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MEASURING PATIENTS' QUALITY OF LIFE AND THE PERCEIVED QUALITY IN LONG TERM CARE SERVICES

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Abstract

With the ageing of the Portuguese population, there are more people in dependency situations and needing long-term care (LTC). In this context, it is important to ensure the quality of life (QoL) of those individuals, and that quality can be measured through their health-related quality of life (HRQoL) and overall well-being. Also, understanding how perceived service quality (PSQ) can be related to how people perceive their QoL is pertinent since service quality is an important factor to achieve patient health outcomes.

To develop this project, a LTC unit located in the district of Lisbon was chosen, the LTC unit of Arruda dos Vinhos. The main objective was to assess the relation between the PSQ, the HRQoL and the overall well-being of patients receiving LTC at the LTC unit of Arruda dos Vinhos.

A project based on a case study was performed, through interviews based on the items of the SERVPERF, EQ-5D and ICECAP-O questionnaires, which were then analysed through content analysis.

Results showed there is a relation between PSQ and HRQoL and between HRQoL and overall well-being. It was also possible to realise that to better evaluate the quality of this specific service, other subjects as the activities performed at the LTC unit, the physiotherapy service and the food provided, should be taken in consideration.

Concluding, there is a relation between PSQ and the QoL of the patients receiving LTC at the LTC unit of Arruda dos Vinhos, when quality of life is measured through HRQoL.

Keywords: Perceived Service Quality, Health-Related Quality of Life, Overall Well-being, Long-Term Care.

Resumo

Com o envelhecimento da população portuguesa, há cada vez mais pessoas em situações de dependência e que necessitam de cuidados continuados. Assim, é importante garantir a qualidade de vida destes indivíduos, que pode ser medida através da qualidade de vida relacionada com a saúde e do bem-estar geral. Além disso, perceber de que modo a qualidade percebida do serviço pode estar relacionada com a qualidade de vida é pertinente, visto que a qualidade do serviço é um fator importante para alcançar os resultados de saúde pretendidos.

Para desenvolver este projeto, foi escolhida uma unidade de cuidados continuados integrados (UCCI), a UCCI de Arruda dos Vinhos, onde o objetivo foi avaliar a relação entre qualidade percebida do serviço, qualidade de vida relacionada com a saúde e bem-estar geral dos pacientes.

Desenvolveu-se um projeto baseado num caso de estudo, através de entrevistas baseadas nos questionários SERVPERF, EQ-5D e ICECAP-O. Os resultados foram analisados através de análise de conteúdo.

Os resultados mostraram que existe relação entre a qualidade percebida do serviço e a qualidade de vida relacionada com a saúde e entre este último e o bem-estar geral. Percebeu-se também que para avaliar melhor a qualidade deste serviço outros assuntos como atividades realizadas na UCCI, serviço de fisioterapia e comida fornecida devem ser considerados.

Concluindo, existe relação entre a qualidade percebida do serviço e a qualidade de vida percebida pelos utentes da UCCI de Arruda dos Vinhos, quando a qualidade de vida é medida pela qualidade de vida relacionada com a saúde.

Palavras chave: Qualidade Percebida do Serviço, Qualidade de Vida Relacionada com a Saúde, Bem-Estar Geral, Cuidados Continuados Integrados.

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PSQ – Perceived Service Quality

HRQoL – Health-Related Quality of Life

LTC – Long-Term Care

NNICC – National Network of Integrated Continuous Care

NHS – National Health Service

Chapter 1. Introduction

1.1. Introduction

This chapter aims at presenting the theme of the present thesis as well as the context of the aspects that originated the need for developing the present investigation and its objectives. It englobes the following topics: the context of the problem, research questions, generic objectives, specific objectives, methodology, scope, ethics, and project structure.

1.2. Context of the Problem

In the last decades, it has been possible to notice an ageing of the Portuguese population. This ageing is happening because the birth rate is decreasing, and life expectancy is increasing (Roser, 2015, 2017).

With an ageing population, there are more people with functional disabilities (DGS, 2004) and, consequently, a greater number of people dependent on others. Data from the Portuguese Observatory of health systems (OPSS, 2015) show that at each moment there will be around 100 thousand people dependent on others for self-care, of which around 48 thousand are bedridden. Following this problem comes the need of promoting health, well-being, and quality of life for this people, since being healthy is essential for people to feel good about their psychological, physical and social abilities and, consequently, to perceive a good quality of life (Healthy People 2020, 2010). Moreover, this health promotion is a crucial cornerstone of many health systems across Europe (Samele, 2016), including in Portugal.

Particularly, in Portugal, the National Health Service (NHS, *Serviço Nacional de Saúde*), created in 1979, is the instrument of the state that has the responsibility of ensuring the right to health protection. Every citizen has access to this service independently of his or her economic and social conditions. This service covers all official institutions and services which provide health care under the Portuguese Ministry of Health (Ministry of Health, 2011).

Within the Portuguese NHS, there is the National Network of Integrated Continuous Care (NNICC - *Rede Nacional de Cuidados Continuados Integrados*, RNCCI). This network receives people who are in dependency situations and need long-term care (LTC), regardless of their age. LTC gathers a set of services intended to give care and support to

senior citizens with low capacity and who need help to perform their daily activities (WHO, 2019). The NNICC was created in 2006 through a partnership between the Ministries of Labour, Solidarity and Social Security (MTSSS) and Health (MS). The network was created to provide health care and social support focusing on the patients' recovery and helping to improve their autonomy and quality of life (Ministry of Health, 2006).

Quality of life is a combination of several elements which goes beyond the health itself. Particularly, it can capture an individual's overall health (health-related quality of life, HRQoL) and or the overall well-being (Makai *et al.*, 2014). HRQoL relates to basic needs such as being able to perform usual daily activities and living in good health, whereas well-being relates to self-accomplishments, having pleasant experiences and being independent (Patrick and Erikson, 1993; Healthy People 2020, 2010). Nevertheless, the relation between quality of life in terms of HRQoL and quality of life in terms of well-being is not clear in the literature for the health sector in general, which includes the LTC sector (Karimi and Brazier, 2016).

However, the quality of life is not the only concern that should be taken into consideration when providing LTC within the NNICC in Portugal. Particularly, the health service sector, where both the NHS and NNICC are included, and the service sector, in general, have been growing throughout time, which triggered the interest of understanding and defining the concept of service quality (Naidoo *et al.*, 2010).

Service quality is directly connected with perceived service quality (PSQ) (Lupo, 2016). This connection happens because a service can be good, but if the users do not perceive it that way, the evaluation of the service will not be as good. Also, the perceived quality directly influences the perceived value of a healthcare institution (Lupo, 2016).

Health care is a type of service that almost everyone will need at a certain point in time (Berry and Beudapudi, 2007) and there are more and more competitors due to sector growth. This growth resulted in awareness by the organisations who have realised that the quality of the services they provide should be measured in order to ensure differentiation, competitive advantage, sustainability and long-term success (Brown and Swartz, 1989), even though demand is still higher than supply. Additionally, it has been shown that a good perception of service quality leads to positive financial performance in the healthcare sector (Duggirala *et al.*, 2008). Overall, service quality is considered to be

a key factor in reaching the appropriate health results for the patients (Dagger and Sweeney, 2006; Lupo, 2016).

Considering the LTC sector as a reference, it is clear that it is necessary to ensure patients' quality of life by understanding how they feel about their HRQoL and overall well-being. However, it may also be relevant to understand their perceptions about the quality of the LTC services they received and analyse if it has a relation with what patients perceive as their quality of life. These dimensions and the impact service quality has on patients' perceived quality of life has not been studied in the health sector in general nor in the LTC sector in particular. Accordingly, this project aims at filling this gap in the literature. Particularly, a case study in the LTC unit of Arruda dos Vinhos that belongs to the NNICC in Portugal will be considered as reference.

1.3. Research Question

The following research question is defined to address the above-stated concerns: How is the perceived service quality related to the quality of life of patients receiving long-term care at the long-term care unit of Arruda dos Vinhos?

1.4. Generic Objective

The main purpose of the present research is to assess the relation between perceived service quality and quality of life of patients receiving LTC at the LTC unit of Arruda dos Vinhos, with quality of life being measured through both the health-related quality of life and the overall well-being.

1.5. Specific Objectives

Arising from the generic objective above, the specific objectives intended to be achieved with this research are the following, considering as a reference the LTC unit of Arruda dos Vinhos:

1. Assess the possible relation between the perceived service quality and the health-related quality of life of LTC patients;
2. Assess the possible relation between the perceived service quality and the overall well-being of LTC patients.

1.6. Methodology

To achieve the objectives proposed and since there are few studies regarding the quality of life in the LTC sector, the present research is a project based on a case study.

It is a project because an analysis to a particular LTC unit will be performed, which will potentially contribute to the literature by helping to fill an existing gap regarding the relation between PSQ and quality of life, and the relation between HRQoL and overall well-being in the LTC sector. It will also contribute, in practice, to the unit under analysis and similar ones.

It is based on a case study since "How" questions are the focus of the study, it is not possible to influence the process, and it is a contemporary phenomenon that has not been studied (Yin, 2009).

The PSQ and the quality of life at the LTC unit of Arruda dos Vinhos will be analysed according to the instruments that the literature review indicates as the most appropriate.

1.7. Scope

According to the specific objectives stated above, the present investigation will take place at a long-term care unit in Portugal, with focus on the typology of medium-duration and rehabilitation, more specifically at the UCCI Santa Casa da Misericórdia de Arruda dos Vinhos, belonging to the district of Lisbon.

1.8. Ethics

The present research was carried out with the permission of the LTC unit under analysis, the UCCI Santa Casa da Misericórdia of Arruda dos Vinhos.

1.9. Project Structure

The following dissertation will be structured in 5 chapters to accomplish the proposed objectives:

Chapter 1: Introduction - disclosed the context of the problem, research questions, objectives and methodology used.

Chapter 2: Literature Review - the main concepts and theoretical domains will take place in this chapter regarding service quality, quality of life, well-being and the corresponding measurements.

Chapter 3: Long-Term Care Unit of Arruda dos Vinhos – the background of the LTC unit will be addressed.

Chapter 4: Methodology - hypotheses, instruments of data collection, population and sample, pre-tests, data collection process and instruments of data analysis will be addressed.

Chapter 5: Results - the data collection will be introduced as the corresponding analysis.

Chapter 6: Conclusions - the research question will be answered, and recommendations regarding future investigations will be proposed.

Chapter 2. Literature review

2.1. Introduction

This chapter englobes all the theoretical domains needed to develop the present research. Concepts as service quality, quality of life, health-related quality of life and well-being will be addressed, as well as the corresponding measurements available to assess these concepts.

2.2. Service Operations Management

Service Operations Management appeared as a way of englobing and managing the activities, decisions, and responsibilities involved in delivering the service (Johnston *et al.* 2012). The same authors refer that it plays a key role in any organization as it comprises managing the customers, the processes involved, the outcomes, comprehending the organization's strategy, the service concept, the customers and their needs, and it encourages innovation and continuous improvement of the operations around the service, always concerned about delivering value and good experiences to the customers.

2.2.1. Service concept

Service concept is a description of what the service is. In the nineties, service concept was considered to involve the needs and preferences of the customers that need to be accomplished, which is the service marketing concept, and how they are supposed to be delivered, the service operations concept (Edvardsson and Olsson, 1996; Lovelock, 1999).

Later, in 2001, a more complete definition was proposed where four domains were defined: service operation is how the service is to be delivered, service experience is the experience the user had of the service, service outcome is the advantages and the effects for the users and value of the service is the avail users perceive as necessary comparable to the service cost (Johnston and Clark, 2001).

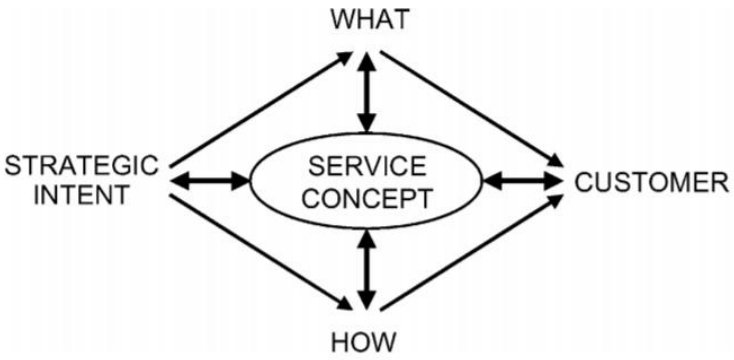
In 1985, Parasuraman *et al.* mentioned the importance of a well-defined service concept in order to avoid incongruences. These incongruences can exist between customers' expectations of the service, service delivered, executive perceptions of the expectations and between the service provided by executives and the service concept. By avoiding them, service providers can avoid misevaluations of the quality of the services provided.

These statements were reinforced in 2001 by Johnston and Clark where it was accentuated the necessity of a clear understanding and alignment of the service concept by all the stakeholders of a certain organisation to reduce the gap between customers' expectations and service provided.

Besides having a well-structured and defined concept of the service to be delivered, it is essential that at the design stage of the service the main focus is satisfying the needs of the customers (Johnston and Clark, 2001).

Overall, "the service concept has a key role to play in service design and development, not only as a core element of the design process but as a means of "concretising" the nature of the service" (Goldstain *et al.*, 2002; 124) (see figure 1). Thus, regardless of having already experienced the service or not, people have a preconceived idea and expectation of what and how the service is. This expectation may result from having actually experienced it, from hearing or reading other people's testimony or any other source. That being said, the service delivered has to be very clear in a way that ensures customers perceive it as it was designed (Johnston and Clark, 2001).

Fig.1: Basic structure of the service concept



Source: Goldstain *et al.*, 2002

2.2.2. Service Quality

Throughout time, many definitions about quality have been rehearsed, but overall, there is no accurate and universal definition and measurement of it (Cronin and Taylor, 1992). However, it has been defined as performing the service right the first time without defects (Crosby, 1979), achieving or exceeding the client's expectations, and as an attitude

resultant from the difference between the expectations and the performance of the service (Parasuraman *et al.*, 1988).

