9 and P10, which have the same median values of 6,50 points, the interquartile range is 2 points and 1 point respectively. This allows perceiving that, for the item P9, there is a great variability in

the responses given by the patients considered in the study, which demonstrates that although their assessment of the quality of the service is very positive, the opinions regarding the quality of the UMDR to keep the records updated and without flaws are somewhat discordant.

Table 10 – Quality Perception by Item and Dimension

	Min	Max	M	IR
Tangibility Dimension	**4,50**	**7**	**6,00**	**1,13**
P1. This LTC Unit has up-to-date equipment.	4	7	6,00	1,50
P2. The physical facilities of this LTC Unit are visually appealing.	5	7	6,00	1,50
P3. The healthcare professionals of this LTC Unit have a neat appearance and are appropriately dressed for the functions they perform.	5	7	6,00	1,00
P4. The support equipment used by the healthcare professionals of this LTC Unit has a cautious and appealing aspect.	3	7	6,00	2,00
Reliability Dimension	**3,40**	**7**	**6,00**	**1,70**
P5. When this LTC Unit promises to do something at a certain moment, it does so.	3	7	6,00	2,75
P6. As a patient, when you have a problem, this LTC Unit demonstrates determination to solve it.	3	7	5,50	2,00
P7. The healthcare professionals of this LTC Unit provide the service correctly the first time it is requested.	2	7	5,50	2,50
P8. This LTC Unit provides its services at the time promised.	3	7	6,00	2,00
P9. This LTC Unit keeps your records updated and without flaws.	3	7	6,50	2,00
Responsiveness Dimension	**4**	**7**	**6,25**	**1,88**
P10. This LTC Unit informs you exactly when the service will be provided.	4	7	6,50	1,00
P11. The healthcare professionals of this LTC Unit provide you a prompt service.	2	7	5,50	2,00
P12. The healthcare professionals of this LTC Unit are always willing to help you.	3	7	6,00	2,00
P13. The healthcare professionals of this LTC Unit are always available to answer promptly to your questions.	4	7	6,00	2,00
Assurance Dimension	**4**	**7**	**6,13**	**1,19**
P14. The behaviour of the healthcare professionals inspires confidence.	4	7	7,00	1,00
P15. As a patient, you trust the service provided by the healthcare professionals of this LTC Unit.	5	7	6,00	1,00
P16. The healthcare professionals are always kind and polite.	2	7	6,50	1,75
P17. The healthcare professionals know how to answer your questions.	2	7	6,00	2,00
Empathy Dimension	**3,40**	**7**	**5,90**	**1,35**
P18. This LTC Unit gives you individual attention.	2	7	7,00	1,00
P19. This LTC Unit has an appropriate timetable for the different patients.	4	7	6,00	1,75
P20. The healthcare professionals of this LTC Unit provide a personalized service.	1	7	6,00	2,00
P21. This LTC Unit has your best interest at heart.	1	7	5,50	2,75
P22. The healthcare professionals of this LTC Unit understand your specific needs.	1	7	6,00	2,75
P23. Evaluation of the overall quality of service provided in this LTC Unit.	**3**	**7**	**5,00**	**1,75**

(Subtitle: M – Median; IR – Interquartile Range)

In the analysis by dimension, the Responsiveness Dimension reports the highest perception of quality, with 6,25 points, and the Empathy Dimension has the lowest quality perception. However, even with the worst perception of quality, it is important to highlight that this same dimension encompasses one of the items with the best quality perception. Empathy is linked to the SCMAV capability of providing an personalised service, but also an appropriate timetable for all the different patients. In addition, it is also linked to the way that the healthcare professionals show interest in both analysed patients and their specific needs.

By being the dimension with the worst perceived quality, it means that the patients analysed do not have a good perception of the healthcare professionals' capability to relate with them, whereby, there is scope to improve this relationship.

Lastly and regarding the overall perception of service quality (P23), it is possible to conclude that its result (5,00 points) is good, by being above the midpoint of the scale (4 points). However, this value is the lowest when compared to the median value of each service quality dimensions (Empathy had the lowest perceived quality with 5,90 points), so it is possible to understand that the overall evaluation of the service quality perceived by each patient may have included other aspects that are not covered in the items that constitute the SERVPERF instrument.

5.4.2. Internal Consistency of the SERVPERF scale

As mentioned in the Data Collection Instruments section, the wording of the SERVPERF items was adapted to the healthcare environment. Thus, it becomes necessary to assess the internal consistency and reliability of the adapted instrument. To do so, the Cronbach Alpha coefficient was used.

As stated by Marôco & Garcia-Marques (2006: 70), the internal consistency assesses the "*consistency with which a given set of measurement items estimates a particular construct or dimension latent*". The Cronbach Alpha coefficient varies between 0 and 1, and the closer to 1, "*the greater the homogeneity of the items and greater is the consistency of these items to measure the same dimension or theoretical construct*" (Marôco & Garcia-Marques, 2006: 73). The same author argues that the internal consistency of the instrument' scale results from the obtainment of the same results when the same scale is applied repetitively, which, in turn, leads to the reliability of the instrument. In this sense, the instrument is considered to have an adequate reliability when the index is, at least, 0,70 or 0,6, when applied in a social science scenario, as long as the results are cautiously interpreted (Marôco & Garcia-Marques, 2006).

Table 11 shows that the set of all dimensions and each individually, with the exception of Tangibility dimension, presents a Cronbach Alpha coefficient superior to 0,7, reflecting a strong reliability of the SERVPERF instrument. However, for the tangibility dimension, the coefficient is 0,661, which means that this dimension is not very expressive, but nonetheless very good. Anyway, the results from this dimension have to be carefully analysed.

The instrument used, based on SERVPERF, have good reliability (0,942). The Cronbach Alpha coefficient for the Tangibility dimension was only 0,66, nonetheless an accepted value in a social science scenario (Marôco & Garcia-Marques, 2006), as mentioned before.

Table 11 - Cronbach Alpha by dimension and overall dimensions

Dimensions	**Cronbach Alpha**
Tangibility (P1 to P4)	0,661
Reliability (P5 to P9)	0,893
Responsiveness (P10 to P13)	0,864
Assurance (P14 to P17)	0,859
Empathy (P18 to P22)	0,806
Total (P1 to P22)	0,942

5.5. Health-Related Quality of Life Analysis

A total of 16 patients interviewed have answered to all of the six questions that constitute the EQ-5D tool, in both phases of the data collection. The 2nd moment of data collection was held 30 days after the 1st one and its results are shown in Table 12.

Table 12 - Perception of the Health-Related Quality of Life

	1st Data Collection		**2nd Data Collection**	
	N	**%**	**N**	**%**
Mobility				
1. I have no problems in walking about	1	6	3	19
2. I have some problems in walking about	14	88	13	81
3. I am confined to bed	1	6	0	0
Self-Care				
1. I have no problems with self-care	3	19	6	38
2. I have some problems washing or dressing myself	10	63	7	44
3. I am unable to wash or dress myself	3	19	3	19
Usual Activities				
1. I have no problems with performing my usual activities	3	19	7	44
2. I have some problems with performing my usual activities	5	31	6	38
3. I am unable to perform my usual activities	8	50	3	19
Pain/Discomfort				
1. I have no pain or discomfort	7	44	3	19
2. I have moderate pain or discomfort	5	31	9	56
3. I have extreme pain or discomfort	4	25	4	25
Anxiety/Depression				
1. I am not anxious or depressed	6	38	8	50
2. I am moderately anxious or depressed	6	38	4	25
3. I am extremely anxious or depressed	4	25	4	25
Own Health State				
- ≤40	2	13	2	13
- Between 50 and 59	3	19	4	25
- Between 60 and 69	5	31	0	0
- Between 70 and 79	4	25	4	25
- ≥80	2	13	6	38

As shown in Table 12, in the first moment of data collection, the majority of the patients reported that had some problems in walking about (88%) and that had some problems to perform their self-care (63%). Besides that, 44% of the patients had no pain or discomfort, 50% were unable to perform their usual activities and 38% rate their own health state above 70 points. After 30 days of treatment in the UMDR, the number of patients who had no problems in walking about rose from 6% to 19%, while the number of patients who had no problems with self-care rose from 19% to 38%. Additionally, the percent of respondents who rate their own health state above 70 points rose to 63%. However, the frequency of patients who reported no pain or discomfort decreased from 44% to 19% after the 30 days treatment. In this sense, considering that the EQ-5D evaluates the HRQOL in the mentioned 5 items, it is possible to notice that, in general, with the 30 days treatment, the patients tend to demonstrate an improved perception of their HRQOL.

5.6. Analysis of Perceived Service Quality and HRQOL per Independent Variable

In this section, the formulated investigation hypotheses were tested by resorting to Hypotheses Testing. Firstly, it is necessary to verify simultaneously two requirements to implement the parametric hypotheses testing. Therefore, the Shapiro-Wilk test was performed to verify if the independent variables follow a normal distribution, since the sample is inferior to 50 people (Marôco, 2010). For a level of significance of 0,05, the variable under study was considered to follow a normal distribution, this is, when Sig. $> \alpha = 0{,}05$. To test for the homoscedasticity requirement, the Levene test was used for the same level of significance. After the application of normality and homoscedasticity tests to each independent variable, as detailed in the following subsections, the selection of the type of hypotheses tests is based on the fulfilment of these two requirements. For those variables that fulfil both criteria, the parametric t test was used. On the other hand, for the variables that fail one of the requirements, the Mann-Whitney non-parametric test was applied. For both cases, the selection of the tests to use is based on the fact that the independent variables under analysis are dichotomous.

The independent variables, accessed to analyse the service quality, were aggregated into two groups: personal characteristics and service characteristics, as detailed below.

5.6.1. Personal Characteristics

As mentioned before, the personal characteristics comprise the independent variables "Gender", "Age", "Education", "Residence", "Pathology", "Living Alone or with Family before institutionalization" and "Need for assistance from family members or healthcare professionals before Institutionalization". The independent variable "Residence" had demonstrated to be constant and, for this reason, it was not considered in the analysis.

Independent Variable "Gender"

The analysis of the Table A4.1 and A4.2 (Appendix 4) allowed to conclude that for the independent variable "Gender", only the assurance dimension did not fulfil both requirements, to which a non-parametric test was applied.

Regarding this variable, the intention was to verify if the analysed patients' gender influence their perception of service quality and the perception of their HRQOL. In this sense, the t test was used: H_0: $\mu_{Male} = \mu_{Female}$ versus H_1: $\mu_{Male} \neq \mu_{Female}$, being that H_0 is rejected when Sig. $\leq \alpha = 0,05$. Table 13 shows that Sig. $> \alpha = 0,05$ for all the dependent variables under study and, thus, the H_0 is not rejected. In this context, it can be affirmed that there are no significant differences within the independent variable "Gender".

Table 13 - Test t for the equality of means for the independent variable "Gender"

Gender		T-test for Equality of Means		
		t	df	Sig. (2-tailed)
Tangibility	Equal Variances Assumed	-0,791	14	0,442
Reliability		0,241	14	0,813
Responsiveness		0,274	14	0,788
Empathy		0,561	14	0,584
P23		0,025	14	0,980
Mean of the Dimensions' average		0,381	14	0,709
VAS differential		0,551	14	0,590
QALYs gained		1,064	14	0,305

For the assurance dimension, the Mann-Whitney non-parametric has tested H_0: $\mu_{Male} = \mu_{Female}$ versus H_1: $\mu_{Male} \neq \mu_{Female}$. Table 14 demonstrates that Sig. $> \alpha = 0,05$, whereby the H_0 is not rejected. Therefore, there is no evidence that the perception of the doctors' knowledge and competence to inspire trust and safety varies with gender.

Table 14 - Mann-Whitney test for equality of means for the independent variable "Gender"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Assurance	25,000	53,000	-0,704	0,481

It is then possible to conclude that the independent variable "Gender" does not influence the analysed patients' perception of service quality or their perception of HRQOL.

Independent Variable "Age"

In Table A4.3 and Table A4.4 (Appendix 4), the groups considered in the independent variable "Age", with exception for the assurance dimension, fulfilled both assumptions of the parametric tests' applicability.

To verify if the analysed patients' age influence their perception of service quality and the perception of their HRQOL, this variable was analysed with the t test, where H_0: $\mu_{64 \text{ years old or less}} = \mu_{65 \text{ years old or more}}$ versus H_1: $\mu_{64 \text{ years old or less}} \neq \mu_{65 \text{ years old or more.}}$ The results present in Table 15 demonstrate that there no significant differences for the independent variable "Age" in any of the dependent variables under analysis, since Sig. > $\alpha = 0,05$.