It is possible to measure goods' quality and services' quality, and there are differences in doing so. As Parasuraman *et al.* (1985) mentioned, measuring the quality of a service is much harder than measuring the quality of a good. It is harder because there are many aspects to judge in a product such as style, hardness, colour, label, feel, package and fit (Parasuraman *et al.*, 1985), but when it comes to services, because they are intangible, it is more difficult to find aspects to evaluate.

As measuring service quality is such a hard task, and there are no physical aspects to evaluate apart from, in most cases, equipment, facilities, and personnel, other features need to be addressed (Parasuraman *et al.*, 1985). In that way, Juanes and Blanco (2001) argue that the customers are the ones who determine which criteria should be assessed, according to what they expect, they need, the treatment they receive, the effectiveness of the service, how long it takes for the service to be delivered and many other aspects that they consider relevant.

Besides difficult, measuring the quality of a service can be complex and subjective, especially when it comes to services that involve much specific knowledge, which a lot of the consumers do not master, resulting in quality measurements based on their perceptions (Purcarea *et al.*, 2013).

Service quality is a fundamental issue for any business because it has been recognised as a crucial element to increase competitive advantage and consequently improve customer relationship. Also, service quality leads to customer service satisfaction, loyalty, and retention which means better long-term financial results for the organisation (Trasorras *et al.*, 2009).

According to Parasuraman *et al.* (1985), service quality results from a comparison between expectations and performance, and its evaluation involves not only the outcome but also the process around service delivery.

Hence, service quality is essential to measure in order to understand the perception of the consumers regarding the service provided.

2.2.3. Service Quality Measurements

Evaluating service quality, according to Lehtinen and Lehtinen (1982), involves three dimensions: physical quality, interactive quality and corporate quality. For Grönroos (1982), quality assessment involves only two dimensions: technical quality and functional quality. Later, in 1985, Parasuraman *et al.* proposed that, besides the outcome of the service, the process around delivering the service is essential when evaluating service quality.

2.2.3.1. Conceptual model of Service quality – the GAP model

In 1985, Parasuraman et al. proposed a new model for measuring service quality. This model measures the gap between what is expected from the service and what is the perception of the service. Five gaps were found:

→ **GAP 1:** difference between consumers' expectations and executive perceptions of the expectations;

→ **GAP 2:** difference between executive perceptions of expectations and the quality specifications of the service;

→ **GAP 3:** difference between quality specifications of the service and the service provided;

→ **GAP 4:** difference between service provided and external communications;

→ **GAP 5:** difference between costumers' expectations and the quality they perceived of the service provided.

Gap number 5 depends on the previous gaps, which are associated with design, marketing, and service delivery.

Overall, the research made by the preceding authors revealed that the evaluation of service quality results from the comparison between the expectations and the perceptions of the service delivered accordingly to ten determinants which are reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding/knowing the customer and tangibles. Later, in 1988, these dimensions were reduced to five dimensions - tangibles, reliability, responsiveness, assurance, and empathy – as detailed below.

2.2.3.2. The SERVQUAL instrument

In 1988, Parasuraman *et al.* develop the SERVQUAL model, a multi-item service quality instrument with good reliability and validity, whose purpose was creating applicable measuring scales to assess consumers' expectations and perceptions, in a way that enabled the instrument to be used for any type of service, and consequently to help organizations improve their services.

This scale comprises five determinants, and it is assessed through a 7-point scale, where 1 means strongly disagree and 7 means strongly agree. The five determinants resulted from the condensation of the above mentioned ten dimensions since there was a strong correlation among them. Thus, Parasuraman *et al.* (1988) reached a model of five determinants which are:

- → **Tangibles:** consists of physical facilities, equipment, and personnel appearance;
- → **Reliability:** refers to the ability to provide the service that was promised dependably and accurately;
- → **Responsiveness:** reflects the willingness of the providers to help customers and provide prompt service;
- → **Assurance:** encompasses the knowledge and courtesy of the providers and their ability to inspire trust and confidence;
- → **Empathy:** indicates the ability to provide caring and individualised attention do customers.

The five dimensions of the instrument comprise 22 paired items in which the first 22 are used to quantify the expectations of the customers about the services, and the other 22 are used to assess the actual perception of the services provided. The difference between the perception and the expectations is called gap, and it can result in either a positive or a negative gap. A positive gap means the perception met or exceeded the expectations and a negative gap implies that the expectations were not reached.

However, some concerns and criticisms about the efficiency of the SERVQUAL instrument started to appear. According to Tan Le and Fitzgerald (2014), the two main concerns about the SERVQUAL instrument are that it can be a waste of time answering a total of 44 questions and that the expectations of a service can be just a vague judgment.

This way, investigations were made in order to create a new instrument with the ability to measure the perceived quality of the services provided and at the same time without the concerns of the SERVQUAL instrument.

2.2.3.3. The SERVPERF instrument

It was in 1994 that Cronin and Taylor developed an adapted version of the SERVQUAL instrument named SERVPERF. This instrument only takes in consideration the actual perceptions of the customers regarding the quality of the services provided, which means that customers only need to answer to the 22 questions that assess the perception of the service quality.

This instrument is "*a useful tool for measuring overall service quality attitudes*" (Cronin and Taylor, 1994: 130) instead of measuring using a paradigm of disconfirmation like Parasuraman *et al.* (1988) proposed.

The reduction for half the questions reduces the time required to answer to the survey, questions are more easily understood, and the analysis of the results is more efficient since they are only based on the customers' perceptions (Morales and Medina, 2015).

Overall, the SERVPERF scale is easier to operationalise and it is more sensitive to variations in the results regarding the quality of the services provided (Ramez, 2012).

2.2.3.4. Service Quality in Health

Currently, many health care organisations seek for quality measurements in order to survive, since quality is the way to achieve the outcomes desired for the patients (Dagger and Sweeney, 2006) and to have long-term success (Trasorras *et al.*, 2009).

Kang (2006) mentioned that healthcare service quality could be challenging to measure, especially where technical quality is concerned. This author concluded this happens because patients, in most cases, do not have the skills to evaluate the technical competence of the providers and the immediate results of a given treatment. Patients end up relying on other aspects of quality, namely the way the service is provided (process), including empathy, emotions, benefits, reliability, among other issues to evaluate the overall quality of the service provided (Kang, 2006; Johnston *et al.*, 2012).

When it comes to LTC, it encompasses several services and support for people with functional disabilities, usually older people, and besides providing medical treatments, it

also focuses on helping with day-to-day living activities like feeding, dressing, and cleaning, and with their emotional, mental and social well-being (Brodsky *et al.*, 2003). This means that, besides measuring the quality of the medical services patients receive, it is also essential that all the other non-medical services are evaluated, which is very important since, as already mentioned, patients lack the ability to assess the core service.

Many studies were made in the health-care sector with the objective of measuring service quality. Some examples are, Ramez (2012) who used both SERVQUAL and SERVPERF to assess the service quality of health-care providers and concluded that "*SERVPERF scale was more efficient than SERVQUAL in explaining the variance in service quality*" (Ramez, 2012: 131). Also, Akdere *et al.* (2018), intending to assess how the quality of the hospital services was perceived, used the SERVPERF scale.

2.3. Quality of life

Quality of life is an important concept in health care services which incorporates not only an objective/social component like basic needs and functionality but also subjective/psychological components like well-being, pleasure and personal achievement (Healthy People 2020, 2010). In other words, quality of life can be measured in terms of health-related quality of life and through overall well-being.

2.3.1. Health-Related Quality of Life

Health-related quality of life (HRQoL) is a broad and multi-dimensional concept that relates to the perception of an individual's overall health status, including his mental, emotional and physical health over time and his social and economic limitations. It takes into consideration the individual's culture and values and the life objectives and expectancies he has (Khanna and Tsevat, 2007).

Within this concept, some metrics are typically used to assess HRQoL. The most widely used metrics include the QALY (Quality Adjusted Life Years), the DALY (Disability Adjusted Life Years), the HYE (Healthy Years Equivalents) and the PTO (Person Trade-Offs) (Drummond et al., 2015).

The QALY is a single metric measure combining both quality of life and quantity of life that can be used to every disease and to everyone, which allows the assessment of changes in health and facilitates the comparison of outcomes and improvements between different diseases, populations, and programs. QALYs are normally used when decisions need to

be taken on the allocation of resources in the health sector as an aid for decision making (Smith *et al.*, 2009; Devlin and Lorgelly, 2016).

DALYs is a measure that quantifies the weight of disease, disability, injuries and risk factors among populations, and also establishes priorities to assign resources (Murray and Acharya, 1997). It is also defined as lost healthy life years, which makes it a negative concept and allows to calculate the gap between the actual health status of a population and the ideal health status where people live with no diseases and disabilities until advanced ages (Murray and Acharya, 1997; WHO, 2019).

HYE is a measure which assesses not only quality of life but also quantity of life, and it reflects the individuals' preferences by taking in consideration those individuals' utility function when calculating it, which means there is no need for assumptions to measure HYE (Mehrez and Gafni, 1989 and 1991).

PTO is another HRQoL measure that assesses how different health care interventions have equivalent social values (Nord, 1995).

Even though several metrics exist, the QALYs is the one that has been used the most widely since it can seize gains from reduced morbidity and mortality and gather them into a single measure (Drummond *et al.*, 2015).

In order to measure the QALYs, there are several direct and indirect methods (Whitehead & Ali, 2010). The Visual Analogue Scale, the Standard Gamble, and the Time Trade-Off are the direct methods which are used the most to obtain the QALYs, however, they consume a lot of time and resources. Thus, indirect methods are also available, and they entail the use of generic preference-based measures, called questionnaires, which allow the representation of the full horizon of existing health states (Whitehead & Ali, 2010).

HRQoL can be influenced by many aspects, like functional status, sociodemographic characteristics, social network, chronic diseases and neighbourhood environment (Konig *et al.*, 2010; Pino *et al.*, 2014). Within the QALYs, HRQoL can be assessed through specific questionnaires like the EuroQol – 5 Dimensions (EQ-5D), the SF-36 instrument and the Health Utility Index (HUI).

2.3.1.1. Health-Related Quality of Life Measurements

Numerous studies about the HRQoL have been made, and different models have been proposed regarding the assessment of the perception of the health status of people. One

of them was proposed by the International Classification of Functioning, Disability, and Health, which is a framework used to organise and document information regarding functioning and disability (WHO, 2001). This framework is composed by two parts where the first one is related with body functioning and disability, including body functions and structures, and activities and participation, and the second one refers to contextual factors, including environmental and personal factors (WHO, 2001).

Another recommended model is the one proposed by Wilson and Cleary in 1995. This model encompasses five dimensions: biological and psychological factors, symptom status, functional status, general health perceptions and overall quality of life. Additionally, it includes individual and environmental characteristics. This model has been the most frequently adopted (Bakas *et al.*, 2012).

Besides, as already mentioned, some instruments are available to measure HRQoL, which is the case of the SF-36 questionnaire, the EQ-5D questionnaire, and the Health Utility Index.

2.3.1.1.1. The SF-36 instrument

The SF-36 instrument was proposed by the RAND Corporation, and it was developed to be used in the Medical Outcomes Study. It is a questionnaire that measures the quality of life of people. It is composed of 36 items within eight domains: functional capacity, physical limitations, pain, overall health state, vitality, social problems, economic aspects, and mental health. This questionnaire perceives positive and negative states of health, and it results in a final score between 0 and 100, where 0 means the worst health status and 100 corresponds to the best health status (Ware and Sherbourne, 1992).

Even though this instrument allows to understand how individuals function and if they can do usual daily activities, including taking care of themselves, it only allows obtaining a health profile to be used in cost-effectiveness economic evaluations. It misses the possibility of calculating the indexes that represent the value attributed by preference intensity to the individuals' health status, which can be used for economic cost-utility assessments (Ferreira *et al.*, 2013).

2.3.1.1.2. The EQ-5D instrument

The EQ-5D (EuroQol-5Dimensions) is a health status utility instrument, suggested by Dolan in 1997, which incorporates two parts: a descriptive system and a visual analogue

scale (VAS) that assesses the overall perceived health state of an individual. The first part includes five dimensions: mobility, self-care, regular activities, pain and discomfort, and anxiety and depression. The second part is an assessment from the patients regarding their overall health state between 0 and 100, where 0 means the worst health state and 100 corresponds to the best health state.

Different versions of the EQ-5D instrument exist. There is the EQ-5D-Y, which is the child-friendly version of the instrument, and for adults, the traditional EQ-5D has two different versions, with different levels of severity per dimension. The EQ-5D-3L has three levels of severity, which means that measurements for each dimension are made on three response options: no problems, some/moderate problems, or severe/extreme problems. The EQ-5D-3L can define 243 different health states resultant from the possible combinations of the different answers (Dolan, 1997).

However, compared with other instruments, 243 is a low number. For that reason, and in order to improve its discriminative power, sensitivity to change, validity and to reduce ceiling effects, the EuroQol Research Foundation created a new version of the instrument with a higher number of levels of severity. This version includes five levels instead of three: no problems, slight problems, some/moderate problems, severe problems, and extreme problems, which increases the possible health states to 3,125 (Herdman *et al.*, 2011). This version is called the EQ-5D-5L.

Recent research compared these two versions (EQ-5D-3L and EQ-5D-5L) to understand how increasing the number of levels has improved the distribution, discriminatory power and validity of EQ-5D (Martí-Pastor *et al.*, 2018). The conclusion was that people with poor health were redistributed to different levels of severity and the outcomes of the perceived health VAS covers the validity of the redistribution. Overall the results supported the validity and discriminative capacity of the new version, EQ-5D-5L (Martí-Pastor *et al.*, 2018). However, the same authors recommend using both versions simultaneously for a temporary period while inserting the new version (5L) for the purpose of establishing an anchor.

To be used in the cost-utility analysis, the EQ-5D answers need to be converted into an index score with a value set (Dolan, 1997). That being said, for a long time, only the EQ-5D-3L version had a conversion index score. Still, in 2014, the EuroQol Group created a valuation index for the EQ-5D-5L (Oppe *et al.*, 2014). However, recent research was

made to re-test the reliability of the EQ-5D-5L valuation techniques, and the results revealed that further examinations need to be made (Purba *et al.*, 2018).

2.3.1.1.3. The Health Utilities Index

The Health Utility Index (HUI) is a multi-attribute system that englobes health profiles and preference-based systems in order to measure health status, HRQoL and develop utility scores (Horsman *et al.*, 2003).

This instrument can identify almost 1,000,000 different health states resultant from the two systems it incorporates, HUI2 and HUI3. These systems are independent, however, they complement each other by adding valuable information and the HUI questionnaires cover both systems. The systems have a generic comprehensive health status classification system and a generic HRQoL utility scoring system (Furlong *et al.*, 2001) and they provide descriptive measures of ability or disability for health-state attributes and descriptions of comprehensive health status.

The HUI2 comprises seven dimensions with 3 to 5 levels of severity each: sensation, mobility, emotion, cognition, self-care pain, and fertility; while the HUI3 comprises eight dimensions with 5 or 6 levels of severity each: vision, hearing, speech, ambulation, dexterity, emotion, cognition and pain.

There are two versions of the HUI questionnaires: 15Q which was developed for self-completion, and 40Q which was developed for interviewer administration. The HRQoL scoring system results in a final score between 0 and 1, where 0 means the worst state of health and 1 corresponds to the best health status.

The HUI "*have strong theoretical foundations, are valid, reliable, and are accepted by patients and professionals*" (Horsman *et al.*, 2003:2), however, like the SF-36 questionnaire, even though it enables to create a health profile, it lacks the possibility of calculating the indexes that represent the value attributed to the individuals' health status (Ferreira *et al.*, 2013).

2.3.2. Well-being

While HRQoL instruments assess when people feel ill or sad or when they are limited in their daily tasks regarding physical, mental, social and emotional functions, well-being instruments measure the positive aspects of life such as feeling healthy, fulfilled and satisfied and having positive relationships and emotions (Healthy People 2020, 2010).

There are many definitions around the concept of well-being. According to the World Health Organization (2001a; 1) "*Mental health is defined as a state of well-being in which every individual realizes his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to her or his community*". Another definition was created by Diener in 2009 where he states that well-being is a general assessment of an individual's quality of life involving life satisfaction, positive functioning, high levels of positive emotions and absence of negative ones.

Regarding what is associated with an individual's well-being, it is known that this concept is influenced by many different factors like mental and physical illness, healthy behaviours, self-perceived health, longevity, productivity, and physical and social environment.

There are several instruments available to measure well-being, such as the ICECAP instrument, the Adult Social Care Outcomes Tool (ASCOT) and the Carer Experience Scale (CES). The last referred instrument assesses the unpaid carers and is more applicable when patients are treated at home (Al-Janabi *et al.*, 2008), which is not the focus of the present research, and that is why it was not further explored.

2.3.2.1. Well-being Measurements

2.3.2.1.1. The ICECAP instrument

The ICECAP is an instrument that focuses on a person's well-being and capabilities rather than health. Within ICECAP, there is ICECAP-A and ICECAP-O. ICECAP-A is used with adults, and it measures an individual's capability regarding five domains: attachment, stability, achievement, enjoyment, and autonomy. On the other hand, ICECAP-O is intended for use with older people, and it measures an individual's capability regarding attachment, security, role, enjoyment, and control. Each domain has four levels of response where 1 means no capability, 2 means few capability, 3 means some capability and 4 means full capability (Milte *et al.*, 2018).

2.3.2.1.2. The Adult Social Care Outcomes Tool (ASCOT)

The Adult Social Care Outcomes Tool **(**ASCOT) is a tool used in social care to understand if patients' needs and wants are being met (Netten *et al.*, 2012). It assesses the impact of the combination between people's health, social-economic status, home circumstances and social care services received on the quality of life.

The tool involves eight domains which are: accommodation, cleanliness and comfort, safety, food and drink, personal care, control over daily life, social participation and involvement, and dignity (Stevens *et al.*, 2018). Every attribute has 4 levels to be measured: ideal level achieved, no unmet needs, some unmet needs, and high unmet needs. The final scale ranges between -0.171 and 1, where negative scores mean worse than being dead and 1 represents the best level of wellbeing.

Even though the ASCOT instrument is a good and reliable measure to assess well-being among senior citizens, it seems more specific to social care–related outcomes (Hackert *et al.*, 2017).

2.4. Service Quality and Quality of Life in Health

For a long time, researchers did not investigate the value of QOL that may be associated with the service provided. The service perceptions from the patients regarding technical and functional quality can have an impact on the quality of life perceived by them. Thus, it was important to investigate the effect of service quality on social outcomes (Dagger and Sweeney, 2006).

Dagger and Sweeney (2006) conducted a research regarding the effect of service quality on behavioural intentions and quality of life. The study was developed with patients from oncology clinics at major private hospitals, and the results were that service quality (functional and technical) influence behavioural intentions and QOL perceptions.

Within this setting, the connection between service quality and quality of life is a subject-matter that has not been much explored in the health sector in general nor in the LTC sector in particular, which means there is a gap in the literature that requires further investigation in order to understand how these topics are related.

2.5. Conclusions

Throughout this theoretical research, it was possible to notice that not only it is difficult to find a clear definition and understanding of the concept of service quality but also it is a difficult aspect to measure. At first, in 1988, Parasuraman *et al.* proposed the use of the SERVQUAL instrument, a scale that compared the expectations and the perceptions of the customers regarding service quality. However, this model started being criticised by many authors about its effectiveness and reliability and in 1994, Cronin and Taylor developed an alternative instrument, named SERVPERF, that is only focussed on

measuring the perception of the service quality. Thus, since the SERVPERF is an easier and more sensitive to variations instrument (Ramez, 2012), an adaption of it will be used in the present research to assess the perceived quality of the services provided.

Regarding the quality of life, this is also a broad concept which involves the overall health state of an individual. Between the existing instruments to measure HRQoL, the EQ-5D is the easiest and more widely used instrument that assesses this matter (Ferreira *et al.*, 2013) since it has strong validity support and an index score to convert the answers.

For the present research, it was chosen to use the 3L version of EQ-5D because there is a reduced number of participants that are expected to be found in LTC units in Portugal. Another reason is the age group involved since the users of this type of service are typically senior citizens. Additionally, there is a lack of a validated conversion scale for the 5L version of the instrument since the existing scale is still waiting for validation.

When it comes to well-being, there are many definitions. However, they all agree that the concept is majorly influenced by the overall life satisfaction of an individual, including also service satisfaction and all the features that generate value for the patient. To measure the well-being of older people the ICECAP-O instrument showed to be the more appropriate one because it is strongly associated with the EQ-5D and also with activities of daily living, limitations, illness, and depressive symptoms which are essential dimensions for the present investigation (Leeuwen *et al.*, 2015). Also, ICECAP is the instrument most widely used in the health economics evaluation literature (Makai *et al.*, 2014).

Chapter 3. Long-Term Care Unit of Arruda dos Vinhos

3.1. Long-term care in Portugal

The National Network for Integrated Continuous Care (NNICC) in Portugal focuses on providing LTC and social support services to people with lack of autonomy, either at their homes or at appropriate facilities. The services are provided through public institutions, such as hospitals and primary health care centres, as well as through private institutions, such as private hospitals, particular institutions of social solidarity (Instituições Particulares de Solidariedade Social – IPSS) and "Casas da misericórdia" (Boto *et al.*, 2014; Plano de Desenvolvimento da RNCCI, 2016).

According to the DL 101/2006 (Ministry of Health, 2006), the referred services are ensured by inpatient units, ambulatory units, hospital teams, and domiciliary teams:

- → Inpatient units include units of convalescence, medium-duration and rehabilitation units, long-term and maintenance units and palliative care units;
- → Ambulatory units are composed by day and self-care promotion units;
- → Hospital teams comprise discharge management teams (Equipas de gestão de Altas – EGA) and in-hospital support teams in palliative care (Equipas intra-hospitalares de suporte em cuidados paliativos – EIHSCP);
- → Domiciliary teams are composed of LTC teams (Equipas de cuidados continuados integrados – ECCI) and community teams of support in palliative care (Equipas comunitárias de suporte em cuidados paliativos).

People whom these services are destined to are people of all ages with functional dependency situations, people with chronic diseases and people with incurable diseases in advanced and or late stages of life. However, as the years pass it becomes notable that the majority of the people using this type of services are the elderly (85%) since there is a continuous growth of the ageing population in Portugal (DGS, 2004; Plano de Desenvolvimento da RNCCI, 2016).

Regarding the present situation of the NNICC, the number of beds available has been increasing by typology. There was a growth of 921 beds (11,9%) between December 2015 and March 2019 (Plano de Desenvolvimento da RNCCI, 2016). However, the number of places in teams of LTC decreased 15,3%, from 6.712 in 2015 to 5.686 in 2019. The number of beds available in 2015 and 2019 is presented in table 1.

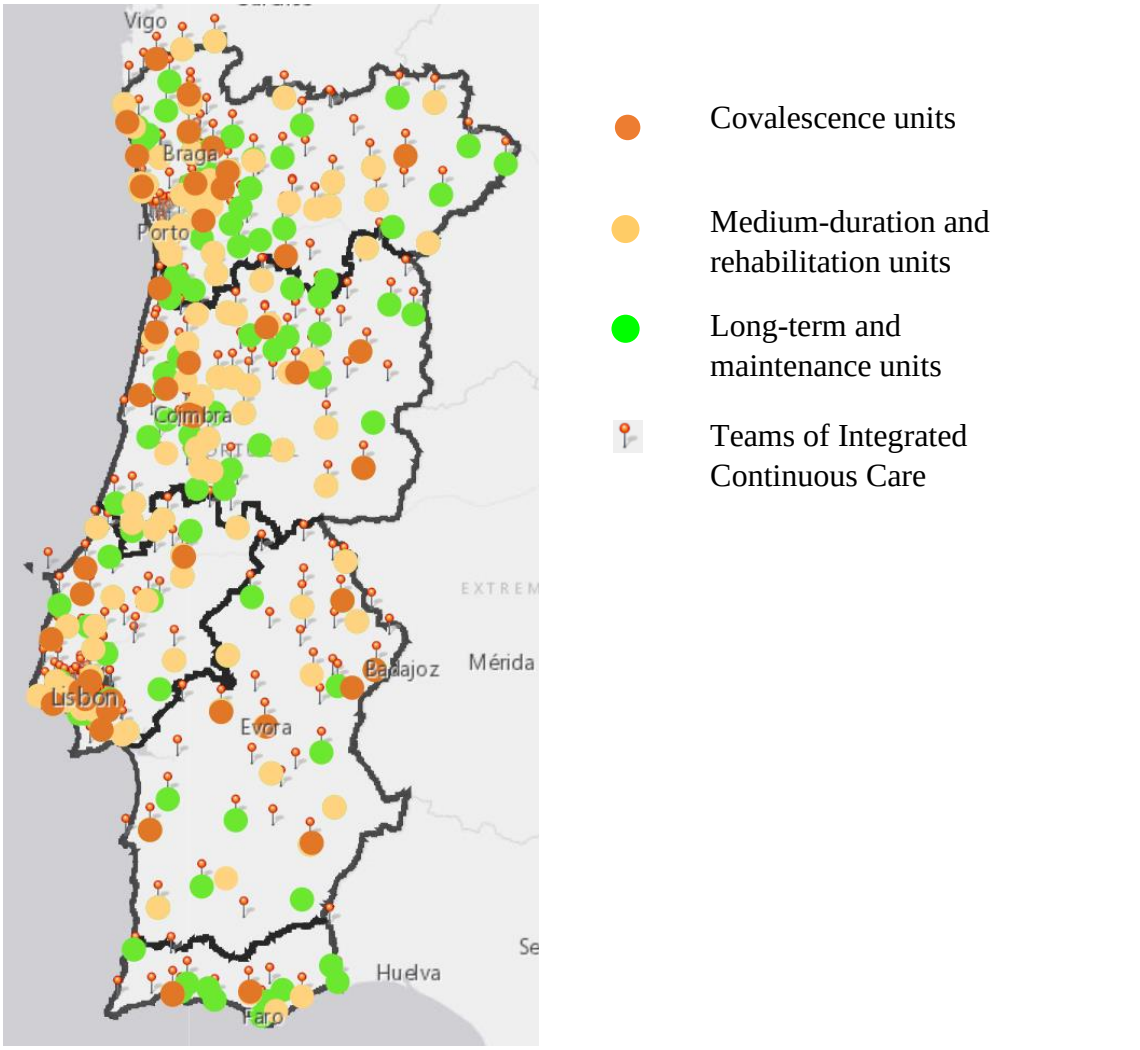
Table 1: Beds available of the NNICC in 2015 and 2019

Typology	Convalescence	Medium-duration and rehabilitation	Long-term and maintenance	Palliative	Total
No of beds 2015	764	2.306	4.411	278	7.759
No of beds 2019	1.006	2.718	4.790	166	8.680

Source: Plano de Desenvolvimento da RNCCI, 2016; ACSS – Respostas da RNCCI, 2019

Overall, the distribution of the units and teams are represented in figure 2.

Fig. 2: Distribution of the units and teams of the NNICC



Source: Plano de Desenvolvimento da RNCCI, 2016; ACSS – Respostas da RNCCI, 2019

3.2. Unit of Arruda dos Vinhos

Within all the LTC units existent in Portugal, the present research took place at the LTC unit of Arruda dos Vinhos (Unidade de Cuidados Continuados e Integrados – Santa Casa da Misericórdia de Arruda dos Vinhos).

This unit is part of the NNICC and started its activity on January 2nd of 2008. It is inserted in the Santa Casa da Misericórdia's hospital that has three floors: floor 0 is for ambulatory physiotherapy, the first floor is occupied by the LTC unit, and the second floor is for the hospital's external consultations and is where the analysis laboratory takes place.