Table 15 - Test t for the equality of means for the independent variable "Age"

Age		T-test for Equality of Means		
		T	df	Sig. (2-tailed)
Tangibility	Equal Variances Assumed	-0,258	14	0,800
Reliability		0,835	14	0,418
Responsiveness		0,420	14	0,681
Empathy		-0,294	14	0,773
P23		-0,827	14	0,422
Mean of the Dimensions' average		0,185	14	0,856
VAS differential		1,791	14	0,095
QALYs gained		-0,215	14	0,833

The Mann-Whitney test, for the assurance dimension, has tested H_0: $\mu_{64 \text{ years old or less}} = \mu_{65 \text{ years old or more}}$ versus H_1: $\mu_{64 \text{ years old or less}} \neq \mu_{65 \text{ years old or more.}}$ Table 16 demonstrates that Sig. > $\alpha = 0,05$ and, thus, H_0 is not rejected. This shows that there is no evidence that the perception of the doctors' knowledge and competence to inspire trust and safety is different between people aged 64 or less and the people aged 65 or more.

Table 16 - Mann-Whitney test for equality of means for the independent variable "Age"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Assurance	23,500	101,500	-0,062	0,951

It is then possible to conclude that the age of the analysed patients does not influence their perception of service quality and the perception of their health-related quality of life.

Independent Variable "Education Level"

Table A4.5 and Table A4.6 (Appendix 4) show that only the assurance, responsiveness and empathy dimensions are tested with the non-parametric test, for the independent variable "Education Level".

This variable was examined to verify if it influenced the analysed patients' perception of service quality and the perception of their HRQOL. Therefore, the t test has tested H_0: $\mu_{1st\ Cycle\ of\ Basic\ Education\ (4th\ year\ of\ Schooling\ Completed)\ or\ less} = \mu_{2nd\ Cycle\ of\ Basic\ Education\ (6th\ year\ of\ Schooling)\ or\ more}$ versus H_1: $\mu_{1st\ Cycle\ of\ Basic\ Education\ (4th\ year\ of\ Schooling\ Completed)\ or\ less} \neq \mu_{2nd\ Cycle\ of\ Basic\ Education\ (6th\ year\ of\ Schooling)\ or\ more}$. All variables presented a Sig. > $\alpha = 0,05$ and, thus, the H_0 is not rejected (see Table 17). In this sense, it is possible to affirm that there no clear differences between the perception of patients with different educations levels.

Table 17 - Test t for the equality of means for the independent variable "Education Level"

Education Level		T-test for Equality of Means		
		t	df	Sig. (2-tailed)
Tangibility	Equal Variances Assumed	-0,180	14	0,860
Reliability		0,056	14	0,956
P23		-0,799	14	0,438
Mean of the Dimensions' average		-0,357	14	0,726
VAS differential		1,350	14	0,199
QALYs gained		-0,342	14	0,737

Considering the assurance, responsiveness and empathy dimensions, the Mann-Whitney has tested H_0: $\mu_{1st\ Cycle\ of\ Basic\ Education\ (4th\ year\ of\ Schooling\ Completed)\ or\ less} = \mu_{2nd\ Cycle\ of\ Basic\ Education\ (6th\ year\ of\ Schooling)\ or\ more}$ versus H_1: $\mu_{1st\ Cycle\ of\ Basic\ Education\ (4th\ year\ of\ Schooling\ Completed)\ or\ less} \neq \mu_{2nd\ Cycle\ of\ Basic\ Education\ (6th\ year\ of\ Schooling)\ or\ more}$. Table 18 indicates that the H_0 is not rejected. Thus, the patients' perception of the doctors' competence to inspire trust and safety, their ability to provide an individualized service and their willingness to help is not different for patients with different levels of education.

Table 18 - Mann-Whitney test for equality of means for the independent variable "Education Level"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Assurance	25,500	40,500	-0,232	0,817
Responsiveness	15,000	81,000	-1,432	0,152
Empathy	24,500	90,500	-0,341	0,733

It is then possible to conclude that the education level does not influence analysed patients' perception of service quality or their perception of HRQOL.

Independent Variable "Pathology"

By the analysis of Table A4.7 and Table A4.8 (Appendix 4), the variables assurance dimension and the QALYs gained did not fulfilled the conditions of the applicability of the parametric test for the independent variable "Pathology".

The independent variable "Pathology" was investigated to verify if the type of diagnosis influenced the analysed patients' perception of service quality and the perception of their HRQOL, by resorting to the parametric t test, where H_0: $\mu_{\text{AVC sequels or Femoral}} = \mu_{\text{Diabetes (Amputation/Sequels) or Other}}$ versus H_1: $\mu_{\text{AVC sequels or Femoral Fractures}} \neq \mu_{\text{Diabetes (Amputation/Sequels)}}$. Table 19 exhibits that for all dependent variables under analysis, the Sig. $>\alpha = 0,05$, where the H_0 was not rejected. Therefore, there is no statistical evidence to state that there are differences within this independent variable.

Table 19 - Test t for the equality of means for the independent variable "Pathology"

Pathology		T-test for Equality of Means		
		t	df	Sig. (2-tailed)
Tangibility	Equal Variances Assumed	-0,393	14	0,700
Reliability		-0,453	14	0,657
Responsiveness		-0,312	14	0,759
Empathy		-1,093	14	0,293
P23		-0,155	14	0,879
Mean of the Dimensions' average		-0,796	14	0,439
VAS differential		0,451	14	0,659

For the variables QALYs gained and assurance dimension, the Mann-Whitney was tested H_0: $\mu_{\text{AVC sequels or Femoral}} = \mu_{\text{Diabetes (Amputation/Sequels) or Other}}$ versus H_1: $\mu_{\text{AVC sequels or Femoral Fractures}} \neq \mu_{\text{Diabetes (Amputation/Sequels}}$. The results displayed in Table 20 show that the H_0 is not rejected. In this sense, there is no evidence that the analysed patients' perception of their health status improvements and of the doctors' knowledge and competence to inspire trust and safety is different according to the type of disease diagnosed.

Table 20 - Mann-Whitney test for equality of means for the independent variable "Pathology"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Assurance	26,500	81,500	-0,389	0,698
QALYs gained	27,000	82,000	-0,325	0,745

The results obtained show the variable "Pathology" does not influence the perception of service quality or the perception of HRQOL of the patients considered in this investigation.

Independent Variable "Living Alone or with Family before Institutionalization"

Table A4.9 and Table A4.10 (Appendix 4) show that only the variables QALYs gained and the tangibility and reliability dimensions have simultaneously verified the requirements for the applicability of the parametric tests.

The influence of the independent variable under analysis on the analysed patients' perception of service quality and on their HRQOL was examined by resorting to the parametric t test, where H_0: $\mu_{Yes} = \mu_{No}$ versus H_1: $\mu_{Yes} \neq \mu_{No}$. The results presented in Table 21 allow to conclude that the H_0 is not rejected once the Sig. > α = 0,05. Thus, the perception about the appearance of the facilities and medical equipment, the doctors' ability to perform the promised service dependably and accurately and the health status improvements is no different for the patients that live alone or with family.

Table 21 - Test t for the equality of means for the independent variable "Living Alone or with Family before Institutionalization"

Living Alone or with Family before Institutionalization		T-test for Equality of Means		
		t	df	Sig. (2-tailed)
Tangibility	Equal Variances Assumed	1,669	14	0,117
Reliability		0,578	14	0,573
QALYs gained		0,991	14	0,338

For the remaining variables, the Mann-Whitney test was used to test H_0: $\mu_{Yes} = \mu_{No}$ versus H_1: $\mu_{Yes} \neq \mu_{No}$. Table 22 displays that there no significant differences for the independent variable under analysis in any of the dependent variables analysed.

Table 22 - Mann-Whitney test for equality of means for the independent variable "Living Alone or with Family before Institutionalization"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Assurance	27,000	93,000	-0,058	0,954
Responsiveness	16,000	82,000	-1,317	0,188
Empathy	14,000	80,000	-1,535	0,125
P23	17,500	83,500	-1,177	0,239
Mean of the Dimensions' average	16,000	82,000	-1,304	0,192
VAS differential	22,000	37,000	-0,627	0,531

In this sense, it is possible to conclude that the independent variable "Living Alone or with Family before Institutionalization" does not influence the analysed patients' perception of service quality or their perception of HRQOL.

Independent Variable "Need for assistance from family members or healthcare professionals before institutionalization"

Table A4.11 and Table A4.12 (Appendix 4) exhibits that only the variables Mean of the Dimensions' average, VAS differential and QALYs gained have fulfilled the assumptions for the parametric tests' applicability, for the independent variable in study.

This independent variable was analysed to verify if it influenced the analysed patients' perception of service quality and the perception of their HRQOL. To do so, the parametric t test was used to test H_0: $\mu_{Yes} = \mu_{No}$ versus H_1: $\mu_{Yes} \neq \mu_{No}$. The variables under study presented a Sig. > α = 0,05, which implies that the H_0 is not rejected (see Table 23). In this particular case, it is possible to affirm that there no significant within the independent variable in study.

Table 23 - Test t for the equality of means for the independent variable "Need for assistance from family members or healthcare professionals before institutionalization"

Necessity of Assistance before Institutionalization		T-test for Equality of Means		
		t	df	Sig. (2-tailed)
Mean of the Dimensions' average	Equal Variances Assumed	1,035	14	0,318
VAS differential		-0,771	14	0,453
QALYs gained		0,480	14	0,639

For the remaining variables, the Mann-Whitney non-parametric test was used to test H_0: $\mu_{Yes} = \mu_{No}$ versus H_1: $\mu_{Yes} \neq \mu_{No}$. Table 24 shows that there no significant differences between the perception of patients that need assistance from those who do not need it.

Table 24 - Mann-Whitney test for equality of means for the independent variable "Need for assistance from family members or healthcare professionals before institutionalization"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Tangibility	15,000	25,000	-1,100	0,271
Reliability	14,500	24,500	-1,161	0,246
Assurance	17,500	27,500	-0,807	0,420
Responsiveness	15,500	25,500	-1,042	0,297
Empathy	15,500	25,500	-1,035	0,301
P23	11,000	21,000	-1,638	0,101

Table 23 and Table 24 revelled that this independent variable does not influence the perception of service quality and the HRQOL perception of the analysed patients.

The data presented in Table 13 to Table 24, and their respective analysis, suggests the rejection of the hypotheses regarding the personal characteristics of the analysed patients: H1.1, H2.1, H4.1, H5.1, and H6.1.

5.6.2. Service Characteristics

As mentioned before, service characteristics comprise the independent variables "Duration of Institutionalization", "Previous Institutionalization", "Time of Previous Institutionalization", "Duration of Previous Institutionalization" and "Waiting time for Institutionalization". From these, none of them showed variability in the responses obtained from the patients, except the variable "Duration of Institutionalization" and, for this reason, this variable was the only one that was analysed.

Independent Variable "Duration of Institutionalization"

Table A4.13 and Table A4.14 (Appendix 4) show that, for this independent variable, only the assurance dimension are tested with the non-parametric test.

The influence of this independent variable on the analysed patients' perception of service quality and of their HRQOL was examined by resorting to the parametric t test: H_0: $\mu_{\text{Until 3 weeks (inclusive)}} = \mu_{\text{From 3 weeks to 60 days}}$ versus H_1: $\mu_{\text{Until 3 weeks (inclusive)}} \neq \mu_{\text{From 3 weeks to 60 days}}$. Table 25 exhibits that the H_0 is not rejected (Sig. > α = 0,05) and, therefore, there is no clear evidence that the patients' perceptions differ according to the institutionalization period that each patient had by the time they were interviewed.

Table 25 - Test t for the equality of means for the independent variable "Duration of Institutionalization"

Duration of Institutionalization		T-test for Equality of Means		
		T	df	Sig. (2-tailed)
Tangibility	Equal Variances Assumed	-0,986	14	0,341
Reliability		-0,870	14	0,399
Responsiveness		-0,973	14	0,347
Empathy		-0,650	14	0,526
P23		-1,246	14	0,233
Mean of the Dimensions' average		-0,949	14	0,359
VAS differential		-0,779	14	0,449
QALYs gained		-1,366	14	0,193

For the assurance dimension, Mann-Whitney test was used to test H_0: $\mu_{\text{Until 3 weeks (inclusive)}} = \mu_{\text{From 3 weeks to 60 days}}$ versus H_1: $\mu_{\text{Until 3 weeks (inclusive)}} \neq \mu_{\text{From 3 weeks to 60 days}}$. Table 26 shows that the H_0 is not rejected. Thereby, there is no evidence that the perception of the doctors' knowledge and competence to inspire trust and safety is different between people with different periods of institutionalization.