The LTC unit offers 2 typologies: medium-duration and rehabilitation and long-term and maintenance. Each typology has 15 beds available, and the unit has 4 more beds for private hospitalisation.

The typology of medium-duration and rehabilitation, which is the typology under analysis, is a hospitalisation unit that provides medical and rehabilitation care and psychosocial support to people that lost their autonomy but have a great potential of recovery. This type of situation usually follows an acute process or a decompensation of a chronic pathological process. Overall, the purpose of this typology is the clinical stabilisation of the patients and their evaluation and integral rehabilitation for a hospitalisation period of no longer than 90 consecutive days (Ministry of Health, 2006).

On the other hand, the typology of long-term and maintenance is a hospitalisation unit that provides social support and maintenance care to dependent people who cannot be cared for at home. This type of situation usually is associated with chronic diseases or processes. The purpose of this typology is to avoid and delay the worsening of the dependency situation while enhancing comfort and quality of life for a hospitalisation period of more than 90 consecutive days (Ministry of Health, 2006).

For both typologies the LTC unit of Arruda dos Vinhos has:

- → 2 doctors, one of general clinic and one of physiotherapy;
- → 16/17 nurses, 4 that belong to the medical board and the rest work according to availability;
- → 2 physiotherapists;
- → 1 occupational therapist;
- → 1 speech therapist;

- → 1 social assistant;
- → 1 psychologist;
- → 17 medical action aids;
- → 1 nutritionist;
- → 3 general service workers/cleaning;
- → 4 kitchen-maids;
- → 1 manager;
- → 1 technical director;
- → 2 entertainers;
- → 3 vigilantes.

When it comes to staff turnover, the technical and the nurse team are stable. The aids have a higher turnover.

Many activities take place at the unit apart from the regular service. Some examples are themed parties around celebration dates like Christmas, Easter, carnival and even to welcome new seasons like the spring party, the summer party, and so on, where the patients help to prepare and decorate by doing, for instance, manual crafts.

There are also more regular activities like playing bingo, where the winner always receives a prize, once a week the patients help baking a cake and the ladies often have a moment of beauty where they paint their nails. There is also a musical choir to entertain, and there is volunteering every week where besides helping giving lunches, the volunteers play some games and entertain the patients.

The LTC unit of Arruda dos Vinhos is characterised by having a great and close relationship between employees and patients and the employees always try to adjust themselves to the patients' interests and needs (Social, 2019). This is also possible through the activities mentioned above that are a great opportunity to develop relationships. The employees also take advantage of these activities to gather and cross important information given by the patients that may be useful for the patients' recovery.

Chapter 4. Methodology

4.1. Introduction

This chapter intends to clarify the methods and instruments that will be applied to develop the investigation process, taking in consideration the research objectives and the literature review already developed. It starts with an explanation of the type of research that will take place, followed by the definition of the propositions intended to verify, the most appropriate instruments to collect information and the operationalisation of those propositions. Afterwards, the sampling process to be used will be explained, as well as the pre-tests, the method of data collection and the instruments for data analysis.

4.2. Case Study

Yin (2009) mentioned that case studies are empirical inquiries and are characterised by having "how" or "why" research questions, the investigator does not have control and access to behavioural events, and it investigates contemporary events. It also involves direct observation of events and interviews of the people involved in those events (Yin, 2009).

For the present investigation, a particular case study was analysed in order to develop a study with "how" questions to answer in a field that has not been much investigated (Yin, 2009). This is an exploratory, single-case study with a holistic design. It is exploratory because it explores a problem in order to find a way to understand it better, single-case because it focuses on only one LTC unit, and holistic since it examines the global nature of one typology, the typology of medium-duration and rehabilitation, of the unit under analysis (Yin, 2009).

The case study that will be analysed, as already mentioned, is the UCCI Santa Casa da Misericórdia de Arruda dos Vinhos, in particular, the typology of medium-duration and rehabilitation.

4.3. Propositions

In 2006, Dagger and Sweeney mentioned the association between service quality and quality of life in their research regarding the effect of service evaluations on behavioural intentions and quality of life and concluded that the quality of the service influences the quality of life of the users. Taking in consideration that quality of life may be measured both through HRQoL and overall well-being (Healthy People 2020, 2010), it is believed

that there is a relation between the PSQ and the HRQoL and between the PSQ and the overall well-being at the LTC unit under analysis because it is also believed that the close relationship between the service providers and the patients that characterise this unit is related to how the patients feel about their physical, psychological, and social abilities. Following these results, the next propositions are suggested:

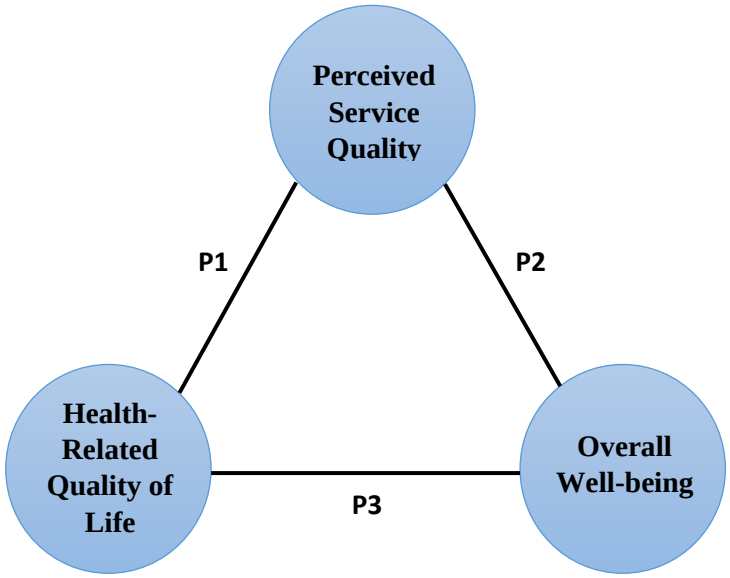
P1: Overall perceived service quality is related to the health-related quality of life

P2: Overall perceived service quality is related to the overall well-being

When it comes to the relation between HRQoL and the overall well-being, there is a gap in the literature. In 2008, Edmondson *et al.* made an investigation about the relationship between existential well-being and HRQoL and concluded that existential well-being is a strong predictor of HRQoL. Thus, it is believed that there is a relation between HRQoL and overall well-being at the LTC unit under analysis because of the activities performed at the unit with the objective of improving the quality of life of the patients. Naturally, the following proposition emerges:

P3: Health-related quality of life is related to the overall well-being

Fig. 3: Conceptual Model



4.4. Instruments for data collection

Data was collected through interviews which were based on the questionnaires EQ-5D-3L, ICECAP-O, and SERVPERF. Additionally, during the interviews, some demographic information was collected as well as information about the health service. The interviews were done in order to collect more in-depth information because the unit under analysis has a small population and therefore, there is few variability in the existing clinical situations. Also, the interview was helpful to clarify some doubts that patients had with the questions or to give some examples in order to facilitate comprehension.

4.5. Population and sample

The present investigation took place at the LTC unit of Arruda dos Vinhos, with focus on the typology of medium-duration and rehabilitation. Within this typology, there were 23 potential patients to interview, however, due to eligibility criteria, from the 23 only 11 reunited all the necessary conditions in order to provide accurate data during the interviews. The mentioned necessary conditions were not having any cognitive problems, and the decision of who could participate was made together by the doctors, the physiotherapists and the psychologist of the unit.

Those 11 patients represent the population in study, and everyone who was eligible to participate in the interviews was included in the study. Since all the 11 accepted to participate, it means the sample is equal to the population, and the potential sample is equal to the effective sample.

4.6. Pre-test

According to Strainer *et al.* (2015) and Perneger *et al.* (2015), a qualitative pre-test is essential for the development and adaption of every questionnaire. The objective of the pre-test is to testify if the recipients of the questionnaire comprehend both the questions and the given options for the answer and if they meet the necessary conditions to answer the questionnaire (Perneger *et al.*, 2015).

Taking the importance of the pre-tests in consideration, two pre-tests were made in order to understand if all the questions of the three questionnaires applied to the situation and if the questions were clear to the patients.

These pre-tests were made at February 15 of 2019 to patients of the LTC unit of Arruda dos Vinhos and the answers were previously used as an insight for the research.

It was possible to notice that some questions were not applicable the way they were written considering the clinical conditions of the LTC patients. Thus, some adjustments were made to the way the sentences of the questionnaires were written in order to ensure its suitability.

4.7. Data Collection

Between February 15 and May 20, 2019, it was possible to do 11 interviews in the LTC unit of Arruda dos Vinhos of which all 11 were considered valid. The interviews were made directly to the patients using LTC services, more specifically LTC services of medium-duration and rehabilitation (MDR). They were performed vis-a-vis, in a meeting room, and all the relevant information given by the interviewed was registered.

To start every interview, before institutionalisation, questions about demographics were asked, in order to make a demographic characterisation of the sample, together with questions that allowed performing a characterisation of the service. The demographic information collected involved four variables, including gender, age, level of education and income. The information about the health service involved two variables, including previous experience and origin of the patient. Within these variables there are some categories defined according to the answers given by the patients, meaning that the different experiences patients mentioned were added as categories. The variable previous experience comprises hospital, LTC unit, nursing home, rehabilitation medicine centre and palliative care unit, whereas the variable origin of the patients includes hospital, home, nursing home and rehabilitation medicine centre.

To measure how patients felt about their quality of life in terms of HRQoL, an adaption of the EQ-5D-3L instrument was applied twice: the first time when the patient arrived at the LTC unit; and the second time after 30 days of institutionalisation. The questionnaire (Dolan, 1997) is composed of 5 questions with 3 levels of severity each: no problems, some/moderate problems, or severe/extreme problems.

The same procedure was followed with the ICECAP-O instrument: it was applied when the patients arrived at the LTC unit and after 30 days of institutionalisation. This questionnaire was intended to understand how patients perceived their quality of life apart from the health perspective, which means the patients' overall well-being. This questionnaire (Milte *et al.*, 2018) is also composed of 5 questions, each with 4 levels of severity: no capability, few capability, some capability and full capability.

The SERVPERF instrument showed to be the most appropriate one to use as a reference in order to measure the perception of health service quality. That being said, the questions of the SERVPERF questionnaire were adapted according to the research objective proposed and to the context of the study, and the resulting questionnaire was applied only once, after the 30 days of institutionalisation. The SERVPERF questionnaire (Cronin and Taylor, 1994) is composed by 22 questions with a Likert scale of seven points suggested by Parasuraman *et al.* (1985,1988) and Cronin and Taylor (1994), where 1 means totally disagree, and 7 means totally agree. The questions are distributed by 5 dimensions. Questions 1 to 4 assess the dimension tangibles, questions 5 to 9 are about reliability, questions 10 to 13 measure responsiveness, questions 14 to 17 are related to assurance and questions 18 to 22 assess empathy.

Additionally, a question number 23 was applied in order to assess how patients perceived the overall service quality. This last question has the same scale of seven points where 1 goes for very weak, and 7 goes for excellent. The questionnaire assesses five dimensions - tangibles, reliability, responsiveness, assurance, and empathy - regarding the quality of the service provided (Parasuraman *et al.*, 1988).

4.8. Instruments for data analysis

To analyse the data collected through the interviews, taking in consideration the sample size, initially, an analysis based on the median and the interquartile range takes place. Also, the conversion of the health states of the patients into the added values of improved HRQoL and overall well-being, gathered with the EQ-5D-3L and ICECAP-O questionnaires consecutively, was performed, in order to jointly with the answers to question 23 of the SERVPERF questionnaire, analyse the relation between PSQ, the HRQoL and the overall well-being of patients.

Afterwards, a content analysis was followed in order to analyse more in-depth the gathered information. This method is characterized by "*a set of techniques of communication analysis aiming to obtain by systematic procedures and objectives of description of the content of the messages, indicators (quantitative or not) that allow the inference of knowledge regarding the conditions of production / reception (inferred variables) of these messages*" (Bardin, 2014: 44).

The preceding author states that content analysis is composed of 3 phases: (1) pre-analysis, (2) material exploitation and (3) treatment of results, inference, and interpretation.

On the first phase of the present research, ideas were discussed regarding the possible topics to be approached as well as the definition of the research question of the study. Also, the specific objectives were defined, and the unit where the research would take place was chosen and confirmed.

The second phase was where the most appropriate type of analysis for the study was defined, propositions were suggested, and the data was collected through the interviews.

Lastly, the third phase was where the results obtained were treated through content analysis, the propositions defined were analysed, and conclusions were made.

4.9. Conclusion

The current chapter analysed the processes that took place in order to meet the research objective. It started with the identification of the type of study, and then the propositions were presented as well as the conceptual model. After, the instruments for data collection were identified and the results from the pre-tests were revealed. This was followed by the data that was collected and the description of the instrument for data analysis. Table 2 summarises the relation between the specific objectives, propositions and research question, referring which propositions allow to answer each objective.

Table 2: Relation between Specific Objectives, Propositions and Research Question

Research Question	Specific Objectives	Propositions
RQ: How is the perceived service quality related to the quality of life of patients receiving LTC at the LTC unit of Arruda dos Vinhos?	***SO1:*** Assess the possible relation between the perceived service quality and the health-related quality of life of LTC patients	***P1:*** Overall perceived service quality is related to the HRQoL ***P3:*** HRQoL is related to the overall well-being
	SO2: Assess the possible relation between the perceived service quality and the overall well-being of LTC patients	***P2:*** Overall perceived service quality is related to the overall well-being ***P3:*** HRQoL is related to the overall well-being

Chapter 5. Case Study Analysis

5.1. Introduction

The present chapter's intention is to analyse through content analysis the results obtained in the interviews made to the patients in the medium-duration and rehabilitation typology of the LTC unit of Arruda dos Vinhos.

It starts with a characterisation of the research's population and sample, then an analysis of the PSQ, perceived well-being and perceived HRQoL takes place, where percentile and content analysis are included for both quantitative and qualitative perspectives. At the end there is a discussion of the several propositions presented in the previous chapter compared to the observations obtained in the analysis.

5.2. Population and Sample Characterisation

The sample of the present study is distributed in 36% males and 64% females, ranging between 42 and 88 years old, more concentrated in the >84 age group, 36,4%. The educational levels range between 3rd grade and master's degree, with 63,3% of the interviewees having only primary education. Regarding the income, it ranges between 200€ and 1100€ per month, and 27,3% of the patients do not know how much their income is. Overall, the sample consists of people with advanced ages, of people with low educational levels and with low monthly income levels. Table 3 gathers all the results.

Table 3: Demographic distribution of the sample

		Number of People	Percentage
Gender	Male	4	36%
	Female	7	64%
Age	<50 years	1	9%
	50 to 64 years	2	18,2%
	65-74 years	1	9%
	75-84 years	3	27,3%
	>84 years	4	36,4%
Education level	Primary Education – 1st to 4th grade	7	63,6%
	Basic Education – 5th to 9th grade	1	9%
	High School – 9th to 12th grade	1	9%
	Professional course, bachelor or higher	2	18,2%
Income	Do not know	3	27,3%
	200€-400€	3	27,3%
	400€-600€	2	18,2%
	600€-800€	1	9%
	>800€	2	18,2%
Total		**11**	**100%**

5.3. Service Characterisation

Some questions related to health service were asked, namely the previous experience each patient had and where they came from before being institutionalised. The results obtained are represented in table 4 and show that every individual had already experienced hospital service, only 18,2% had been at a LTC unit, 9,1% had been at a nursing home, 9,1% experienced a rehabilitation medicine centre, and 9,1% had already experienced palliative care service. When it comes to the origin of the patients the majority came from a hospital, 54,4%, followed by home with 27,3% and only 9,1% of the patients came from a nursing home and other 9,1% from a rehabilitation medicine centre.

Table 4: Service Characterisation

		Number of people	Percentage
Previous experience	Hospital	11	100%
	LTC unit	2	18,2%
	Nursing home	1	9,1%
	Rehabilitation medicine centre	1	9,1%
	Palliative Care Unit	1	9,1%
Origin	Hospital	6	54,5%
	Home	3	27,3%
	Nursing home	1	9,1%
	Rehabilitation medicine centre	1	9,1%

5.4. Perceived Service Quality Analysis

5.4.1. Initial Analysis

The interviews based on the SERVPERF questionnaire were performed only 30 days after institutionalisation. In order to measure the perceived quality of the services provided in the LTC unit of Arruda dos Vinhos, and to understand the best-rated aspects and the ones that should be improved, for each item and dimension, it was calculated the median and the interquartile range through the obtained results. Table 5 shows the calculated medians and interquartile ranges of the 23 questions of the questionnaire.

Table 5: Results of the SERVPERF questionnaire

Questions	Median	Interquartile range
Tangibles	**7**	0
Q1: The long-term care unit has up-to-date equipment and technology.	6	0
Q2: Facilities are visually appealing.	7	1
Q3: The service providers have a careful and appropriate presentation for the functions it performs.	7	0
Q4: The facilities' presentation is according to the services provided.	7	0,5
Reliability	**7**	0
Q5: When the institution promises to do something by a certain time, it does so.	7	1
Q6: When you have a problem, the institution shows a sincere interest in solving it.	7	1
Q7: The institution performs the services right the first time.	7	0,5
Q8: The institution performs the services at the time it promises to do so.	7	1
Q9: Medical records are kept updated and error-free.	7	1
Responsiveness	**7**	1
Q10: The institution tells exactly when services will be performed.	7	1
Q11: Service providers give prompt service.	5	1
Q12: Service providers are always willing to help.	7	0
Q13: Service providers are always available to answer what is asked.	7	0
Assurance	**7**	0
Q14: The behaviour of the service providers inspires confidence in me.	7	0
Q15: I feel safe with the services provided to me by the service providers.	7	0
Q16: Service providers are polite and attentive to the patients.	7	0,5
Q17: Service providers show to have knowledge when answering questions.	7	0,5
Empathy	**7**	0
Q18: The institution gives individual attention.	7	0
Q19: Service providers give personal attention.	7	0
Q20: Service providers provide personalised services according to the needs of each one	7	0
Q21: The institution always has the patients' best interest at heart.	7	0
Q22: The institution has operating hours convenient to the patients.	7	0
Q23: How do you classify the overall quality of the services provided by the physicians?	**7**	**1**

Through the obtained results, it is possible to understand that the item with the lowest perceived quality is question 11 (Q11: 5) regarding prompt service. This item is followed by question 1 (Q1: 6) regarding up-to-date equipment and technology, which has the second-lowest perceived quality. Question 1 has an interquartile range of 0, which means there is none or few variability, the opinions are consistent throughout the patients, and question 11 has an interquartile range of 1.

These results show that the service is not always provided as soon as the patients request support. In some cases, and in order to avoid these situations, especially for patients with difficulties in moving, the unit uses other options, like diapers. Also, the equipment and technology used in the unit, in the perception of the patients, could be improved in order to promote faster recovery.

All the other questions were rated generally with very high scores, 7, and the interquartile range is very low, which means, once again, there is low variability.

When it comes to the 5 dimensions of the questionnaire and its analysis, all of them have a final median of 7, which besides being a score above the middle point of the scale, is the best score possible. Also, 4 of the 5 dimensions have an interquartile range of 0 and only 1 dimension has an interquartile range of 1, showing the consistency of the opinions of the patients of the LTC unit.

Regarding the overall quality of the services provided (Q23), the mean is 7, with the majority, 6 individuals, considering it excellent (appendix 4). This is a very good result since 7 is the highest number of the scale, meaning that the patients are, in general, very pleased with the quality of the services provided in the unit. Additionally, the interquartile range is very low, 1, meaning that the answers were all very close to the median, patients have similar perceptions of the quality of the service and that, overall, patients are satisfied with the services provided at the LTC unit of Arruda dos Vinhos.

Lastly, 100% of the items were scored equal or over 4 points, which means that every item of the questionnaire was scored above the middle point, making it a very positive assessment.

5.4.2. Content Analysis

What patients think and perceive about the service is extremely important for the present research since it is what determines how the service is evaluated. However, with just the answers to the questionnaire, many information and thoughts may get lost.

In fact, it was possible to understand there are some variables and more in-depth information about certain dimensions that the SERVPERF questionnaire by itself does not assess, which was possible to gather with the interviews.

Tangibles dimension

"Tangibles" englobes the physical facilities, equipment, and personnel appearance. The patients consider that both the equipment and technologies in use could be better.

The other questions of the dimension (Q2, Q3, and Q4) had high rates, where more than 50% of the patients (appendix 4) gave the maximum score, and, particularly regarding the accommodations (Q2), patients said they felt well accommodated and liked the facilities and the environment. Some expressions mentioned by the patients regarding this dimension were "I think that the unit could have better equipment", "The installations are really warming, I feel very comfortable here" (table 6).

Reliability dimension

"Reliability" is the ability to provide the service that was promised dependably and accurately. More than 50% of the patients (appendix 4) strongly agree with every question, and only question 9 had ratings lower than 6 regarding updated and error-free medical records. This means only few patients believe that the service providers are not always sure about their condition and their historical. For this topic, patients were straight forward with the answers and did not add more information than the one mentioned in the questions made.

Responsiveness dimension

"Responsiveness" is the willingness of the service providers to help the patients and provide them prompt service. This is the dimension where the matter with the lowest median is inserted. It had more than 50% (appendix 4) of the patients rating it with a 5.

As said before, customers feel like, at times, they have to wait to be attended, and they mentioned that probably happened due to a lack of workers. It was suggested that more

workers should be hired in order for the patients to be attended faster and for the workers already existent be able to have more time to dedicate to each patient without always being in a rush. Some expressions said were "The unit should have more employees" and "Sometimes I have to wait longer to be attended" (table 6).

Assurance dimension

"Assurance" regards to the knowledge and courtesy of the service providers and if they inspire trust and confidence. The majority of the patients (appendix 4) said the caregivers were very nice, warming and trustworthy. Many patients said, "I like everyone here, they are all very nice" (table 6).

Empathy dimension

Lastly, "Empathy" is the ability to provide caring and individualised attention. Patients said the service providers are always interested in making them feel good and comfortable, and more than 70% of the patients (appendix 4) gave the maximum score to each question. It was mentioned that "The service providers are always interested in our best and in helping us" (table 6).

Apart from the matters addressed directly by the dimensions of the SERVPERF, some information about other subjects was also gathered, like the activities developed at the unit, physiotherapy, and quality of the food.

About the activities, many patients said it was a good way to go through time and to keep their heads functioning, stimulated and occupied (table 6).

As regards to physiotherapy, patients were pleased with how often they were exercising the muscles needed to recover the desired mobility. Only a few felt like they could have more or longer sessions (table 6).

The quality of the food was also mentioned by some patients. No one said that food was not good, but they talked about how they missed the food made at home by them or by their family (table 6).

Table 6: Expressions mentioned during the SERVPERF questionnaire and their frequency of occurrence

Expressions	Frequency of occurrence
Tangibility	
The unit could have better equipment	2
The installations are warming and feel comfortable	11
Responsiveness	
The unit should have more employees	7
Sometimes has to wait longer to be attended	10
Assurance	
Like everyone at the unit, they are all very nice	10
Empathy	
Service providers are always interested in our best and in helping	4
Other aspects	
Feels like the activities are a good entertainment	6
Is very pleased with physiotherapy	9
Would like to have more or longer sessions of physiotherapy	2
Misses the food from home	4

With the results shown in the table, it is possible to conclude that everyone who participated in the interviews is satisfied with the conditions of the installations and that the majority of the patients liked and said good things about the service providers.

Additionally, nine patients referred to how happy they were with the physiotherapy they were having and only two would like to have more or longer sessions. Only two individuals mentioned they believed the unit could have better equipment/technologies and ten said they had to wait a while to be attended, and, regarding this issue, seven patients suggested the unit should hire more workers.

5.4.3. Final Observations

Regarding the PSQ, patients have a very positive perception of the service provided in the LTC unit of Arruda dos Vinhos and overall are very pleased with being there.

With the analysis of the information gathered with the interviews based on the SERVPERF questionnaire, it was possible to conclude that very few aspects need improvement, in the point of view of the customers. The service of the unit is perceived as extremely good, since the global quality of the services provided has a median of 7, with more than 50% of the patients evaluating it with the maximum score (appendix 4). The only dimensions with some topics that have opportunities for further improvement, according to the perception of the patients, are "Responsiveness" and "Tangibles".

Also, it was very clear to understand, based on what the patients referred in the interviews, that some other matters should be part of the SERVPERF questionnaire when talking about service quality assessment, in order to have a more complete evaluation of its quality. These matters are the activities performed at the LTC unit, the physiotherapy service, and the food provided.

5.5. Perceived Health-Related Quality of Life Analysis

5.5.1. Initial Analysis

To comprehend how HRQoL is perceived and its evolution among the first month of institutionalization in the LTC unit of Arruda dos Vinhos, all the answers from the two phases of the interviews based on the EQ-5D questionnaire (before institutionalisation and after 30 days of institutionalisation) were analysed and the median and the interquartile range for each dimension was calculated. After, the difference between the medians and the interquartile range of the answers given before institutionalisation and the answers given after 30 days of institutionalisation was measured, obtaining the results presented in table 7 (appendix 5).

Table 7: Results of the EQ-5D questionnaire

Dimensions	**Before institutionalisation**		**After 30 days of institutionalisation**		**Difference**	
	Median	**Interquartile range**	**Median**	**Interquartile range**	**Median**	**Interquartile range**
Mobility	2	0	2	0	0	0
Self-Care	3	1	2	1	1	0
Usual Activities	2	0	2	0	0	0
Pain/Discomfort	2	0	2	0,5	0	0,5
Anxiety/Depression	2	1	1	0,5	1	-0,5
Total Median	2		2		0	

It is possible to note that before institutionalisation there are no dimensions with the best score (1) and that the dimension with the worst score is "Self-Care" with a median of 3 and an interquartile range of 1. The other four dimensions have a median of 2 and only "Anxiety/Depression" has an interquartile range different than 1. The interquartile ranges of 0 and 1 show there is few variability through the answers given by the patients which means the patients tend to have similar opinions.

Analysing in more detail the dimension "Mobility", it is possible to conclude that every patient answered, before and after 30 days of institutionalisation, they had some problems in moving (appendix 5). By simply considering the answers to the question related to this dimension, it could be concluded that there was no improvement at all and that all the patients were exactly on the same stage when they were received in the unit and one month later. Nevertheless, this is not the case as it is possible to understand further ahead (Section 5.5.2). The median of this dimension is in both phases equal to the scale middle point which means it does not have a positive nor negative assessment, based on the questionnaires.

Regarding "Self-Care", nine of the eleven patients (appendix 5) perceived improvement from before the institutionalisation and after 30 days. This means that patients feel like they are more capable of taking care of themselves, including dressing and taking a shower. The median of this dimension increased from 3 to 2, which means it moved from being negatively assessed to being neutral.

About the dimension "Usual Activities", only two patients (appendix 5) felt an improvement between the moment in which they were institutionalised in the unit and one month later, which means that only two people felt like they could perform better some of their usual activities. For this dimension it was possible to understand why the majority of the people answered the same thing twice – this is possibly because there are no big opportunities to perform usual and daily activities when at a LTC unit. The median of this dimension is again on both phases equal to the middle point which is not a good nor bad evaluation.

When it comes to "Pain and Discomfort", four patients (appendix 5) said they felt less pain or discomfort one month after entering the unit, and the others felt the same on both phases. The median of this dimension is like the previous, equal to the middle point, being neither positive nor negative.

Lastly, for "Anxiety and Depression" there were improvements for 4 patients (appendix 5) which means they feel psychologically better one month after being institutionalised than they were before arriving. For this case, the median increased from 2 to 1, meaning it changed from a neutral assessment to a positive one.