Table 26 - Mann-Whitney test for equality of means for the independent variable "Duration of Institutionalization"

	U de Mann-Whitney	Wilcoxon W	Z	Sig. asymptotic (2-tailed)
Assurance	26,000	71,000	-0,596	0,551

Table 25 and Table 26 demonstrate that the variable “Duration of Institutionalization” does not influence analysed patients’ perception of service quality or their perception of HRQOL. This suggests the rejection of the hypotheses regarding the following service characteristics of the UMDR: H1.2, H2.2, H4.2, H5.2, H6.2.

5.7. Correlations between the Perceived Service Quality and the HRQOL

In order to test the Hypotheses 3, 7, 8, 9, 10 and 11, the correlation of the service quality dependent variables (P23 and Mean of the Dimensions’ average), of the HRQOL dependent variables (VAS differential and QALYs), and of both combined, was computed. It was necessary to test whether the variables fulfil the assumptions of normality and homogeneity of variances, as previously mentioned. Table A5.1 (Appendix 5) shows that all variables under analysis accomplish the normality requirement, since all Sig. > $\alpha = 0,05$.

By the analysis of the Graphics A5.1 to A5.6 (in Appendix 5), it is possible to notice that the distance between the points and the line is not similar in the Graphics A5.1 and A5.2, which indicates noticeable variations that leads to the rejection of the homoscedasticity assumption. For these two particular cases, the variable P23 combined with the Mean of the Dimensions’ average and with the VAS differential, the Spearman correlation was used. For the remaining cases, which fulfil this requirement, the Pearson's correlation was used.

Table 27 results from the implementation of the Spearman coefficient test to analyse the correlation of the P23 with the VAS differential and with the Mean of the Dimensions’ average.

Table 27 exhibits that there is a moderate non-significant and inverse correlation between the P23 and VAS differential variables, as the Spearman correlation coefficient is -0,377. Thus, there is a moderate association, although not significant, between the patient not having a good overall quality perception of the service and a good perception of their self-rated health improvements. In this sense, this result leads to the non-rejection of H8.

Table 27 - Spearman Correlations

Spearman Correlation		P23	VAS differential	Mean of the Dimensions' average
P23	Correlation Coefficient	1,000	-0,377	0,685**
	Sig. (2-tailed)		0,150	0,003
	N	16	16	16
VAS differential	Correlation Coefficient	-0,377	1,000	–
	Sig. (2-tailed)	0,150		–
	N	16	16	–
Mean of the Dimensions' average	Correlation Coefficient	0,685**	–	1,000
	Sig. (2-tailed)	0,003	–	
	N	16	–	16

(Subtitle: **: the correlation is significant at the 0.01 level (2-tailed); " – ": the correlation was not computed.)

Once the Spearman correlation coefficient is 0,685, for a level of significance of 0,01, there is a large strength of association between the Mean of the Dimensions' average and the P23. It is then possible to state that the global perception of service quality resulting from the aggregation of the five dimensions is associated to the overall perception of service quality, which leads to the non-rejection of the H3.

In Table 28, the Pearson coefficient test was used to analyse the following associations: 1) Mean of the Dimensions' average with VAS differential; 2) P23 with the QALYs gained; 3) Mean of the Dimensions' average with the QALYs gained; and 4) VAS differential with the QALYs gained.

For a level of significance of 0,05, there is statistical evidence to state that there is a small non-significant and direct correlation between the VAS differential and QALYs gained variables, once the Pearson correlation coefficient is 0,231. Thus, there is a small non-significant association between the patient' health status improvements and the perception of the improvements of his self-rated health, which results in the non-rejection of the H7.

In addition, there is no association between the Mean of the Dimensions' average and the VAS differential, due to the Pearson correlation coefficient of 0,08. Thus, H9 is rejected.

Concerning the correlation between the P23 and the QALYs gained, the Pearson coefficient of 0,109 tells that there is a small and direct strength of association, although not significant (Sig. > 0,05), between both variables. In this way, there is an association between the patients' overall perception of service quality and their health status improvements that, in turn, leads to the non-rejection of H10, however, with limitations once the Pearson coefficient is low and non-significant.

Table 28 - Pearson Correlations

Pearson Correlation		P23	VAS differential	Mean of the Dimensions' average	QALYs gained
P23	Pearson Correlation	1,000	–	–	0,109
	Sig. (2-tailed)		–	–	0,687
	N	16	–	–	16
VAS differential	Pearson Correlation	–	1,000	-0,080	0,231
	Sig. (2-tailed)	–		0,769	0,390
	N	–	16	16	16
Mean of the Dimensions' average	Pearson Correlation	–	-0,080	1,000	-0,006
	Sig. (2-tailed)	–	0,769		0,983
	N	–	16	16	16
QALYs gained	Pearson Correlation	0,109	0,231	-0,006	1,000
	Sig. (2-tailed)	0,687	0,390	0,983	
	N	16	16	16	16

(Subtitle: " – ": the correlation was not computed.)

Lastly, there is no association between the Mean of the Dimensions' average and the QALYs gained, once the coefficient is lower than 0,1. In this sense, the global perception of service quality resulting from the aggregation of the five dimensions is not associated with health status improvements of the UMDR patient, which rejects H11.

5.8. Discussion

By analysing the results obtained, several issues can be discussed. Therefore, the discussion section is divided in three sub-sections: 1) Perceived Service Quality, 2) Health-Related Quality of Life and 3) The Association between the Perceived Service Quality and the Health-Related Quality of Life.

5.8.1. Perceived Service Quality

Regarding the UMDR service quality, the items with the lowest perception of quality refer to the healthcare professional's capacity to provide correctly the service the first time it is requested, determination to solve problems, capacity to have their best interests at heart, but mainly their readiness to provide a service. Indeed, during the interviews, several patients have complained about the time they have to wait before being assisted after requesting for a specific service. Although some of them showed to be comprehensive about the amount of work of the healthcare professionals and their readiness to provide the services, this was still the main reason for the patients' complaints. In this sense, the service is not delivered promptly probably due to the lack of staff to provide the service or due to the high level of dependency of some patients and recurrence of their requests for support.

From the five dimensions of perceived service quality studied, the Responsiveness dimension reports the highest level of perceived quality. Similar to the present investigation, K.P.M & Srinivasulu (2014) and Joonas & Wang (2012) have also concluded that this dimension is considered to have the highest values in terms of the service quality perception, while the authors (Dean (1999), Le & Fitzgerald (2014) and Qin & Prybutok (2012)) concluded that other dimensions were better perceived. In this sense, this proves that different healthcare services lead to different perceptions of the five dimensions that assess service quality.

As mentioned before, although the overall perception of service quality in the UMDR is good, 5 points out of 7, this value is the lowest when compared to the median value of each of the dimensions of service quality. On the other hand, there is a correlation of 0,685 between the variables P23 and Mean of the Dimensions' average, which proves that there is a large strength of association, however it is still far from 1. The inpatient unit, as a more specific service from the healthcare area, might englobe more aspects that can influence the quality of the service delivered and, in this sense, the SERVPERF basic framework is not enough to measure it. Thus, the overall evaluation of the service quality perceived by each UMDR patient may have included additional aspects that are not covered in this tool, as Dabholkar *et al.* (1996) have also found. Among the possible aspects, patients have mainly complained, in both data collection moments, about the meals, which can be an issue considered relevant for them but SERVPERF does not mention.

5.8.2. Health-Related Quality of Life

The sample characterization allowed to verify that the type of diagnosis that had the highest percent of responses is "Femoral Fractures", with 37,5%. As observed among the interviewed patients of the UMDR, the ones with a femoral fracture had some problems on walking since they needed the help of a cane or walker. After the 30 days treatment, these patients were able to walk without any kind of help, which was translated into the improved patient mobility, as the results have shown. The considerable percent of patients with this pathology might have influenced the overall improvement results.

The EQ-5D analysis showed, by comparing the results obtained from the first and second collection moments, that with 30 days treatment the patients tended to increase their mobility, but also their capability of performing their usual activities and self-care. In this sense, patients have shown improvements at the physical level, except for the item Pain and

Discomfort, which has risen from to 31% to 56%. Once there was an increase in the number of people with pain or discomfort, this worsening might have resulted from the UMDR treatment that the patients receive, such as the physiotherapy. On the other hand, there were no substantial changes on the level of anxiety and depression, since the patients showed to be equally depressed over time, due to being away from home and from their relatives, and to their physical conditions.

Regarding the EQ-5D VAS analysis, which assesses an overall improvement, both physically and psychologically, the outcomes proved that after the 30 days treatment there were improvements, as there was an increase of twenty-five percentage points in the number of patients who have self-rated their health above 80 points. The comparison between the data collected from the EQ-5D index scores and the EQ-5D VAS allows verifying that the patients who present health status improvements feel good about themselves.

However, the correlation between these two constructs is small, due to the Pearson correlation coefficient of 0,231. So, according to Suhonen *et al.* (2008), the small correlation between these two variables can derive from an inconsistency in the patients' responses, since they might not be able to relate correctly their health status improvements and the improvements related to their self-rated health. On the other hand, this inconsistency might also derive from the fact that the EQ-5D index score and the EQ-5D VAS end up measuring different aspects - the EQ-5D VAS may be reflecting additional aspects that are not being evaluated in the EQ-5D index score, such as the patient' psychological state that can be interfered by being away from home and family members. However, it is important to enhance that these results may be conditioned by the dimension of the analyzed sample.

Cancer (Lidgren *et al*., 2007), diabetes (Solli *et al*., 2010), chronic illness (Suhonen *et al*., 2008) or a low physical and psychological health status (Flynn *et al*., 2011) tends to have a negatively impact on the perception that patients have about their health and quality of life (Flynn *et al*., 2011; Bewick *et al*., 2017), which leads to a lower perception of HRQOL. In the present investigation, the patients who were institutionalized in the UMDR due these clinical situations, presented a lower perception of HRQOL, compared to the assessed perception of HRQOL after the 30 days treatment. This improvement is driven by the UMDR services, which provide a set of health care and social support to its patients, by promoting their autonomy and by improving their functionality (SCMAV, 2018). In this sense, as Flynn *et al.* (2011) defends, the patients' quality of life is influenced by a low state of physical and

psychological health, but also by a disability or limited long-term illness, as verified in the first data collection from the current study. However, in the present investigation, it is possible to notice that, with the 30 days treatment, the patients tend to demonstrate, in general, an improved perception of their HRQOL.

5.8.3. The Association between the Perceived Service Quality and the Health-Related Quality of Life

The association between P23 and VAS differential showed to be moderate non-significant and inverse, meaning that not having a good overall quality perception of the service is somewhat linked to the patient good perception of his self-rated health. In this sense, it can be noticed that the patients who experience a wider improvement in their self-rated health have a not so good perception of the service quality. It might be possible that, due to the fact that patients feel better, they are more predisposed to make a mental judgment that, consequently, leads to a more demanding evaluation of the service quality.

The correlation between the variables QALYs gained and P23 showed to be a small non-significant correlation. Thus, it can be alleged that the patients' overall perception of service quality is somewhat associated with their health status improvements.

However, it is important to highlight that the low expressiveness, or even its existence, in the investigated associations may be related to the sample size analyzed.

5.9. Conclusions

In this chapter, the UMDR perceived service quality of SCMAV and its patients' HRQOL was assessed based on 16 validated surveys.

The sample is constituted mainly for male patients (56,3%), patients aged 65 years old or more (75,0%) and patients with the 1st Cycle of Basic Education (4th year of Schooling) (56,3%). Among the patients, the most common pathology is Femoral Fractures, with 37,5% of the total answers. 68,8% of the patients lived with their family before being institutionalized and 75,0% needed assistance before being institutionalized.

According to the analysed patients' perceptions the overall perception of service quality delivered in the SCMAV is above the middle point of the considered scale. The dimension with the highest quality perceived was Responsiveness, while the items P14 (the behaviour of the healthcare professionals inspires confidence) and P18 (this LTC Unit gives you individual

attention) were the best classified by the patients. On the other hand, the dimension with the lowest perception of quality was Empathy, which shows that the contact that healthcare professionals have with the analysed patients is not recognized as having good quality.