5.5.2. Global Evaluation

The global evaluation is based on the scored obtained through the conversion of the health states of the patients (before and after receiving LTC), according to the answers gathered with the EQ-5D-3L questionnaire, following its conversion index suggested by Ferreira *et al.* in 2014 (appendix 8).

Table 8: Health-Related Quality of Life gain per patient

Patient	HRQoL state before institutionalisation	Score	HRQoL state after 30 days of institutionalisation	Score	HRQoL gain
1	23322	-0,101	22322	0,068	0,169
2	22221	0,325	21121	0,585	0,26
3	23221	0,123	22211	0,435	0,312
4	22221	0,325	22211	0,435	0,11
5	23221	0,123	22221	0,325	0,202
6	23221	0,123	22221	0,325	0,202
7	22221	0,325	21221	0,482	0,157
8	22231	0,169	21221	0,482	0,313
9	23322	-0,101	23312	0,009	0,11
10	23222	0,086	22222	0,288	0,202
11	22221	0,325	21121	0,585	0,26

The results obtained through the conversion show that every patient had an improvement in their HRQoL during the first 30 days of institutionalisation.

5.5.3. Content analysis

The dimensions of the EQ-5D-3L questionnaire can be difficult to translate the status of the patients regarding those dimensions, and this is especially the case of the questions about mobility and self-care (as it is further detailed below). With the interviews it was possible to understand that in most cases, even though the answer of the questionnaire is

the same in the two moments of the interview (before institutionalisation and after 30 days of institutionalisation), there was actually an improvement. Considering the "Mobility" dimension as an example, it gives options that are very vague (no problems, some/moderate problems, or severe/extreme problems in moving) and through the answers, it is only possible to understand if an individual can move, has difficulties in moving or just cannot move.

A good example of an improvement that is not possible to understand through the questionnaire is as follows. Someone who is on a wheelchair at the moment of the first interview and has some difficulties on moving around, and then after 30 days of institutionalisation is already walking by his feet with the help of a stroller but also has difficulties on moving around. The answer to the question will in both situations be "I have some difficulties in moving", but in the end, there was a big improvement in the health status of the patient. In fact, at the time of the first interview, he could barely stand on his feet, and, at the time of the second interview, the patient was already able to stand and use his legs and feet to move, even if with some difficulties. There is plenty of information that gets lost when just looking at the answers of the questionnaires, and that is very important and meaningful to understand a patient's evolution from one month to the other.

Mobility dimension

"Mobility" is associated with how patients can or cannot dislocate from one place to another. Some expressions said by the patients about this matter were "*I am on a wheelchair and need someone to push it*", "*I am on a wheelchair and can move around by myself*", "*I walk with the help of a stroller*" and "*The unit has good conditions for us to recover*" (table 9).

Self-care dimension

"Self-Care" is majorly associated with how patients can take care of themselves, namely if they need help dressing and washing or if they can do it on their own. Patients said, "*I cannot take a shower by myself, but I can dress myself*", "*I only need help to dress the lower part of the body*" and "*I believe I could take a shower by myself, but the caregivers do not let me*" (table 9). Like mentioned before, there were improvements in this matter, and only two (appendix 5) patients did not feel like they improved which means that more than 75% of the patients improved.

Usual Activities dimension

"Usual Activities" is associated with activities like working, cleaning, having leisure activities and more. Many patients felt like they had problems in performing those activities, and the majority felt like they did not even have the opportunity to perform those activities, which is the expected while being at a LTC unit. Expressions mentioned were "*I do not have the opportunity to perform usual activities here*" and "*I hope I can go back to perform those activities I was used to perform*" (table 9).

Pain and Discomfort dimension

Concerning "Pain and Discomfort", the majority of the patients were feeling some pain or discomfort, either because of surgery, physiotherapy or weather changes. Thus, some expressions said were "*Sometimes I have some pain due to the physiotherapy*", "*I only have some pain when the weather is about to change a lot*" and "*I had a surgery and still have some pain due to it*" (table 9).

Anxiety and Depression dimension

"Anxiety and Depression" is a very vague subject and can be interpreted in several different ways. Patients associated it with being positive or negative, crying about their situation, just wanting to take care of themselves to totally recover or just wanting to go home to their things. Patients mentioned expression like "*I cry a lot*" and "*I just want to go home*" (table 9).

Table 9 summarises the frequency of occurrence of the referred sentences by the patients at the time of the first and the second interviews.

Table 9: Expressions mentioned during the EQ-5D questionnaire and their frequency of occurrence

Expressions	Frequency of occurrence in the 1st interview	Frequency of occurrence in the 2nd interview
Mobility		
Uses a wheelchair with help	5	2
Uses wheelchair, by himself	4	2
Walks with a stroller	2	4
The unit has good conditions to recover	5	5
Self-Care		
Cannot shower but can dress	1	2
Needs help to dress the lower part	3	3
Can shower by himself, but the service providers do not let	1	1
Usual Activities		
Do not have the opportunity to perform usual activities at the unit	5	4
Hopes to be able to perform usual activities again	4	4
Pain/Discomfort		
Has pain due to physiotherapy	3	3
Has pain with weather changes	1	1
Anxiety/Depression		
Wants to go home	3	2
Cries a lot	3	0

With this analysis, it is possible to verify what was said above about "Mobility", where information gets lost when just considering the answers to the questionnaires, but also for other dimensions.

Regarding "Self-Care", some individuals, at the moment of the first interview, could not dress nor take a shower by themselves. However, at the moment of the second interview, it was possible to note an improvement since they could already dress the upper part of the body but still could not take a shower by themselves. Despite this evolution, the answer to the questionnaire was again the same in both phases of the questionnaire "I am

unable to wash or dress myself". In fact, they cannot dress themselves completely, but there was an improvement; and if before these patients were not able to move one arm and hand, at the second phase of the interview they could already use that arm and hand to help dressing themselves.

Once again, by the answers to the questionnaires, it can, very often, look like there was no improvement at all and that the patients, after 30 days of institutionalisation, were at the same point as they were one month before, which majorly is not the case.

Concerning "Usual Activities", the results obtained through content analysis were majorly the same as the ones obtained through the questionnaires, there were no big improvements. Only one less person mentioned he had no opportunity to perform daily activities since that particular patient was already able to organise and save his clothes on his cabinet. As mentioned before (section 5.4.1) this happens possibly due to the lack of opportunity to perform this type of activities while institutionalised in a LTC unit.

When it comes to "Pain and Discomfort", it was possible to verify that several patients have pain due to physiotherapy and sometimes have pain in the bones due to weather changes, which means that people in the unit do not tend to have pain directly because of their health problems, unless they were operated not long ago. Even though there were no improvements for this dimension, understanding in more detail the reasons of the patients' pain and discomfort is important so they can be diminished and, consequently, obtain better scores in this dimension.

About "Anxiety and Depression", the improvement noted with the results of the questionnaires was actually confirmed with the content analysis, where before institutionalisation 3 patients mentioned they cried a lot and after the 30 days of institutionalisation there was a reduction in this aspect. This possibly means that, by seeing even the smallest improvements, patients tend to be more relaxed and optimistic.

5.5.4. Final Observations

With the help of the content analysis, it was possible to conclude that the overall assessment of the perceived HRQoL is positive instead of not good nor bad, as it could be concluded based only on the interviews. That is because there were more improvements than the ones actually captured by the patients' answers to the questionnaires.

However, there is still space for improvement for the majority of the patients, especially when it comes to performing the usual activities in life, including being able to take care of themselves. Even though in some cases people feel like they could do more than they are allowed to in the LTC unit, there is always the possibility of improvement which can be confirmed by the interviews, since no one gave the best score to every dimension.

5.6. Perceived Well-being Analysis

5.6.1. Initial analysis

To understand how the patients perceive their well-being and if the perception varies along the first month in the unit, the answers obtained from the two phases of the interviews based on the ICECAP-O questionnaire were analysed and the median and the interquartile range for each dimension was calculated. Additionally, the difference between the medians and interquartile range of the answers of the two phases of the interviews was measured, and the results are shown in table 10 (appendix 6).

Table 10: Results of the ICECAP-O questionnaire

Dimensions	Before institutionalisation		After 30 days of institutionalisation		Difference	
	Median	Interquartile range	Median	Interquartile range	Median	Interquartile range
Affective Relations	4	1	4	0	0	-1
Thinking about the future	3	1	3	0,5	0	-0,5
Feeling valued	2	1	3	0,5	1	-0,5
Enjoyment/ Pleasure	3	0	3	0	0	0
Independency	2	0	3	1	1	1
Total Median	3		3		0	

Through the results of the questionnaire, it is possible to understand that the dimension with the best evaluation before institutionalisation was "Affective Relations", with a median of 4 and an interquartile range of 1. On the other hand, the dimensions with the lowest assessment were "Feeling Valued" and "Independency", with a median of 2 in the first phase and an interquartile range of 1 and 0, consecutively. The interquartile ranges of 0 and 1 represent there is few variability through the answers given by the patients meaning the patients usually have similar opinions.

When it comes to "Affective Relations", only two patients (appendix 6) gave different answers between before institutionalisation and after 30 days of institutionalisation, which means everybody else felt like they had the same amount of love and friendship when they entered the LTC unit and one month later. The median of this dimension is above the middle point of the scale in both phases of the questionnaire, which means it has a positive evaluation.

Regarding "Thinking about the future", also only two patients (appendix 6) had fewer preoccupations about their future one month after entering the unit than they had when they arrived. The other nine felt exactly the same on both phases. The median is 3 for both phases, so it has a positive assessment.

Concerning "Feeling valued", four patients (appendix 6) perceived an improvement between before the institutionalisation and after 30 days. However, this means that still seven patients felt they were at the same stage on both phases of the questionnaire. The median for this dimension increased from 2 to 3, moving from having a negative assessment to a positive one.

About "Enjoyment and Pleasure", only one person (appendix 6) felt like he had more pleasure and enjoyment one month after getting to the unit than they had when they entered, which once again means that the other 10 individuals had the same perception of enjoyment and pleasure when they entered as they had one month later. The median is again above the scale middle point, which makes it positive.

Lastly, regarding "Independency", again four patients (appendix 6) felt like they were more independent after 30 days of being at the unit, meaning that the other 7 perceived the same on both stages. The median increased from 2 to 3, resulting in a change to a positive assessment.

5.6.2. Global Evaluation

The global evaluation is based on the score obtained through the conversion of the well-being states of the patients (before and after receiving LTC), according to the answers gathered with the ICECAP-O questionnaire, taking in consideration the index proposed by Coast *et al.* in 2008.

Table 11: Overall well-being gain per patient

Patient	Well-being state before institutionalisation	Score	Well-being state after 30 days of institutionalisation	Score	Overall Well-being gain
1	32132	0,5856	32232	0,7001	0,1145
2	43332	0,8118	43333	0,8890	0,0772
3	43222	0,7163	43333	0,8890	0,1727
4	33333	0,8680	43333	0,8890	0,0210
5	42222	0,6753	42322	0,7250	0,0497
6	42232	0,7211	42233	0,7983	0,0772
7	33332	0,7908	33332	0,7908	0
8	42232	0,7211	43333	0,8890	0,1679
9	43242	0,7638	43242	0,7638	0
10	43332	0,8118	43332	0,8118	0
11	33333	0,8680	44333	0,9607	0,0927

These results show that almost every patient, 7 out of the 11, had an improvement in their overall well-being during the first 30 days of institutionalisation.

5.6.3. Content analysis

Through the interviews, it was possible to gather more information than the one collected simply with the questions of the ICECAP-O questionnaire.

Affective Relations dimension

When talking about "Affective Relations", the interviewees majorly associated it to their family and the visits they received while they were institutionalised in the unit. The lowest rates, in this case 3, were, in most cases, given by patients who missed their spouses that already left or who would like to have more visits from their family in the unit. However, many people mentioned "*I have a lot of visits*", "*My family cares a lot about me*" and "*I feel really completed regarding love and friendships*" (table 12).

Thinking about the future dimension

Concerning "Thinking about the future", the majority of the patients said they were afraid of not recovering and consequently not being able to return to the lives they used to have

before. Some concerns mentioned by the patients about this matter were "*I just want to go back to my normal life, and I am afraid that will not happen*". Besides that, other expressions said were "*I do not think a lot about the future*", "*I am very positive and just want to recover*" and "*I am thinking about going to a nursing home after leaving the unit*" (table 12).

Doing things that make you feel valued dimension

When it comes to "Doing things that make you feel valued", a big portion of the individuals feel like they can do very little things that make them feel valued and the reasons are, possibly, the fact of not being able to do so because of their health or not having the opportunity because they are in a health unit where the majority of the things are performed by the employees. Some expressions mentioned by the patients were "*I used to help others a lot and I hope I can still have that chance when I recover*" and "*I used to do everything at home and want to go back at it*" (table 12).

The results showed there was an improvement in this matter because four patients (appendix 6) rated the dimension with a higher score in the second interview, however this means that in more than 50% of the cases there was no improvement, which is understandable because even the ones that would be able to do things that make them feel valued do not have the opportunity to do so.

Enjoyment and Pleasure dimension

The dimension "Enjoyment and Pleasure" was in every case associated with the activities patients would do to spend their time such as watching television, reading and talking to others, but also with the activities where patients participated such as playing bingo, painting, helping with the decoration of thematic parties and so. Regarding this matter, some expressions mentioned were "*I would prefer if the sleeping time was later*" and "*I really enjoy reading and watching television, but I cannot because I can no longer see with my glasses*". Something that was shared by a great part of the patients was "*I wish I could go outside more often to get some fresh air*" (table 12).

Independency dimension

Finally, the dimension about "Independency" was associated with how many things the patients could do by themselves without any help. It was possible to understand that the ratings of this dimension were really low by the time the individuals entered the LTC unit

because their state of health was low, which prevented the possibility of being autonomous. Some thoughts were "*I think I could do more things by myself, but I am not allowed*" and "*I can only do few things by myself like eating and doing some basic hygiene*" (table 12).