The analysis of the HRQOL allowed perceiving that the 30 days treatment improved the capability of the analysed patients to walk, to take care of themselves, to perform their usual activities and to feel less anxious/depressed, while their pain/discomfort have increased. However, the majority of the analysed patients rate their own health state above 70 points. In this sense, with the 30 days treatment, it is possible to notice that, in general, the patients tend to demonstrate an improved perception of their HRQOL.

The investigation hypotheses were tested resorting to the hypotheses testing and to correlations. Through the hypotheses testing, results showed that none of the personal and service characteristics influence the perception of the UMDR service quality and the perceived HRQOL, which led to the rejection of H1, H2, H4, H5 and H6.

By using the correlations testing, 6 pairs of variables were analysed. Firstly, the global perception of service quality resulting from the aggregation of the five dimensions and the overall perception of service quality showed to have a large strength of association, which led to the non-rejection of the H3. Secondly, a small non-significant association was verified between the improved self-rated health of the analysed patients and the health status improvements after receiving the LTC, which shows that these patients who present health status improvements feel good about themselves. Thus, the H7 was not rejected. Thirdly, regarding the association between the service quality and the patients' HRQOL, the remaining 4 pairs of variables were correlated, being that its main results are shown in Table 29.

Table 29 - Correlations between the variables under analysis

Service Quality Variables	HRQOL Variables	
	VAS Differential	QALYs gained
P23	Moderate non-significant correlation	Small non-significant correlation
Mean of the Dimensions' average	No correlation	No correlation

In this sense, results proved that only the overall perception of service quality is associated with the improvements in the self-rated health and with the health status improvements, after receiving the LTC, of the analysed patients. Therefore, H8 and H10 were not rejected, while the H9 and H11 were rejected. Summing up, the investigation hypotheses

rejected were: H1, H2, H4, H5, H6, H9 and H11, while the non-rejected hypotheses were: H3, H7, H8 and H10.

After the analysis of the results, several issues were discussed. The item that was worst ranked in terms of quality was the healthcare professionals' readiness to provide a service, which agreed with the main complaints of the patients. On the other hand, in agreement with K.P.M & Srinivasulu (2014) and Joonas & Wang (2012) researches, the Responsiveness dimension have reported the highest level of perceived quality. Still related to the perceived service quality analysis, it was found that additional aspects, besides the ones usually measured in the service quality assessment, may have been considered in the overall evaluation of the service quality. An example might be food, since patients have mainly complained about this particular aspect.

The pain/discomfort non-improvements might be related to the treatment that patients receive in the physiotherapy. On the other hand, the anxiety/depression non-improvements might be linked to the patients' tendency to be equally depressed over time, due to being away from home and from their relatives, but also due to their physical conditions.

Concerning the EQ-5D VAS analysis, which assesses the physical and psychological overall improvements, the 30 days treatment allowed to perceive improvements in the patient's self-rated health. The association between the patients' health status improvements and the perception of their improved self-rated health proved to be small, probably derived from the fact that these tools measure different aspects or from an inconsistency in the patients' responses to relate correctly their health status improvements and their self-rated health. Even so, in the present investigation, the 30 days treatment have demonstrated to improve, in general, the patients' HRQOL.

To finalize, it has also discussed that there is an improvement in the patients' quality of life, which results in a positive assessment of the service received. On the other hand, it was also debated that the people who feel better are not the ones who have a better perception of the service quality.

6. Conclusion

6.1. Introduction

In this chapter, the main conclusions obtained from this investigation are summarized, in order to respond to the formulated research questions and assess the fulfilment of the specific objectives. From the analysis of the obtained outcomes, recommendations to the service managers will are presented with the intention to improve the perceived quality of the service delivered in the UMDR and the patients' HRQOL. Thereafter, the limitations of the present investigation are listed and indications for future studies are provided.

6.2. Answers to the Research Questions

6.2.1. Question 1

The first research question is "How does the perceived quality of service delivery influence the health-related quality of life of the patients in long-term care units?". This research questions involved testing hypotheses H1 to H11.

Starting by analysing each specific objective, firstly and concerning to the perceived service quality analysis, the results have showed that the patients' overall perception quality (P23) of the UMDR service is positive, as also is the perceived service quality in all service quality dimensions. The items with the highest perceived quality are related with the confidence that the behavior of healthcare professionals inspires (P14) and with the individualized attention provided in the UMDR (P18). Contrarily, the determination to solve problems (P6), the correct provision of the service in the first request (P7), the provision of a prompt service (P11) and having the patient best interest at heart (P21) are the items that have the lowest quality from the patients' point of view. It is, therefore, expected that the first specific objective of the present investigation has been achieved.

However, it is important to note that although the perceived quality of the UMDR service was considered good, this study has also found that the overall evaluation of the service quality perceived by each patient may have included other aspects that are not covered in the five dimensions of service quality. These findings agree with the Dabholkar *et al.* (1996).

The HRQOL analysis allowed perceiving that the 30 days institutionalization have improved the capability of the analysed patients to walk, to take care of themselves, to perform their usual activities and to feel less anxious/depressed, while their pain/discomfort have increased. However, the majority of the analysed patients rate their own health state

above 70 points. The verified small and non-significant association, between the patients' health status improvements and the perception of their improvements in the self-rated health, have demonstrated that patients who have improved health status tend to feel well. In this sense and with the 30 days treatment, it is possible to notice that, in general, the patients tend to demonstrate an improved perception of their HRQOL. Thus, it is expected that the second specific objective of the present investigation has been achieved.

Lastly, the strength of association between the perceived service quality in the UMDR and the improvement of the HRQOL of the patient was analysed to verify if there is an improvement in the health state after the service is provided. After the analysis of the correlations, its outcomes proved that there is no association of the global perception of service quality resulting from the aggregation of the five dimensions with the improvements in the self-rated health of the analysed patients and with the health status improvements of the analysed patients.

Nonetheless, a moderate non-significant and inverse association was detected between the patient's overall perception of service quality and the improvements in the self-rated health of the analysed patients. In this sense, those who experience a wider improvement in their self-rated health have a not so good perception of the service quality. This may be a consequence of them becoming more conscious to do a better mental judgment and, thus, become more demanding with the quality of service received.

In addition, a small and direct strength of association, but not significant, was detected between the overall perception of service quality and the health status improvements after receiving the LTC. Therefore, it is understandable that the improvements in the patients' quality of life are somewhat associated with a positive assessment of the service received. It is, therefore, expected that the third specific objective of the present investigation has been achieved and, thus, it is considered that the first research question has been answered.

However, it is important to highlight that the low expressiveness in the investigated associations may be related to the sample size analyzed.

6.2.2. Question 2

The second research question is “Which measures should be followed to improve the perceived quality of service delivered and the perceived health-related quality of life in long-term care units?”.

In order to provide managerial recommendations to improve the perceived quality of service delivered and the perceived HRQOL, the analysis from the results obtained and from the conclusions presented can lead to the indication of some measures to be implemented by the SCMAV’s service managers.

To provide recommendations to improve the service delivered, first, it is important to mention that the following recommendations look upon to the fact that the service is good, since all items are evaluated above 5,5 points, however, these recommendations intend to improve the perceived quality of customers in relation to the service received and how this can fulfil the customers’ needs.

It is observed that the Empathy and Reliability dimensions present the lowest values of the perceived service quality, since the latter has the largest interquartile range. In this sense, it is advisable for the service managers to focus on the provision of a personalized service, but also on how the healthcare professionals show interest in both patients and their specific needs. In addition, it should also focus on how health professionals demonstrate determination in solving the patients' problems and by delivering the service correctly at their first request and at the promised time, since several patients have complained about these aspects as mentioned. In this way and to improve these aspects, it is suggested to the SCMAV to provide additional training to the SCMAV healthcare professionals or to hire more qualified healthcare professionals.

As Donabedian (1986) and Lam (1997) defended, the proper staff number and type, with the right qualifications, influences the service quality assessment. Since the SCMAV managers have mentioned that the number of the current staff in the UMDR is below from what is stipulated by law, the recruitment of more staff shows to be fundamental for the patients to have a better evaluation of the service quality in this unit.

As mentioned in the Discussion section, the overall evaluation of the service quality perceived by each patient may have included additional aspects that are not covered in the items that constitute the SERVPERF instrument. Among those possible aspects, patients have mainly complained about the food served in the UMDR. Once this aspect should be

transversal to all the SCMAV units, this institution should, therefore, seek to understand the patients' opinions regarding this aspect so that it can be improved. Besides that, the SCMAV should investigate which other aspects may have affected the patients' perceptions so that, in the end, the patients can have a better perception of the service.

Similar to the analysis of the service quality, there is always scope to improve the patients' perception of their HRQOL, since patients do not have the best possible HRQOL. In this sense, several investigations, mainly in nursing homes, have permitted to understand that the practice of physical exercises and entertainment activities leads to an improvement in the quality of life of the institutionalized patients (Fleuri *et al.*, 2013; Guimarães *et al*., 2016; Carvalho, 2016; Sousa, 2013). Generally, these practices influence numerous of the patients' ADLs (Carvalho, 2016), by leading to the patients' physical and psychological well-being (Fleuri *et al.*, 2013).

At the physical level, this type of activities tends to stimulate the patients' capacity to acquire greater motor capacity, but also a greater autonomy to perform their ADLs (Guimarães *et al*., 2016). At the psychological level, the social interactions between different patients, during these activities, allow to maintain a mental health and to reduce isolation, since they do not feel alone (Fleuri *et al.*, 2013), which, in turn, ends up contradicting the feeling that they had abandoned their home and respective families (Carvalho, 2016). Thus, the patients tend to feel less anxious or depressed, since these activities allow to share experiences and to express their feelings (Sousa, 2013).

It is, therefore, perceptible that the promotion of this type of activities, which considers the physical and psychological aspects of the patient, thrives the perception of their HRQOL (Costa *et al*., 2016), in all items evaluated by the EQ- 5D instrument. Although there is, currently, a socio-cultural animator that develops activities in the SCMAV facilities, from what was possible to observe, there is the possibility to further stimulate the activities developed, so that all patients can participate, by always considering the characteristics of the patients who participate, but also their potential and possible limitations (Sousa, 2013). Therefore, with a greater investment in this type of activities, it is comprehensible that there will be several improvements, in terms of all items of the EQ-5D and, consequently, of the patient' HRQOL.

Thereby, it is considered that the fourth specific objective of the present investigation has been achieved and that the second research question was answered. However, it is important

to mention that all the provided recommendations are limited to the sample collected, nevertheless, it is applicable to this sample, but also to the study population, since it has been found that the sample and the study population have an identical profile.

6.3. Contributions

The major contribution of the present investigation is that it contributes to filling the existing gap in the literature in the long-term care area. At a practical level, this investigation allows the SCMAV institution and respective service managers to have a specific set of recommendations to be implemented, with a view to improving the patients' perception concerning to the UMDR service quality, but also to improve their HRQOL.

On the other hand, other institutions, which fall within the scope of the institution of the present investigation, may resort to some of the managerial recommendations provided to the SCMAV, in order to meet the same improvement objectives.

6.4. Limitations

The present investigation was conducted through a case study in the Medium Duration Rehabilitation Unit of *Santa Casa da Misericordia* in *Alhos Vedros,* wherefore the limited number of patients institutionalized and their health conditions made the obtained results limited by the sample size and lack of randomness. However, all the patients available were interviewed. In addition, the proximity of the study population profile and the sample profile make these results valid within the sample and the study population, as explained previously.

The Cronbach alpha coefficient has shown to be inferior to 0,7 for the tangibility dimension in the SERVPERF instrument and, in this sense, the conclusions drawn from this dimension must have some reservations. Nonetheless, it is not much lower than stipulated, since in a social science scenario, coefficients of 0,6 are used (Marôco & Garcia-Marques, 2006).

Concerning to the item Usual Activities, it is important to mention that in the first moment of data collection, this item focused on the patients' ability to perform their usual activities before being institutionalized in the UMDR, such as cooking or performing the housework. In the second moment of data collection, this item was evaluated according to the usual activities that the patient performed in the UMDR facilities, such as reading the newspaper, participating in the activities developed in the SCMAV, etc. This different applied

methodology derives from the fact that the activities made by the patients in their homes, cannot be performed by them when institutionalized in the SCMAV. In this sense, this may result in a limitation of the quantification of the patients' improvements, since the patients are in a physically different space.

6.5. Leads for Future Investigations

Once all the obtained results, conclusions and recommendations are limited to the sample size, one of the recommendations for future research lies in the possibility of expanding the sample to be collected, by seeking to collect data for longer periods of time. In order to have a better perception of the service provided by SCMAV and its performance, this investigation can also be conducted for the remaining units that constitute the LTC in this particular institution. On the other hand, the UMDR can also be assessed in other institutions.

Besides that, since the questionnaires were only implemented to the patients, it would be interesting to also perceive the perceptions of UMDR healthcare professionals regarding the quality of the service provided by them, in order to assess possible discrepancies in relation to the service quality through the patient perspective and the healthcare professionals' perspective. Thus, from these discrepancies, conclusions could be drawn that would improve the service provided in this SCMAV unit. For this purpose, a questionnaire adapted to healthcare professionals would have to be developed. In addition, it would also be interesting to perceive the opinions that the relatives of the UMDR patients have concerning to the quality of the service delivered, as well as the perception they have regarding the HRQOL of their institutionalized relatives.

Another recommendation for future research consists in the verification of other aspects that can influence the quality perception of the service provided to a patient who is in an inpatient unit. Based on the patient feedback, received during the interviews, the aspects related to the food may be a starting point for this verification.

To conclude, it might also be interesting to investigate in a broader way the patient's perception of their well-being and not only the perception of his HRQOL, by using the ICECAP instrument.

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8. Appendix

8.1. Appendix 1 – Interview Script to the Hospital Managers of SCMAV

ISCTE Business School
Instituto Universitário de Lisboa

O presente Guião tem em vista esclarecer algumas informações, com as Gestoras Hospitalares da Santa Casa da Misericordia de Alhos Vedros, de forma a complementar os questionários a serem aplicados, à posteriori, aos pacientes da Unidade de Média Duração e Reabilitação. A seguinte ordem de trabalhos apresenta os tópicos que serão discutidos em reunião:

1. Principais Patologias dos pacientes que são institucionalizados na Unidade de Média Duração e Reabilitação;
2. Tempo de Espera para Institucionalização na Santa Casa da Misericordia de Alhos Vedros;
3. Situações de Institucionalizações Transatas

5 de Abril de 2018

8.2. Appendix 2 - Questionnaire applied in the First Moment of Data Collection

Questionário de Perceção da Qualidade de Vida Relacionada com Saúde

Caro Utente,

Este estudo tem como objetivo avaliar a sua perceção relativamente ao seu estado de saúde assim que entra na Unidade de Média Duração e Reabilitação da Santa Casa da Misericordia Alhos Vedros. Os dados recolhidos serão posteriormente utilizados num estudo académico com vista à realização de uma dissertação de Mestrado em Gestão de Serviços e da Tecnologia do ISCTE-IUL. Todas as suas respostas são anónimas e confidenciais. Agradeço a sua colaboração, Joana da Silva Freire.

Coloque, por favor, uma cruz no círculo correspondente à sua resposta.

Grupo I – Caracterização do Paciente/Utente

Género:

Masculino ○ Feminino ○

Idade:

De 18 a 24 anos ○ De 25 a 34 anos ○ De 35 a 44 anos ○

De 45 a 54 anos ○ De 55 a 64 anos ○ 65 anos ou mais ○

Grau de Escolaridade (grau completo):

Não sabe ler nem escrever ○

1º Ciclo do Ensino Básico (4ºano de Escolaridade) ○

2º Ciclo do Ensino Básico (6ºano de Escolaridade) ○

3º Ciclo do Ensino Básico (9ºano de Escolaridade) ○

Ensino Secundário (12ºano de Escolaridade) ○

Bacharelato ou Licenciatura ○

Mestrado ou Superior ○

Vive:

Sozinho ○ Acompanhado ○

Necessita de assistência de familiares ou profissionais de saúde?

Sim ○ Não ○

Onde mora atualmente?

Norte	◯	Lisboa e Vale do Tejo	◯
Centro	◯	Algarve	◯
Região Autónoma da Madeira	◯	Alentejo	◯
Região Autónoma dos Açores	◯		

De que patologia padece?

Sequelas de AVC ◯

Fraturas do Colo do Fémur ◯

Diabetes ◯

Outra. Qual? _____

Grupo II – **Caracterização da Estada no Processo**

Há quanto tempo é que está internado nesta Unidade de Saúde?

Menos de 1 semana ◯ De 1 a 2 semanas ◯ De 2 a 3 semanas ◯

De 3 semanas a 30 dias ◯ De 30 a 45 dias ◯ De 45 a 60 dias ◯

Já esteve internado antes? Sim ◯ Não ◯

Há quanto tempo?

No último mês ◯ Entre 1 e 3 meses ◯

Entre 3 e 6 meses ◯ Há mais de 6 meses ◯

Qual foi a duração?

15 dias ◯ 30 dias ◯ 45 dias ◯

60 dias ◯ 75 dias ◯ 90 dias ◯

Quanto tempo esperou até ter vaga na nesta Unidade de Saúde?

Menos de 1 semana ◯ Entre 2 semanas e 1 mês ◯ Entre 4 a 6 meses ◯

Entre 1 e 2 semanas ◯ Entre 1 e 3 meses ◯ Mais de 6 meses ◯

Grupo III – Caracterização do Estado de Saúde do Paciente/Utente

Assinale com uma cruz, num círculo de cada um dos seguintes grupos, indicando qual das afirmações melhor descreve o seu estado de saúde de hoje:

Mobilidade

Não tenho problemas em andar ◯

Tenho alguns problemas em andar ◯

Tenho de estar na cama ◯

Cuidados pessoais

Não tenho problemas em cuidar de mim ◯

Tenho alguns problemas a lavar-me ou vestir-me ◯

Não sou capaz de me lavar e vestir sozinho/a ◯

Atividades Habituais (Trabalho, Estudo, Lidas da Casa, Família ou Lazer)

Não tenho problemas em desempenhar as minhas atividades habituais ◯

Tenho alguns problemas em desempenhar as minhas atividades habituais ◯

Não sou capaz de desempenhar as minhas atividades habituais ◯

Dor/Mal estar

Não tenho dores ou mal estar ◯

Tenho dores ou mal estar moderados ◯

Tenho dores ou mal estar extremos ◯

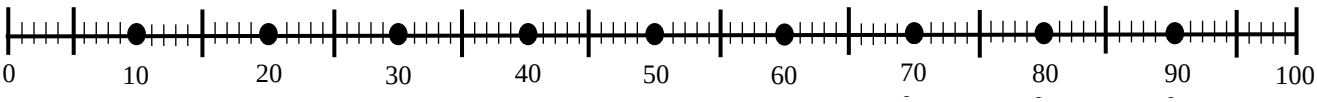
Ansiedade/Depressão

Não estou ansioso/a ou deprimido/a ◯

Estou moderadamente ansioso/a ou deprimido/a ◯

Estou extremamente ansioso/a ou deprimido/a ◯

De forma a ajudar o paciente a avaliar o seu estado de saúde, foi desenhada a seguinte escala, onde 100 representa o melhor estado de saúde possível e 0 representa o pior estado de saúde possível. Gostaria que indicasse, nesta escala, a sua opinião relativamente ao seu estado de saúde hoje. Para tal, desenhe uma linha desde a caixa preta abaixo até ao valor da escala que indica o quão bem ou mal está a sua saúde hoje.



Pior estado de saúde possível

Melhor estado de saúde possível

O seu estado de saúde hoje

8.3. Appendix 3 – Questionnaire applied in the Second Moment of Data Collection

Questionário de Perceção da Qualidade do Serviço Prestado e da Qualidade de Vida Relacionada com Saúde

Caro Utente,

Este estudo tem como objetivo avaliar a sua perceção relativamente ao seu estado de saúde, bem como do serviço prestado na Unidade de Média Duração e Reabilitação da Santa Casa da Misericordia de Alhos Vedros. Os dados recolhidos serão posteriormente utilizados num estudo académico com vista à realização de uma dissertação de Mestrado em Gestão de Serviços e da Tecnologia do ISCTE-IUL. Todas as suas respostas são anónimas e confidenciais. Agradeço a sua colaboração, Joana da Silva Freire.

Coloque, por favor, uma cruz no círculo correspondente à sua resposta.

Grupo I – Caracterização do Estado de Saúde do Paciente/Utente

Assinale com uma cruz, num círculo de cada um dos seguintes grupos, indicando qual das afirmações melhor descreve o seu estado de saúde de hoje:

Mobilidade

Não tenho problemas em andar ○

Tenho alguns problemas em andar ○

Tenho de estar na cama ○

Cuidados pessoais

Não tenho problemas em cuidar de mim ○

Tenho alguns problemas a lavar-me ou vestir-me ○

Não sou capaz de me lavar e vestir sozinho/a ○

Atividades Habituais (Trabalho, Estudo, Lidas da Casa, Família ou Lazer)

Não tenho problemas em desempenhar as minhas atividades habituais ○

Tenho alguns problemas em desempenhar as minhas atividades habituais ○

Não sou capaz de desempenhar as minhas atividades habituais ○

Dor/Mal estar

Não tenho dores ou mal estar ○

Tenho dores ou mal estar moderados ○

Tenho dores ou mal estar extremos ○

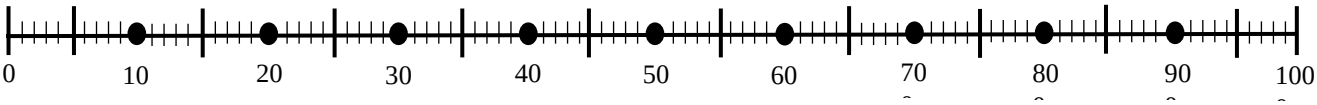
Ansiedade/Depressão

Não estou ansioso/a ou deprimido/a ○

Estou moderadamente ansioso/a ou deprimido/a ○

Estou extremamente ansioso/a ou deprimido/a ○

De forma a ajudar o paciente a avaliar o seu estado de saúde, foi desenhada a seguinte escala, onde 100 representa o melhor estado de saúde possível e 0 representa o pior estado de saúde possível. Gostaria que indicasse, nesta escala, a sua opinião relativamente ao seu estado de saúde hoje. Para tal, desenhe uma linha desde a caixa preta abaixo até ao valor da escala que indica o quão bem ou mal está a sua saúde hoje.



Pior estado de saúde possível

Melhor estado de saúde possível

O seu estado de saúde hoje

Grupo II – **Perceção da Qualidade do Serviço**

Assinale com uma cruz (x) o número que melhor descreve o seu grau de concordância com cada um dos itens apresentados, segundo a escala que vai de 1 – "Discordo Totalmente" a 7 – "Concordo Totalmente". **Não existem respostas erradas.**

Items		Escala						
		Discordo Totalmente						Concordo Totalmente
P.1	Os equipamentos médicos desta Unidade da Santa Casa da Misericordia têm aparência moderna.	1	2	3	4	5	6	7
P.2	As instalações desta Unidade da Santa Casa da Misericordia são visualmente atrativas.	1	2	3	4	5	6	7
P.3	Os profissionais de saúde (médicos, enfermeiros, psicólogos, fisioterapeutas, auxilares, etc) desta Unidade da Santa Casa da Misericordia têm aparência cuidada e vestem-se de modo adequado para as funções que exercem.	1	2	3	4	5	6	7
P.4	Os equipamentos de apoio utilizados pelos profissionais de saúde desta Unidade da Santa Casa da Misericordia têm um aspecto cuidado e apelativo.	1	2	3	4	5	6	7
P.5	Quando esta Unidade da Santa Casa da Misericordia promete prestar um serviço num dado momento, cumpre-o.	1	2	3	4	5	6	7
P.6	Enquanto utente, quando tem um problema, esta Unidade da Santa Casa da Misericordia demonstra determinação em resolvê-lo.	1	2	3	4	5	6	7
P.7	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia prestam o serviço corretamente na primeira vez que este é solicitado.	1	2	3	4	5	6	7
P.8	Esta Unidade da Santa Casa da Misericordia disponibiliza os seus serviços no prazo que anuncia.	1	2	3	4	5	6	7
P.9	Esta Unidade da Santa Casa da Misericordia mantêm os seus registos atualizados e sem falhas.	1	2	3	4	5	6	7
P.10	Esta Unidade da Santa Casa da Misericordia informa-o dos prazos exatos em que a prestação do serviço será realizada.	1	2	3	4	5	6	7
P.11	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia prestam-lhe os seus serviços de forma imediata.	1	2	3	4	5	6	7
P.12	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia procuram sempre ajudá-lo(a).	1	2	3	4	5	6	7
P.13	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia estão sempre disponíveis para responder às suas questões.	1	2	3	4	5	6	7
P.14	O comportamento dos profissionais de saúde desta Unidade da Santa Casa da Misericordia inspira-lhe confiança.	1	2	3	4	5	6	7
P.15	Enquanto utente, confia no serviço prestado pelos profissionais de saúde desta Unidade da Santa Casa da Misericordia.	1	2	3	4	5	6	7
P.16	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia são sempre atenciosos e educados consigo.	1	2	3	4	5	6	7