The results of the second interviews showed some improvements, however less than 50% of the patients (appendix 6) said their independency increased which is comprehensible since there are not many opportunities to be independent because the caregivers want to avoid falls and patients getting hurt and end up not letting the patients do many things by themselves.

All the information mentioned, as well as the frequency of occurrence of every expression, is represented in table 12.

Table 12: Expressions mentioned during the ICECAP-O questionnaire and their frequency of occurrence

Words and expressions	Frequency of occurrence in the 1st interview	Frequency of occurrence in the 2nd interview
Affective Relations		
Has a lot of visits	3	3
The family cares a lot about him	3	2
Feels really completed regarding love and friendships	1	1
Thinking about the future		
Wants to go back to his normal life, and is afraid that will not happen	3	4
Does not think a lot about the future	1	1
Is very positive and just wants to recover	2	1
Is thinking about going to a nursing home after leaving the unit	2	2
Feel valued		
Is used to help others a lot and hopes to still have that chance once recovered	3	1
Is used to do everything at home and wants to go back at it	1	2
Enjoyment/Pleasure		
Would prefer if the sleeping time was later	4	3
Enjoys reading and watching television, but cannot because can no longer see with the glasses	3	5
Wishes he could go outside more often to get some fresh air	4	4
Independence		
Thinks he could do more things by himself, but is not allowed	1	3
Can only do few things by himself like eating and doing some basic hygiene	3	1

With the content analysis, it is possible to understand that simply with the answers to the questionnaires there is some information that is not considered, however, the differences

are not as remarkable as for perceived HRQoL. Also, the results obtained confirmed and completed the information already gathered instead of changing it.

Starting with "Affective Relations", the results are the same as the ones obtained with the questionnaires, people feel the same amount of love, care, and friendship before and after the 30 days of institutionalisation.

Regarding "Thinking about the future", content analysis showed similar results to the ones collected with the questionnaires where only one more person was afraid of not going back to his normal life after being institutionalised for 30 days, and one less person mentioned his positiveness.

About "Feeling Valued", one more patient mentioned, after the 30 days, how he wants to go back at doing everything at home in order to feel valued again, and less two patients mentioned their will to go back at helping others.

Concerning "Enjoyment and Pleasure", the number of people who mentioned the sleeping hours reduced from 4 to 3, and 2 more patients said they would like to read and watch television, but the glasses with outdated lenses do not let them.

When it comes to "Independency", the analysis confirmed the improvements noted with the questionnaires. It was possible to see that more patients, after 30 days of institutionalisation, felt like they could do more thing by themselves, only they were not allowed to or did not have the opportunity to do so. Also, fewer patients felt like they could do only basic things by themselves, which means they believed they were able to do more.

5.6.4. Final Observations

Overall the dimensions were evaluated above the scale middle point of 2,5, and the final median of the questionnaires was positive in both phases. In terms of well-being, it is possible to conclude there was very little improvement, however, the overall assessment is positive. Again, there are many opportunities for improvement specially when it comes to being independent.

5.7. Discussion

All the previous analyses were performed with the purpose of obtaining results that allow concluding whether the propositions defined in the previous chapter are true or not.

Table 13 shows the relation between the PSQ, the HRQoL and the overall well-being of patients, taking in consideration the answers to the question 23 of the SERVPERF questionnaire and the added values of improved HRQoL and overall well-being. After, the results obtained with the content analysis were used to complete the information regarding the relation between these matters.

Table 13: Relation between PSQ, HRQoL and overall well-being

Patient	PSQ	HRQoL gain	Overall well-being gain
1	5	0,169	0,1145
2	5	0,26	0,0772
3	6	0,312	0,1727
4	7	0,11	0,0210
5	7	0,202	0,0497
6	7	0,202	0,0772
7	6	0,157	0
8	7	0,313	0,1679
9	7	0,11	0
10	6	0,202	0
11	7	0,26	0,0927

As said before, the results of the PSQ were extremely good, and the perceived HRQoL also had good perceptions. Nevertheless, having great service does not mean that the perceived HRQoL will also be great. This happens because the health status of an individual does not depend only if they are well accommodated, if the employees are nice and knowledgeable and if they are attended right away. It also depends a lot on how severe the situation was, how healthy people used to be and how the body reacts to the treatments (Evans *et al.*, 1994).

However, if the service at a health unit is good, the results and improvements seen in the patients' health condition are possibly better than the ones obtained in a unit with poor service (Dagger and Sweeney, 2006; Lupo, 2016). In fact, through the joint analysis made to the three constructs it was possible to understand that patients with good perceptions of service quality generally have good perceptions of their HRQoL and, consequently, good gains in their HRQoL, between before institutionalisation and 30 days after institutionalisation (table 13: patients 3, 5, 6, 8, 10 and 11).

With the content analysis, it was possible to see that many patients were pleased with the service and especially with the physiotherapy they were having. Also, it was mentioned there were very good conditions to recover at the LTC unit of Arruda dos Vinhos. With the interviews it was possible to understand that there were improvements in many patients, table 8 showed that every patient had a HRQoL gain. With these results, it seems like there is, in fact, a relation between the PSQ and the HRQoL, which in addition to the research of Dagger and Sweeney (2006), where they showed that service quality and quality of life are related, and that service quality influences quality of life, allows to conclude that the first proposition "*P1: Overall perceived service quality is related to the health-related quality of life*" is true.

As regards to the relation between the PSQ and the perceived overall well-being, the perceived overall well-being was rated above the middle point. For this case, both the service quality and overall well-being have good scores. Table 13 does not show any relation between the scores given to the service and the overall well-being gains and, throughout the interviews, there was nothing mentioned by the patients that allowed confirming that same relation. On the other hand, many patients referred to the activities developed in the unit as being really good for the mind which increases the perception of the dimension "Enjoyment and Pleasure". That being said, the proposition "*P2: Overall perceived service quality is related to the overall well-being*" is not possible to be confirmed, because even though the dimension referred above can be positively influenced by the quality of the service, there is not enough support to assess if the proposition is true.

The last proposition is about the HRQoL being related to the overall well-being. Table 13 shows that almost every patient (8 out of the 11 patients) who had a HRQoL gain also had an overall well-being gain. Also, the patients with the highest HRQoL gain (patients 3 and 8) were the ones with the highest well-being gain, and patients with low well-being gain generally had low HRQoL gain as well (patients 4,7 and 9). Also, it was reinforced by the content analysis, that patients with positive health improvements are less concerned about their future and patients who can move and take care of themselves are more independent and more capable of feeling more joy. These results show that there is a relation between the HRQoL and the overall well-being, which complemented with a research made in 2008 by Edmondson *et al.*, where they showed how existential well-being and HRQoL are related and that existential well-being predicts HRQoL, it becomes

possible to infer that "*P3: Health-related quality of life is related to the overall well-being*" is verified.

In summary, two of the three propositions developed were confirmed to be true, meaning that the PSQ is related to the quality of life of the patients receiving LTC at the LTC unit of Arruda dos Vinhos, when it comes to their HRQoL.

Chapter 6. Conclusion

6.1. Introduction

This chapter intends to present the main conclusions of the study. The research question will be answered, and the achievement of the specific objectives will be verified. Also, some limitations regarding the obtained results will be addressed, as well as recommendations on future investigations about the relation between PSQ and perceived quality of life.

6.2. Main conclusions

As mentioned in the first chapter, the main objective of this research was to understand the relation between PSQ and quality of life, while quality of life can be measured both through HRQoL and overall well-being. The present thesis focused specifically on the typology of medium duration and rehabilitation of the LTC unit of Arruda dos Vinhos.

In order to reach the main objective, a qualitative study was performed through the execution of interviews based on the questionnaires SERVPERF, EQ-5D and ICECAP-O. The interview based on the SERVPERF questionnaire was performed once after the patients being 30 days institutionalised, and it gathered information about the quality of the service perceived by the patients at the LTC unit under analysis, and the interviews based on the EQ-5D and the ICECAP-O questionnaires were applied twice, before institutionalisation and after 30 days of institutionalisation, in order to collect information about the perceived HRQoL and the perceived overall well-being of the patients, consecutively.

The information obtained was analysed and complemented through content analysis. The results showed that the overall quality of the service is very good since more than 60% of the patients (appendix 4) rated it with the highest score, 7. The perceived HRQoL was generally perceived as positive as well as the perceived overall wellbeing.

Regarding service quality, the aspect with the lowest rate was inserted in the dimension "Responsiveness", and it is related to prompt service (Q11), with a median of 5. Within the dimension "Tangibles", the question regarding up-to-date equipment and technology (Q1) had the second-lowest rating, but still very high, with a median of 6. Even so, every dimension had the maximum median of 7. It was also possible to conclude that to better evaluate the quality of a LTC service, some other aspects like the activities performed at

the LTC unit, the physiotherapy service, and the food provided should also be part of the questionnaires since these matters can influence the patients' perception.

The HRQoL improved from before institutionalisation until after 30 days which was reinforced by the content analysis, moving from a neutral evaluation to a positive one. The item with the lowest rating at the time of the first interviews was "Self-Care", which improved until the time of the second interviews. It was possible to see through the conversion of the scores obtained that each patient had a HRQoL gain throughout the first month of institutionalisation.

Overall well-being had little improvement from the first moment of the interviews until the second which was corroborated by the content analysis. However, it has a positive assessment, and there is still space for more improvement.

Regarding the relation between the three constructs mentioned, a joint analysis of each patient's perception about PSQ, HRQoL and overall well-being was developed. The results showed that PSQ and perceived HRQoL are related and that perceived HRQoL and perceived overall well-being are also related. When it comes to the relation between PSQ and perceived overall well-being, the research did not show results that supported there is a relation.

To finalise, by answering to the research question of this study, the perceived service quality is positively related to the quality of life of patients receiving LTC at the LTC unit of Arruda dos Vinhos, when quality of life is measured only through HRQoL.

6.3. Limitations and future recommendations

The major limitation of the present research was the sample size, which was very small yet expectable when performing a project at a specific LTC unit. Since only patients who reunited all the conditions to be part of the study participated in the interviews, that instantly reduced the population to less than 50% of the total number of patients receiving care at the LTC unit of Arruda dos Vinhos under the typology of medium-duration and rehabilitation. However, even though the sample size is reduced, every individual that reunited all the conditions participated in the study, meaning that the sample was as big as it could be.

That being said, it is very difficult to extrapolate the results to other LTC units in Portugal, unless there are many similarities to the unit studied by this research.

Also, the demographic characteristics of the population, especially the high percentage of individuals with low levels of education, may have influenced how service quality was assessed, even though pre-tests were performed, and the questionnaires were adjusted.

Considering the limitations, recommendations are that future studies should have a bigger sample by, for example, extending this research to more LTC units. A research including all the LTC units of Lisboa and Vale do Tejo and assessing the similarities and the differences of the results obtained could be interesting to study.

Also, a research including how the families of the patients perceive the quality of the service provided by the LTC unit and its relation with how the families perceive the patients' improvement in terms of quality of life could be relevant to perform. This is because the relatives of the patients may have different perceptions from the individuals who actually have the experience.

Lastly, for the present study, only the typology of medium-duration and rehabilitation was assessed. However, future studies could perform the same analysis but regarding the typology of long-term and maintenance in order to understand if the PSQ is related to how patients in this typology perceive their quality of life.

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Appendix

1. SERVPERF QUESTIONNAIRE – QUALITY OF THE SERVICES PROVIDED

Items		Scale						
		Totally Disagree						Totally Agree
Q1	The long-term care unit has up-to-date equipment and technology.	1	2	3	4	5	6	7
Q2	Facilities are visually appealing.	1	2	3	4	5	6	7
Q3	The service providers have a careful and appropriate presentation for the functions it performs.	1	2	3	4	5	6	7
Q4	The facilities' presentation is according to the services provided.	1	2	3	4	5	6	7
Q5	When the institution promises to do something by a certain time, it does so.	1	2	3	4	5	6	7
Q6	When you have a problem, the institution shows a sincere interest in solving it.	1	2	3	4	5	6	7
Q7	The institution performs the services right the first time.	1	2	3	4	5	6	7
Q8	The institution performs the services at the time it promises to do so.	1	2	3	4	5	6	7
Q9	Medical records are kept updated and error free.	1	2	3	4	5	6	7
Q10	The institution tells exactly when services will be performed.	1	2	3	4	5	6	7
Q11	Service providers give prompt service.	1	2	3	4	5	6	7
Q12	Service providers are always willing to help.	1	2	3	4	5	6	7
Q13	Service providers are always available to answer what is asked.	1	2	3	4	5	6	7
Q14	The behaviour of the service providers inspires confidence in me.	1	2	3	4	5	6	7
Q15	I feel safe with the services provided to me by the service providers.	1	2	3	4	5	6	7
Q16	Service providers are polite and attentive to the patients.	1	2	3	4	5	6	7
Q17	Service providers show to have knowledge when answering questions.	1	2	3	4	5	6	7
Q18	The institution gives individual attention.	1	2	3	4	5	6	7
Q19	Service providers give personal attention.	1	2	3	4	5	6	7
Q20	Service providers provide personalized services according to the needs of each one.	1	2	3	4	5	6	7
Q21	The institution always has the patients' best interest at heart.	1	2	3	4	5	6	7
Q22	The institution has operating hours convenient to the patients.	1	2	3	4	5	6	7
		Poor						Excellent
Q23	How do you classify the overall quality of the services provided by the physicians?	1	2	3	4	5	6	7

2. EQ-5D-3L QUESTIONNAIRE – PERCEPTION OF QUALITY OF LIFE

Mark with X the statement that best describes your current state of health.