P.17	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia sabem responder às perguntas que lhes coloca.	1	2	3	4	5	6	7
P.18	Esta Unidade da Santa Casa da Misericordia dá-lhe atenção individualizada.	1	2	3	4	5	6	7
P.19	Esta Unidade da Santa Casa da Misericordia tem um horário apropriado para os diferentes utentes.	1	2	3	4	5	6	7
P.20	Esta Unidade da Santa Casa da Misericordia tem profissionais de saúde que lhe prestam um serviço de acordo com as suas necessidades (serviço personalizado).	1	2	3	4	5	6	7
P.21	Esta Unidade da Santa Casa da Misericordia procura ter o seu ponto de vista em consideração aquando do seu atendimento.	1	2	3	4	5	6	7
P.22	Os profissionais de saúde desta Unidade da Santa Casa da Misericordia compreendem as suas necessidades específicas.	1	2	3	4	5	6	7

Assinale com uma cruz (x) o número que corresponde à sua resposta à questão que é feita em seguida, tendo em conta a escala que vai de 1 – "Muito Fraca" a 7 – "Excelente". **Não existem respostas erradas.**

Item		Escala						
		Muito Fraca						Excelente
P.23	Como avalia a qualidade gobal do serviço desta Unidade da Santa Casa da Misericordia?	1	2	3	4	5	6	7

8.4. Appendix 4 – Tests of Normality and Homogeneity of Variance for the Independent Variables

Table A4. 1 - Test of Normality of the Independent Variable "Gender"

Test of Normality				
Gender		Shapiro-Wilk		
		Statistic	df	Sig.
P23	Male	0,899	9	0,246
	Female	0,937	7	0,609
VAS differential	Male	0,863	9	0,103
	Female	0,885	7	0,252
Tangibility Dimension	Male	0,954	9	0,731
	Female	0,928	7	0,533
Reliability Dimension	Male	0,927	9	0,452
	Female	0,848	7	0,118
Responsiveness Dimension	Male	0,841	9	0,059
	Female	0,968	7	0,883
Assurance Dimension	Male	0,825	9	0,039
	Female	0,823	7	0,068
Empathy Dimension	Male	0,855	9	0,085
	Female	0,949	7	0,723
Mean of the Dimensions' average	Male	0,914	9	0,345
	Female	0,916	7	0,437
QALYs gained	Male	0,919	9	0,384
	Female	0,908	7	0,385

Table A4. 2 - Test of Homogeneity of Variance of the Independent Variable "Gender"

Test of Homogeneity of Variance					
Gender		Levene Statistic	df1	df2	Sig.
P23	Based on Mean	1,457	1	14	0,247
	Based on Median	0,841	1	14	0,375
	Based on Median and with adjusted df	0,841	1	13,490	0,375
	Based on trimmed mean	1,530	1	14	0,236
VAS differential	Based on Mean	3,744	1	14	0,073
	Based on Median	1,300	1	14	0,273
	Based on Median and with adjusted df	1,300	1	13,566	0,274
	Based on trimmed mean	3,641	1	14	0,077
Tangibility Dimension	Based on Mean	0,790	1	14	0,389
	Based on Median	0,303	1	14	0,591
	Based on Median and with adjusted df	0,303	1	11,550	0,593
	Based on trimmed mean	0,757	1	14	0,399
Reliability Dimension	Based on Mean	0,634	1	14	0,439
	Based on Median	0,102	1	14	0,754
	Based on Median and with adjusted df	0,102	1	8,955	0,757
	Based on trimmed mean	0,522	1	14	0,482
Responsiveness Dimension	Based on Mean	1,125	1	14	0,307
	Based on Median	0,429	1	14	0,523
	Based on Median and with adjusted df	0,429	1	12,885	0,524
	Based on trimmed mean	0,911	1	14	0,356
Empathy Dimension	Based on Mean	0,695	1	14	0,418
	Based on Median	0,660	1	14	0,430
	Based on Median and with adjusted df	0,660	1	13,843	0,430
	Based on trimmed mean	0,688	1	14	0,421
Mean of the Dimensions' average	Based on Mean	0,044	1	14	0,837
	Based on Median	0,030	1	14	0,864
	Based on Median and with adjusted df	0,030	1	13,592	0,864
	Based on trimmed mean	0,043	1	14	0,839
QALYs gained	Based on Mean	2,449	1	14	0,140
	Based on Median	1,386	1	14	0,259
	Based on Median and with adjusted df	1,386	1	10,896	0,264
	Based on trimmed mean	2,306	1	14	0,151

Table A4. 3 - Test of Normality of the Independent Variable "Age"

Test of Normality				
Age		Shapiro-Wilk		
		Statistic	df	Sig.
P23	64 years old or less	0,945	4	0,683
	65 years old or more	0,890	12	0,118
VAS differential	64 years old or less	0,964	4	0,801
	65 years old or more	0,936	12	0,454
Tangibility Dimension	64 years old or less	0,998	4	0,995
	65 years old or more	0,946	12	0,578
Reliability Dimension	64 years old or less	0,899	4	0,426
	65 years old or more	0,934	12	0,430
Responsiveness Dimension	64 years old or less	0,848	4	0,220
	65 years old or more	0,916	12	0,255
Assurance Dimension	64 years old or less	0,878	4	0,329
	65 years old or more	0,801	12	0,010
Empathy Dimension	64 years old or less	0,880	4	0,339
	65 years old or more	0,919	12	0,281
Mean of the Dimensions' average	64 years old or less	0,884	4	0,354
	65 years old or more	0,937	12	0,458
QALYs gained	64 years old or less	0,815	4	0,131
	65 years old or more	0,971	12	0,926

Table A4. 4 - Test of Homogeneity of Variance of the Independent Variable "Age"

Test of Homogeneity of Variance					
Age		Levene Statistic	df1	df2	Sig.
P23	Based on Mean	0,043	1	14	0,839
	Based on Median	0,042	1	14	0,840
	Based on Median and with adjusted df	0,042	1	7,834	0,843
	Based on trimmed mean	0,043	1	14	0,839
VAS differential	Based on Mean	0,006	1	14	0,937
	Based on Median	0,001	1	14	0,975
	Based on Median and with adjusted df	0,001	1	12,474	0,975
	Based on trimmed mean	0,004	1	14	0,950
Tangibility Dimension	Based on Mean	0,657	1	14	0,431
	Based on Median	0,534	1	14	0,477
	Based on Median and with adjusted df	0,534	1	12,830	0,478
	Based on trimmed mean	0,586	1	14	0,457
Reliability Dimension	Based on Mean	0,626	1	14	0,442
	Based on Median	0,680	1	14	0,424
	Based on Median and with adjusted df	0,680	1	13,900	0,424
	Based on trimmed mean	0,638	1	14	0,438
Responsiveness Dimension	Based on Mean	0,042	1	14	0,840
	Based on Median	0,090	1	14	0,769
	Based on Median and with adjusted df	0,090	1	13,977	0,769
	Based on trimmed mean	0,050	1	14	0,826
Empathy Dimension	Based on Mean	0,894	1	14	0,361
	Based on Median	0,796	1	14	0,387
	Based on Median and with adjusted df	0,796	1	12,880	0,389
	Based on trimmed mean	0,906	1	14	0,357
Mean of the Dimensions' average	Based on Mean	0,002	1	14	0,969
	Based on Median	0,119	1	14	0,735
	Based on Median and with adjusted df	0,119	1	11,375	0,736
	Based on trimmed mean	0,007	1	14	0,933
QALYs gained	Based on Mean	0,011	1	14	0,917
	Based on Median	0,137	1	14	0,717
	Based on Median and with adjusted df	0,137	1	13,360	0,717
	Based on trimmed mean	0,024	1	14	0,880

Table A4. 5 - Test of Normality of the Independent Variable "Education Level"

Test of Normality				
Education Level		Shapiro-Wilk		
		Statistic	df	Sig.
P23	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,916	11	0,285
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,902	5	0,421
VAS differential	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,909	11	0,238
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,914	5	0,492
Tangibility Dimension	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,901	11	0,189
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,903	5	0,429
Reliability Dimension	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,918	11	0,303
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,974	5	0,898
Responsiveness Dimension	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,949	11	0,635
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,722	5	0,016
Assurance Dimension	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,799	11	0,009
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,850	5	0,196
Empathy Dimension	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,847	11	0,039
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,943	5	0,685
Mean of the Dimensions' average	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,938	11	0,496
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,882	5	0,318
QALYs gained	1st Cycle of Basic Education (4th year of Schooling Completed) or less	0,953	11	0,685
	2nd Cycle of Basic Education (6th year of Schooling) or more	0,907	5	0,451

Table A4. 6 - Test of Homogeneity of Variance of the Independent Variable "Education Level"

Test of Homogeneity of Variance					
Education Level		Levene Statistic	df1	df2	Sig.
P23	Based on Mean	0,154	1	14	0,701
	Based on Median	0,165	1	14	0,691
	Based on Median and with adjusted df	0,165	1	13,593	0,691
	Based on trimmed mean	0,126	1	14	0,728
VAS differential	Based on Mean	3,407	1	14	0,086
	Based on Median	3,487	1	14	0,083
	Based on Median and with adjusted df	3,487	1	13,638	0,083
	Based on trimmed mean	3,462	1	14	0,084
Tangibility Dimension	Based on Mean	0,219	1	14	0,647
	Based on Median	0,275	1	14	0,608
	Based on Median and with adjusted df	0,275	1	13,697	0,608
	Based on trimmed mean	0,262	1	14	0,617
Reliability Dimension	Based on Mean	0,003	1	14	0,956
	Based on Median	0,000	1	14	0,988
	Based on Median and with adjusted df	0,000	1	13,657	0,988
	Based on trimmed mean	0,003	1	14	0,956
Mean of the Dimensions' average	Based on Mean	0,007	1	14	0,933
	Based on Median	0,002	1	14	0,965
	Based on Median and with adjusted df	0,002	1	12,346	0,965
	Based on trimmed mean	0,003	1	14	0,957
QALYs gained	Based on Mean	2,585	1	14	0,130
	Based on Median	2,558	1	14	0,132
	Based on Median and with adjusted df	2,558	1	11,809	0,136
	Based on trimmed mean	2,601	1	14	0,129

Table A4. 7 - Test of Normality of the Independent Variable "Pathology"

Test of Normality				
Pathology		Shapiro-Wilk		
		Statistic	df	Sig.
P23	AVC sequels or Femoral Fractures	0,930	10	0,445
	Diabetes (Amputation/Sequels) or Other	0,827	6	0,101
VAS differential	AVC sequels or Femoral Fractures	0,946	10	0,623
	Diabetes (Amputation/Sequels) or Other	0,961	6	0,830
Tangibility Dimension	AVC sequels or Femoral Fractures	0,927	10	0,419
	Diabetes (Amputation/Sequels) or Other	0,926	6	0,548
Reliability Dimension	AVC sequels or Femoral Fractures	0,922	10	0,371
	Diabetes (Amputation/Sequels) or Other	0,941	6	0,670
Responsiveness Dimension	AVC sequels or Femoral Fractures	0,915	10	0,317
	Diabetes (Amputation/Sequels) or Other	0,812	6	0,075
Assurance Dimension	AVC sequels or Femoral Fractures	0,793	10	0,012
	Diabetes (Amputation/Sequels) or Other	0,982	6	0,961
Empathy Dimension	AVC sequels or Femoral Fractures	0,889	10	0,165
	Diabetes (Amputation/Sequels) or Other	0,894	6	0,340
Mean of the Dimensions' average	AVC sequels or Femoral Fractures	0,903	10	0,233
	Diabetes (Amputation/Sequels) or Other	0,958	6	0,802
QALYs gained	AVC sequels or Femoral Fractures	0,966	10	0,847
	Diabetes (Amputation/Sequels) or Other	0,776	6	0,035

Table A4. 8 - Test of Homogeneity of Variance of the Independent Variable "Pathology"

Test of Homogeneity of Variance					
Pathology		Levene Statistic	df1	df2	Sig.
P23	Based on Mean	0,000	1	14	1,000
	Based on Median	0,156	1	14	0,699
	Based on Median and with adjusted df	0,156	1	12,584	0,699
	Based on trimmed mean	0,000	1	14	1,000
VAS differential	Based on Mean	2,784	1	14	0,117
	Based on Median	2,661	1	14	0,125
	Based on Median and with adjusted df	2,661	1	13,908	0,125
	Based on trimmed mean	2,825	1	14	0,115
Tangibility Dimension	Based on Mean	0,555	1	14	0,469
	Based on Median	0,570	1	14	0,463
	Based on Median and with adjusted df	0,570	1	13,989	0,463
	Based on trimmed mean	0,582	1	14	0,458
Reliability Dimension	Based on Mean	0,685	1	14	0,422
	Based on Median	0,412	1	14	0,531
	Based on Median and with adjusted df	0,412	1	13,651	0,532
	Based on trimmed mean	0,627	1	14	0,442
Responsiveness Dimension	Based on Mean	1,516	1	14	0,238
	Based on Median	0,558	1	14	0,468
	Based on Median and with adjusted df	0,558	1	11,018	0,471
	Based on trimmed mean	1,257	1	14	0,281
Empathy Dimension	Based on Mean	3,638	1	14	0,077
	Based on Median	2,478	1	14	0,138
	Based on Median and with adjusted df	2,478	1	11,476	0,143
	Based on trimmed mean	3,487	1	14	0,083
Mean of the Dimensions' average	Based on Mean	2,456	1	14	0,139
	Based on Median	1,837	1	14	0,197
	Based on Median and with adjusted df	1,837	1	12,967	0,198
	Based on trimmed mean	2,422	1	14	0,142

Table A4. 9 - Test of Normality of the Independent Variable "Living Alone or with Family before Institutionalization"

Test of Normality				
Living Alone or with Family before Institutionalization		Shapiro-Wilk		
		Statistic	df	Sig.
P23	Alone	0,767	5	0,042
	With Family	0,920	11	0,321
VAS differential	Alone	0,701	5	0,010
	With Family	0,960	11	0,768
Tangibility Dimension	Alone	0,963	5	0,826
	With Family	0,950	11	0,646
Reliability Dimension	Alone	0,821	5	0,118
	With Family	0,932	11	0,435
Responsiveness Dimension	Alone	0,836	5	0,154
	With Family	0,905	11	0,211
Assurance Dimension	Alone	0,816	5	0,108
	With Family	0,824	11	0,019
Empathy Dimension	Alone	0,656	5	0,003
	With Family	0,934	11	0,450
Mean of the Dimensions' average	Alone	0,761	5	0,037
	With Family	0,964	11	0,826
QALYs gained	Alone	0,809	5	0,095
	With Family	0,922	11	0,335

Table A4. 10 - Test of Homogeneity of Variance of the Independent Variable "Living Alone or with Family before Institutionalization"

Test of Homogeneity of Variance					
Living Alone or with Family before Institutionalization		Levene Statistic	df1	df2	Sig.
Tangibility Dimension	Based on Mean	1,695	1	14	0,214
	Based on Median	1,093	1	14	0,313
	Based on Median and with adjusted df	1,093	1	12,997	0,315
	Based on trimmed mean	1,660	1	14	0,218
Reliability Dimension	Based on Mean	0,132	1	14	0,722
	Based on Median	0,032	1	14	0,860
	Based on Median and with adjusted df	0,032	1	8,339	0,862
	Based on trimmed mean	0,100	1	14	0,756
Responsiveness Dimension	Based on Mean	5,038	1	14	0,041
	Based on Median	1,315	1	14	0,271
	Based on Median and with adjusted df	1,315	1	11,917	0,274
	Based on trimmed mean	4,907	1	14	0,044
QALYs gained	Based on Mean	0,120	1	14	0,734
	Based on Median	0,000	1	14	0,992
	Based on Median and with adjusted df	0,000	1	12,300	0,992
	Based on trimmed mean	0,059	1	14	0,812

Table A4. 11 - Test of Normality of the Independent Variable "Need for assistance from family members or healthcare professionals before Institutionalization"

Test of Normality				
Need for assistance from family members or healthcare professionals before Institutionalization		Shapiro-Wilk		
		Statistic	df	Sig.
P23	Yes	0,845	12	0,032
	No	0,993	4	0,972
VAS differential	Yes	0,930	12	0,378
	No	0,847	4	0,218
Tangibility Dimension	Yes	0,928	12	0,361
	No	0,630	4	0,001
Reliability Dimension	Yes	0,841	12	0,028
	No	0,840	4	0,195
Responsiveness Dimension	Yes	0,853	12	0,040
	No	0,863	4	0,271
Assurance Dimension	Yes	0,762	12	0,004
	No	0,963	4	0,797
Empathy Dimension	Yes	0,892	12	0,123
	No	0,753	4	0,041
Mean of the Dimensions' average	Yes	0,885	12	0,101
	No	0,993	4	0,973
QALYs gained	Yes	0,963	12	0,831
	No	0,859	4	0,256

Table A4. 12 - Test of Homogeneity of Variance of the Independent Variable "Need for assistance from family members or healthcare professionals before Institutionalization"

Test of Homogeneity of Variance					
Need for assistance from family members or healthcare professionals before Institutionalization		Levene Statistic	df1	df2	Sig.
VAS differential	Based on Mean	0,215	1	14	0,650
	Based on Median	0,215	1	14	0,650
	Based on Median and with adjusted df	0,215	1	13,401	0,650
	Based on trimmed mean	0,262	1	14	0,617
Mean of the Dimensions' average	Based on Mean	0,265	1	14	0,614
	Based on Median	0,150	1	14	0,704
	Based on Median and with adjusted df	0,150	1	13,083	0,705
	Based on trimmed mean	0,236	1	14	0,635
QALYs gained	Based on Mean	0,963	1	14	0,343
	Based on Median	1,275	1	14	0,278
	Based on Median and with adjusted df	1,275	1	13,852	0,278
	Based on trimmed mean	1,040	1	14	0,325

Table A4. 13 - Test of Normality of the Independent Variable "Duration of Institutionalization"

Test of Normality				
Duration of Institutionalization		Shapiro-Wilk		
		Statistic	df	Sig.
P23	Until 3 weeks (inclusive)	0,846	9	0,068
	From 3 weeks to 60 days	0,816	7	0,059
VAS differential	Until 3 weeks (inclusive)	0,944	9	0,628
	From 3 weeks to 60 days	0,912	7	0,411
Tangibility Dimension	Until 3 weeks (inclusive)	0,919	9	0,386
	From 3 weeks to 60 days	0,881	7	0,233
Reliability Dimension	Until 3 weeks (inclusive)	0,881	9	0,162
	From 3 weeks to 60 days	0,931	7	0,557
Responsiveness Dimension	Until 3 weeks (inclusive)	0,938	9	0,559
	From 3 weeks to 60 days	0,829	7	0,079
Assurance Dimension	Until 3 weeks (inclusive)	0,823	9	0,037
	From 3 weeks to 60 days	0,811	7	0,053
Empathy Dimension	Until 3 weeks (inclusive)	0,878	9	0,149
	From 3 weeks to 60 days	0,849	7	0,120
Mean of the Dimensions' average	Until 3 weeks (inclusive)	0,907	9	0,295
	From 3 weeks to 60 days	0,881	7	0,229
QALYs gained	Until 3 weeks (inclusive)	0,934	9	0,518
	From 3 weeks to 60 days	0,939	7	0,633

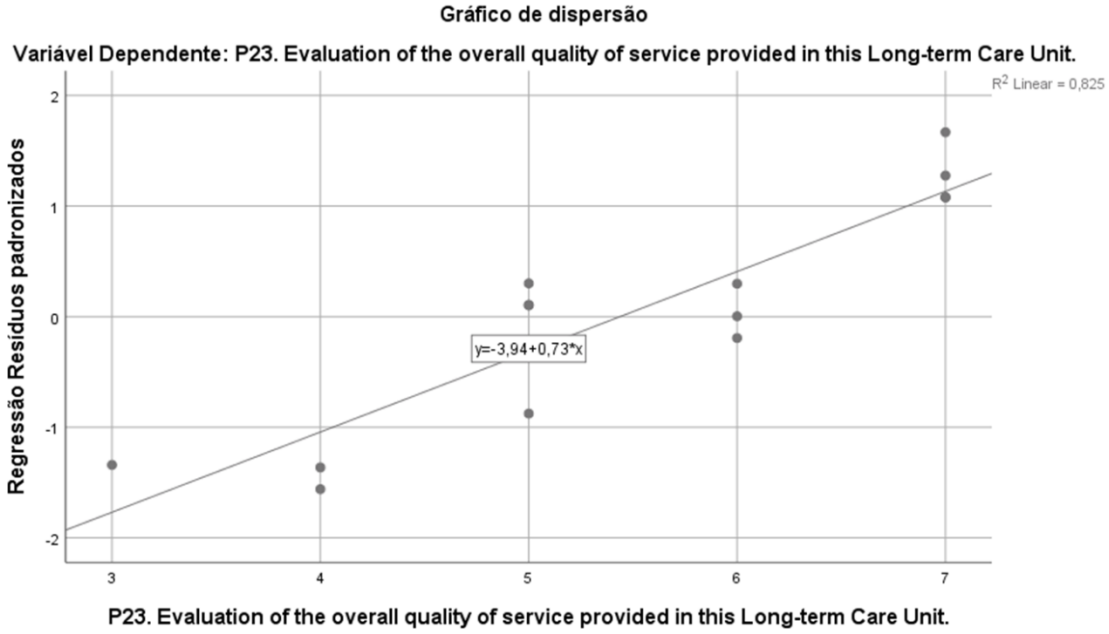
Table A4. 14 - Test of Homogeneity of Variance of the Independent Variable "Duration of Institutionalization"

Test of Homogeneity of Variance					
Duration of Institutionalization		Levene Statistic	df1	df2	Sig.
P23	Based on Mean	1,288	1	14	0,275
	Based on Median	1,065	1	14	0,320
	Based on Median and with adjusted df	1,065	1	12,699	0,321
	Based on trimmed mean	1,073	1	14	0,318
VAS differential	Based on Mean	0,790	1	14	0,389
	Based on Median	0,238	1	14	0,633
	Based on Median and with adjusted df	0,238	1	11,788	0,635
	Based on trimmed mean	0,766	1	14	0,396
Tangibility Dimension	Based on Mean	0,929	1	14	0,352
	Based on Median	0,344	1	14	0,567
	Based on Median and with adjusted df	0,344	1	10,037	0,571
	Based on trimmed mean	0,843	1	14	0,374
Reliability Dimension	Based on Mean	2,693	1	14	0,123
	Based on Median	0,525	1	14	0,481
	Based on Median and with adjusted df	0,525	1	10,372	0,485
	Based on trimmed mean	2,604	1	14	0,129
Responsiveness Dimension	Based on Mean	0,033	1	14	0,857
	Based on Median	0,035	1	14	0,854
	Based on Median and with adjusted df	0,035	1	13,991	0,854
	Based on trimmed mean	0,044	1	14	0,837
Empathy Dimension	Based on Mean	0,547	1	14	0,472
	Based on Median	0,283	1	14	0,603
	Based on Median and with adjusted df	0,283	1	13,227	0,604
	Based on trimmed mean	0,543	1	14	0,473
Mean of the Dimensions' average	Based on Mean	0,199	1	14	0,662
	Based on Median	0,049	1	14	0,829
	Based on Median and with adjusted df	0,049	1	13,128	0,829
	Based on trimmed mean	0,185	1	14	0,674
QALYs gained	Based on Mean	1,061	1	14	0,320
	Based on Median	0,616	1	14	0,445
	Based on Median and with adjusted df	0,616	1	13,671	0,446
	Based on trimmed mean	1,075	1	14	0,318