Mobility

I have no problems in moving ☐

I have some problems in moving ☐

I am confined to bed ☐

Self-Care

I have no problems with self-care ☐

I have some problems washing or dressing myself ☐

I am unable to wash or dress myself ☐

Usual Activities (e.g. work, study, housework, family or leisure activities)

I have no problems with performing my usual activities ☐

I have some problems with performing my usual activities ☐

I am unable to perform my usual activities ☐

Pain/Discomfort

I have no pain or discomfort ☐

I have moderate pain or discomfort ☐

I have extreme pain or discomfort ☐

Anxiety/Depression

I am not anxious or depressed ☐

I am moderately anxious or depressed ☐

I am extremely anxious or depressed ☐

To help people say how good or bad their health state is, the following scale is presented, numbered from 0 to 100, where 100 represents the best health state imaginable and 0 represents the worst health state imaginable.

We would like to know your current overall state of health. In this sense, mark an X on the value that better quantifies it.

Please write that number in the box below.

YOUR CURRENT HEALTH = ☐

3. ICECAP-O – PERCEPTION OF WELL-BEING AND CAPABILITIES

In each section mark with an "X" the statement that best describes your wellbeing and capabilities at the moment.

1.Love and Friendship	
I can have all of the love and friendship that I want	☐ 4
I can have a lot of the love and friendship that I want	☐ 3
I can have a little of the love and friendship that I want	☐ 2
I cannot have any of the love and friendship that I want	☐ 1

2. Thinking about the future	
I can think about the future without any concern	☐ 4
I can think about the future with only a little concern	☐ 3
I can only think about the future with some concern	☐ 2
I can only think about the future with a lot of concern	☐ 1

3. Doing things that make you feel valued	
I am able to do all of the things that make me feel valued	☐ 4
I am able to do many of the things that make me feel valued	☐ 3
I am able to do a few of the things that make me feel valued	☐ 2
I am unable to do any of the things that make me feel valued	☐ 1

4. Enjoyment and pleasure	
I can have all of the enjoyment and pleasure that I want	☐ 4
I can have a lot of the enjoyment and pleasure that I want	☐ 3
I can have a little of the enjoyment and pleasure that I want	☐ 2
I cannot have any of the enjoyment and pleasure that I want	☐ 1

5. Independence	
I am able to be completely independent	☐ 4
I am able to be independent in many things	☐ 3
I am able to be independent in a few things	☐ 2
I am unable to be at all independent	☐ 1

Mark one box only in each section

4. SERVPERF – Results from the questionnaires

Items	1	2	3	4	5	6	7	8	9	10	11	Median	IR
Tangibles													**0**
Q1	6	7	5	7	6	6	6	6	6	6	6	**6**	**0**
Q2	6	7	7	7	6	6	6	7	7	5	7	**7**	**1**
Q3	6	7	7	7	7	7	7	7	7	7	7	**7**	**0**
Q4	6	7	7	7	7	7	6	7	7	6	7	**7**	**0,5**
Reliability													**0**
Q5	6	7	7	6	7	7	6	7	7	6	6	**7**	**1**
Q6	6	7	6	7	7	7	6	7	7	6	6	**7**	**1**
Q7	6	7	7	7	7	7	6	7	7	6	7	**7**	**0,5**
Q8	7	6	7	6	7	7	6	7	7	6	6	**7**	**1**
Q9	6	6	7	6	7	7	5	7	7	5	7	**7**	**1**
Responsiveness													**1**
Q10	6	6	7	6	7	7	7	7	7	6	6	**7**	**1**
Q11	5	5	5	5	6	6	5	7	5	5	6	**5**	**1**
Q12	6	7	7	7	7	7	7	7	7	7	7	**7**	**0**
Q13	6	7	7	7	7	7	7	7	7	6	7	**7**	**0**
Assurance													**0**
Q14	7	7	7	7	7	7	7	7	7	6	6	**7**	**0**
Q15	7	7	7	7	7	7	7	7	7	6	6	**7**	**0**
Q16	6	7	6	7	7	7	6	7	7	7	7	**7**	**0,5**
Q17	7	7	7	7	7	7	6	7	7	6	6	**7**	**0,5**
Empathy													**0**
Q18	7	7	7	7	7	7	6	7	7	7	6	**7**	**0**
Q19	7	7	7	7	7	7	6	7	7	7	6	**7**	**0**
Q20	7	7	7	7	7	7	6	7	7	7	7	**7**	**0**
Q21	7	7	7	7	7	7	7	7	7	6	7	**7**	**0**
Q22	7	7	7	7	7	7	7	7	7	7	7	**7**	**0**
Q23	5	5	6	7	7	7	6	7	7	6	7	**7**	**1**

IR – Interquartile Range

Q - Question

5. EQ-5D – Results from the questionnaires

Variable	Before institutiona--lisation	After 30 days of institutiona--lisation	Difference
Mobility			
1	2	2	0
2	2	2	0
3	2	2	0
4	2	2	0
5	2	2	0
6	2	2	0
7	2	2	0
8	2	2	0
9	2	2	0
10	2	2	0
11	2	2	0
Median	**2**	**2**	**0**
Self-Care			
1	3	2	1
2	2	1	1
3	3	2	1
4	2	2	0
5	3	2	1
6	3	2	1
7	2	1	1
8	2	1	1
9	3	3	0
10	3	2	1
11	2	1	1
Median	**3**	**2**	**1**
Daily Activities			
1	3	3	0
2	2	1	1
3	2	2	0
4	2	2	0
5	2	2	0
6	2	2	0
7	2	2	0
8	2	2	0
9	3	3	0
10	2	2	0
11	2	1	1
Median	**2**	**2**	**0**

Variable	Before institutiona--lisation	After 30 days of institutiona--lisation	Difference
Pain and Discomfort			
1	2	2	0
2	2	2	0
3	2	1	1
4	2	1	1
5	2	2	0
6	2	2	0
7	2	2	0
8	3	2	1
9	2	1	1
10	2	2	0
11	2	2	0
Median	**2**	**2**	**0**
Anxiety and Depression			
1	2	2	0
2	1	1	0
3	2	1	1
4	1	1	0
5	2	1	1
6	2	1	1
7	1	1	0
8	1	1	0
9	2	2	0
10	2	2	0
11	2	1	1
Median	**2**	**1**	**1**

Interquartile range	Before institutiona--lisation	After 30 days of institutiona--lisation	Difference
Mobility	**0**	**0**	**0**
Self-Care	**1**	**1**	**0**
Daily Activities	**0**	**0**	**0**
Pain and Discomfort	**0**	**0,5**	**1**
Anxiety and Depression	**1**	**0,5**	**1**

6. ICECAP-O – Results from the questionnaires

Variable	Before institutiona--lisation	After 30 days of institutiona--lisation	Difference
Affective Relations			
1	3	3	0
2	4	4	0
3	4	4	0
4	3	4	1
5	4	4	0
6	4	4	0
7	3	3	0
8	4	4	0
9	4	4	0
10	4	4	0
11	3	4	1
Median	**4**	**4**	**0**
Thoughts about the future			
1	2	2	0
2	3	3	0
3	3	3	0
4	3	3	0
5	2	2	0
6	2	2	0
7	3	3	0
8	2	3	1
9	3	3	0
10	3	3	0
11	3	4	1
Median	**3**	**3**	**0**
Feeling valued			
1	1	2	1
2	3	3	0
3	2	3	1
4	3	3	0
5	2	3	1
6	2	2	0
7	3	3	0
8	2	3	1
9	2	2	0
10	3	3	0
11	3	3	0
Median	**2**	**3**	**1**

Variable	Before institutiona--lisation	After 30 days of institutiona--lisation	Difference
Satisfaction and pleasure			
1	3	3	0
2	3	3	0
3	2	3	1
4	3	3	0
5	2	2	0
6	3	3	0
7	3	3	0
8	3	3	0
9	4	4	0
10	3	3	0
11	3	3	0
Median	**3**	**3**	**0**
Independency			
1	2	2	0
2	2	3	1
3	2	3	1
4	3	3	0
5	2	2	0
6	2	3	1
7	2	2	0
8	2	3	1
9	2	2	0
10	2	2	0
11	3	3	0
Median	**2**	**3**	**1**

Interquartile range	Before institutiona--lisation	After 30 days of institutiona--lisation	Difference
Affective Relations	**1**	**0**	**0**
Thoughts about future	**1**	**0,5**	**0**
Feeling valued	**1**	**0,5**	**1**
Satisfaction	**0**	**0**	**0**
Independency	**0**	**1**	**1**

7. ICECAP-O – Conversion Index

Attribute	Value
Attachment	
I can have all of the love and friendship that I want	0.2535
I can have a lot of the love and friendship that I want	0.2325
I can have a little of the love and friendship that I want	0.1340
I cannot have any of the love and friendship that I want	−0.0128
Security	
I can think about the future without any concern	0.1788
I can think about the future with only a little concern	0.1071
I can only think about the future with some concern	0.0661
I can only think about the future with a lot of concern	0.0321
Role	
I am able to do all of the things that make me feel valued	0.1923
I am able to do many of the things that make me feel valued	0.1793
I am able to do a few of the things that make me feel valued	0.1296
I am unable to do any of the things that make me feel valued	0.0151
Enjoyment	
I can have all of the enjoyment and pleasure that I want	0.1660
I can have a lot of the enjoyment and pleasure that I want	0.1643
I can have a little of the enjoyment and pleasure that I want	0.1185
I cannot have any of the enjoyment and pleasure that I want	0.0168
Control	
I am able to be completely independent	0.2094
I am able to be independent in many things	0.1848
I am able to be independent in a few things	0.1076
I am unable to be at all independent	−0.0512

Source: Coast *et al.*, 2008

8. EQ-5D – Conversion Index

Portuguese Population-Based Predicted Preference Weights for 243 EQ-5D Health States

State	Value	State	Value	State	Value	State	Value	State	Value	State	Value
11111	1,000	21132	0,392	13221	0,232	31222	0,101	13131	-0,029	31311	-0,179
11112	0,767	22122	0,390	22123	0,232	21323	0,100	23232	-0,036	32232	-0,179
11211	0,702	21123	0,389	21322	0,225	12331	0,091	23223	-0,039	13313	-0,180
21111	0,695	12131	0,380	23121	0,225	32211	0,090	32131	-0,040	33123	-0,180
11121	0,694	21311	0,372	12133	0,218	31213	0,086	13332	-0,047	32223	-0,182
11212	0,665	11321	0,371	22311	0,215	23222	0,086	23313	-0,048	33221	-0,188
21112	0,658	11113	0,368	12321	0,214	32121	0,083	31321	-0,049	32313	-0,191
11122	0,657	12213	0,348	11332	0,212	31132	0,081	13323	-0,049	32321	-0,206
12111	0,646	12132	0,343	31212	0,211	11313	0,079	31113	-0,052	33111	-0,216
12112	0,609	13211	0,342	21313	0,210	31123	0,078	22332	-0,055	31133	-0,217
21211	0,592	22113	0,341	11323	0,209	13232	0,073	32222	-0,057	33222	-0,225
11221	0,592	12123	0,341	13111	0,204	23213	0,071	22323	-0,057	33312	-0,234
21121	0,585	21312	0,335	31122	0,203	13223	0,070	23321	-0,064	32233	-0,237
21212	0,555	23111	0,335	23212	0,196	22322	0,068	32213	-0,072	32322	-0,243
11222	0,555	11322	0,334	13222	0,195	23132	0,066	32132	-0,077	33231	-0,243
21122	0,548	13121	0,334	32111	0,192	23123	0,063	33211	-0,078	13331	-0,250
12211	0,544	21231	0,326	23122	0,188	12332	0,054	31233	-0,079	32331	-0,262
22111	0,537	22221	0,325	13213	0,180	32212	0,053	32123	-0,079	33233	-0,271
12121	0,536	12311	0,324	22312	0,178	22313	0,053	13311	-0,085	31313	-0,274
12212	0,507	31112	0,313	12322	0,177	12323	0,052	31322	-0,086	13333	-0,278
11213	0,506	13212	0,305	13132	0,175	23311	0,046	33121	-0,086	33232	-0,280
11132	0,501	23112	0,298	23113	0,173	32122	0,046	11333	-0,086	33223	-0,283
22112	0,500	13122	0,297	13123	0,172	13321	0,045	23233	-0,094	32333	-0,289
21113	0,499	11131	0,297	22231	0,169	21333	0,045	32311	-0,096	32332	-0,299
12122	0,499	21232	0,289	21233	0,164	13113	0,042	23322	-0,101	32323	-0,301
11123	0,498	22222	0,288	12313	0,162	32113	0,031	22333	-0,113	33321	-0,307
21221	0,482	21223	0,287	32112	0,156	31312	0,024	33212	-0,115	33113	-0,311
12113	0,451	12312	0,287	21331	0,140	31231	0,015	23331	-0,119	33332	-0,333
21222	0,446	12231	0,278	31221	0,138	13233	0,015	33122	-0,123	33323	-0,335
11312	0,444	11233	0,274	11133	0,135	23312	0,009	31131	-0,123	33322	-0,344
11231	0,435	22131	0,271	22232	0,132	13322	0,008	13133	-0,123	31331	-0,344
22211	0,435	21133	0,267	22223	0,129	11331	0,008	32312	-0,133	31333	-0,372
12221	0,434	21321	0,262	23221	0,123	23133	0,008	32133	-0,135	33131	-0,381
21131	0,428	31211	0,248	13312	0,118	22233	0,007	31332	-0,141	33133	-0,409
22121	0,427	11311	0,241	12233	0,116	23231	0,000	32231	-0,142	33311	-0,438
13112	0,407	12232	0,241	31111	0,110	12333	-0,004	31323	-0,143	33313	-0,465
11232	0,398	31121	0,240	13231	0,110	33112	-0,013	23333	-0,147	33333	-0,496
22212	0,398	22213	0,239	22133	0,109	22331	-0,018	23332	-0,156	33331	-0,536
21213	0,397	12223	0,238	22321	0,105	32221	-0,020	23323	-0,158		
12222	0,397	22132	0,234	21332	0,103	31232	-0,022	33213	-0,173		
11223	0,396	23211	0,233	23131	0,103	31223	-0,024	33132	-0,178		

Source: Ferreira *et al.*, 2014