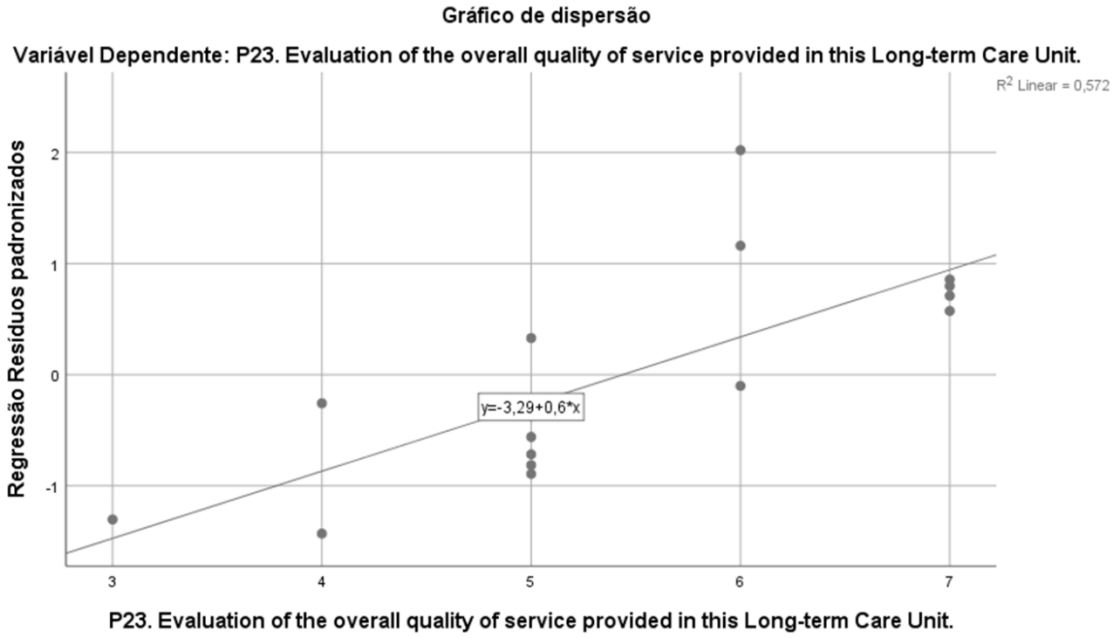
8.5. Appendix 5 – Tests of Normality and Homogeneity of Variance for the Dependent Variables

Table A5. 1 - Test of Normality of the Dependent Variables

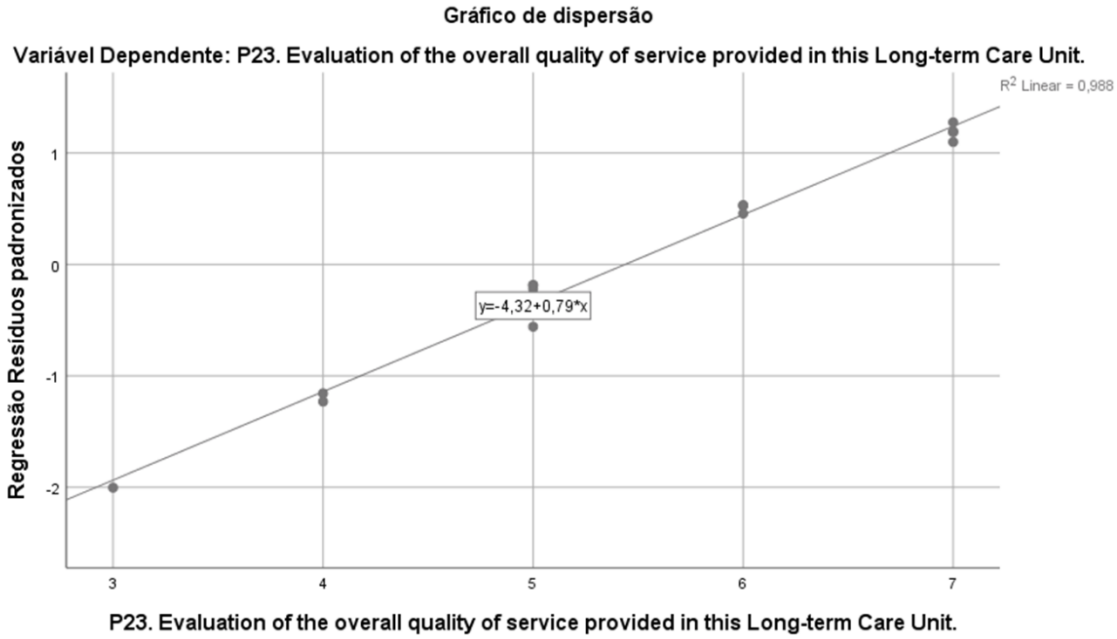
Test of Normality			
	Shapiro-Wilk		
	Statistic	df	Sig.
P23	0,906	16	0,100
VAS differential	0,952	16	0,515
Mean of the Dimensions' average	0,916	16	0,145
QALYs gained	0,965	16	0,746



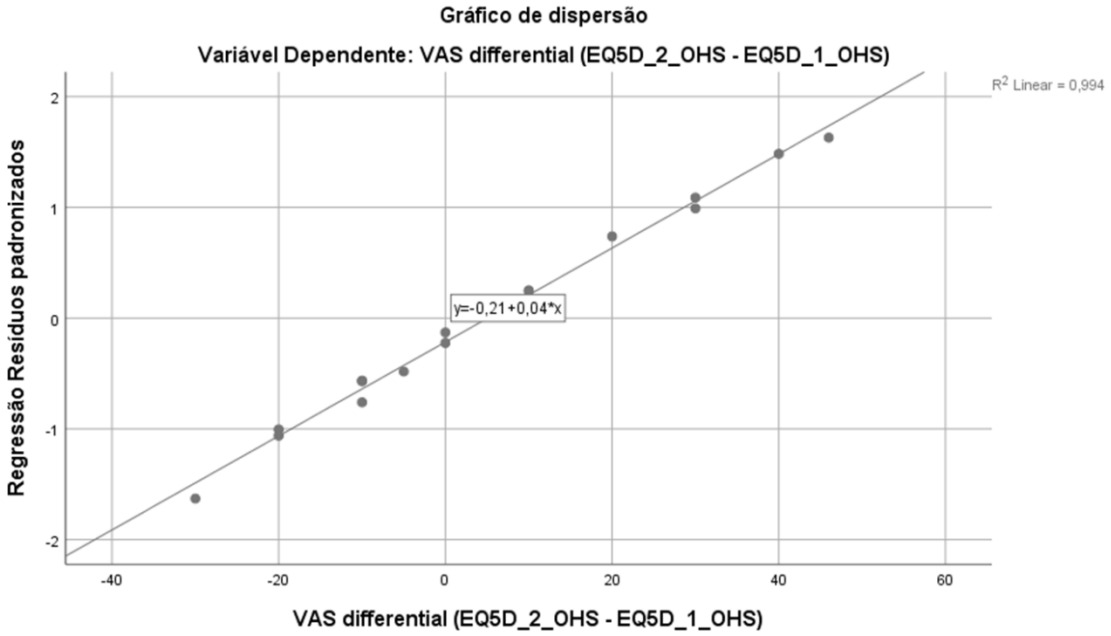
Graphic A5. 1 - Test of Homogeneity of Variance between the Dependent Variables “P23” and “VAS differential”



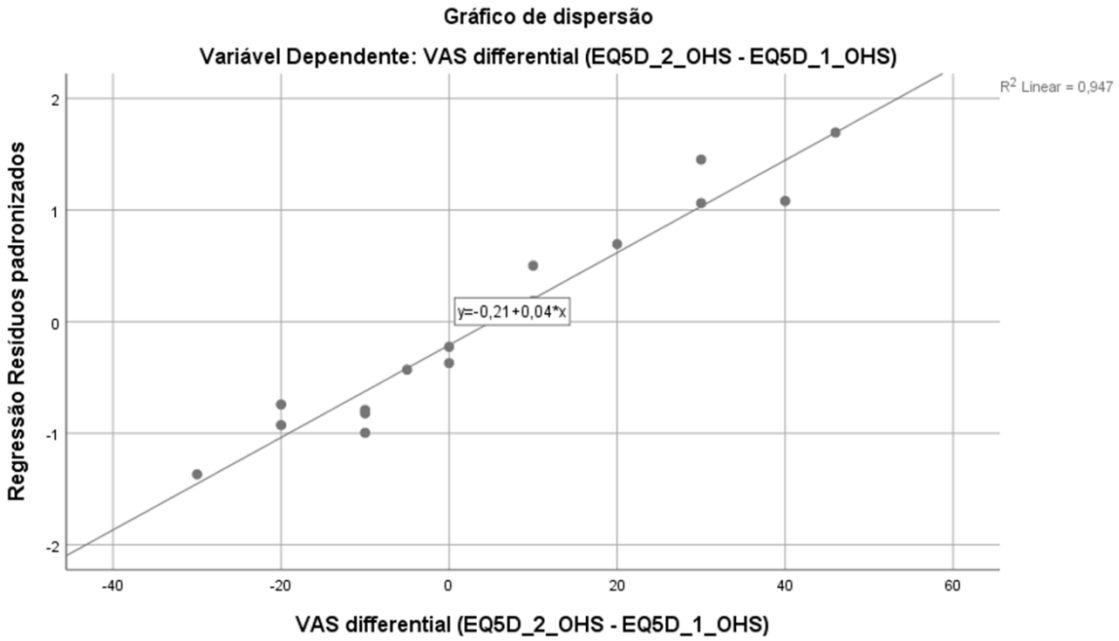
Graphic A5. 2 - Test of Homogeneity of Variance between the Dependent Variables “P23” and “Mean of the Dimensions' average



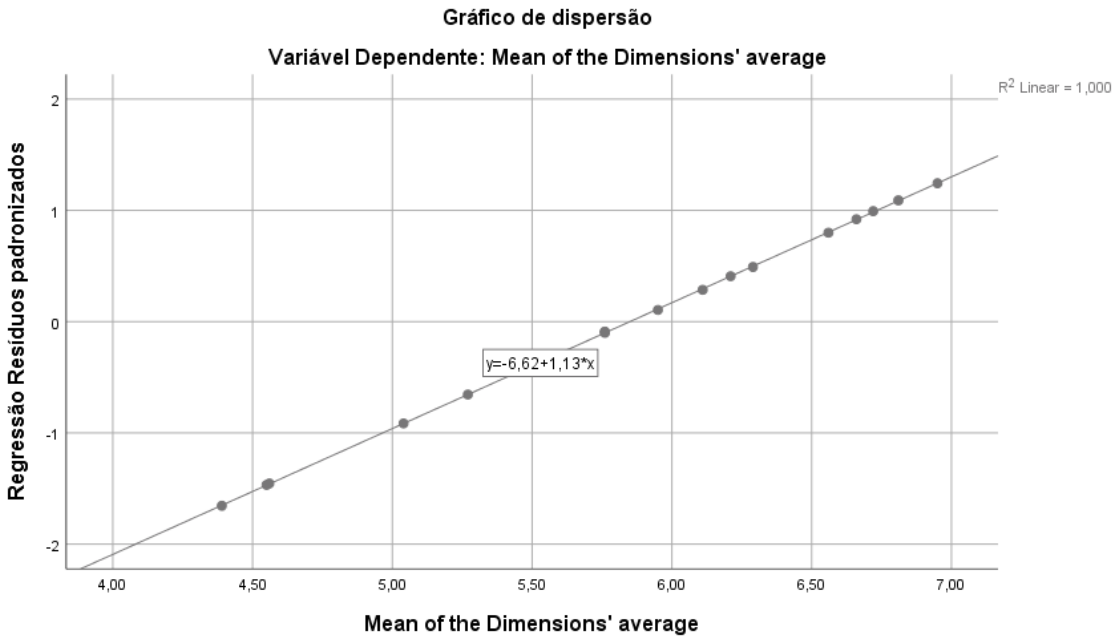
Graphic A5. 3 - Test of Homogeneity between the Dependent Variables “P23” and “QALYs gained”



Graphic A5. 4 - Test of Homogeneity of Variance between the Dependent Variables “VAS differential” and “Mean of the Dimensions' average”



Graphic A5. 5 - Test of Homogeneity between the Dependent Variables “VAS differential” and “QALYs gained”



Graphic A5. 6 - Test of Homogeneity between the Dependent Variables “Mean of the Dimensions' average” and “QALYs gained”