

Determinants of inpatient satisfaction: a systematic review and meta-analysis

Rita Tomás Ramos
rita.tomas.ramos@tecnico.ulisboa.pt

Instituto Superior Técnico, Lisboa, Portugal

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Abstract

Nowadays, one of the main goals of any health care organization is to guarantee their patients' satisfaction as a way to maintain patients and attract new ones. This importance is noted in the literature, where currently, there are numerous articles published addressing the identification of determinants that influence patient satisfaction. The present dissertation aims to systematically identify and review the extent of evidence regarding determinants of inpatient satisfaction between 2012 and 2022, through the application of the PRISMA method. A meta-analysis is also conducted to statistically assess the evidence obtained. The work conducted concludes that 2021 was the year with more publications in the field of inpatient satisfaction. China, the USA, and Ethiopia were the most studied countries. The most studied healthcare system was the National Health Insurance model. The most used method to analyse inpatient satisfaction survey answers and associating variables according to the sample was the logistic regression. The most relevant journal is Patient preference and adherence. Of the 19 determinants analyzed, five were associated to inpatient satisfaction in 100% of studies: interpersonal care, technical care, pain management, the outcome of care and emotional status. For the other determinants, there was no clear-cut as results vary from study to study. Regarding the meta-analysis, four questions were hypothesized. No significant correlation was found between each one of the determinants and the type of healthcare system, the country, and the medical speciality. A correlation was only found significant between the methodology used and patient income and education.

Keywords: Patient satisfaction, inpatient, determinants, meta-analysis, systematic review

1. Introduction

Globalization – the process of cooperation between people, companies, and countries all over the world, has been a growing trend over the last decades. Healthcare is no exception to the globalization of services (Hendry et al., 2018). Currently, one of the main goals of any healthcare organization is not only to meet but also to exceed the expectations of patients (Busse et al., 2012). Around the world, healthcare organizations have been adjusting their strategic plans to achieve leading satisfaction levels, expecting to promote a culture of continuous improvement of the service, given the customers' needs, as a way to offer outstanding service to their patients, better than any other competing provider (Busse et al., 2012; Hendry et al., 2018).

Given this scenario, the factors influencing satisfaction should be defined so that can be used as a way to improve satisfaction and to assess areas that should be tackled first while in service improvement perspective. This importance is noted in the

literature, where there are currently numerous articles addressing the identification of determinants that influence patient satisfaction. This intensive research has been done by several authors, across many journals and countries.

The main goal of the present study is to systematically identify and review the extent of evidence regarding determinants of inpatient satisfaction between 2012 and 2022, articles published in the past ten years so that it is based on the recent literature. To facilitate transparent and complete reporting of systematic reviews and meta-analyses the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement was employed Page et al. (2021). Secondly, it aims at identifying the influence of the type of healthcare system, the medical speciality, and the country on the determinants of patients' satisfaction. To achieve this, a meta-analysis is conducted. A set of questions was constructed to extrapolate relevant relationships between variables from the present study, as a way to incorporate further information for fu-

ture researchers.

2. Overview of the healthcare sector

Healthcare is a complex and heterogeneous industry consisting of multiple sectors. It has a pivotal role in the economy and well-being of every country (Rivers and Saundra, 2008). While the mature economies begin to focus on tailored or customised healthcare practices, the emerging economies are dealing with healthcare issues at a community or population level (Trienekens and Zuurbier, 2008). However, sooner or later, all economies will be tackling the same challenges.

2.1. Describing the healthcare sector

The healthcare sector consists of businesses that provide medical services and goods, or otherwise facilitate the provision of curative, preventive, rehabilitative and/or palliative healthcare to patients (Ungureanu et al., 2019). Around the world, there are four major health care systems: the Beveridge Model, the Bismarck model, the National Health Insurance model, and the out-of-pocket model. While in theory these systems have individual strategies and different policies, in reality, most countries have a blend of these approaches, involving features of several systems. However, officially, countries have a single healthcare system that is uniform for most citizens (Leite et al., 2022).

2.1.1 The Beveridge Model

The government funds all health care services upfront and for all its citizens funded by direct income tax deductions. The majority of hospitals are owned and operated by the government and most healthcare staff are employed by the state. The UK's National Health Service, Spain, Cuba and New Zealand operate on this model (Leite et al., 2022). A disadvantage of this system are the long waiting lists for treatment and a lack of choice (Or et al., 2010). One further challenge is that ageing populations mean there are fewer young people to pay taxes which arises the need to find ways to pump additional funding into health systems Wallace (2013).

2.1.2 The Bismarck Model

Employers and employees are responsible for funding their health insurance system through sickness funds created by payroll deductions. Health care is provided through insurance companies that are paid by employer and employee payroll deductions (Or et al., 2010). There is a plurality of providers, financed by multiple insurers, an abundance of choice, and patients have direct access to specialists. It is a more decentralized form of healthcare compared to the Beveridge model (Leite et al., 2022).

2.1.3 The National health insurance model

This model incorporates aspects of both the Bismarck and Beveridge models. Like the Beveridge model, the government is the single care payer, and like the Bismarck model, there are also private providers (Wallace, 2013). Health care is paid by government-run insurance programs financed through dedicated taxation or general revenues. Patients are free to choose any doctor or healthcare provider they wish (Mossialos et al., 2020).

2.1.4 Out-of-pocket

This method of access to healthcare is most common in developing countries where no formal state-wide system exists and where governments can't afford mass health care. People requiring medical treatment need to pay for it with no external coverage. There is no universal insurance system and income taxes are not raised to provide access to healthcare for all citizens (Wallace, 2013).

Each country faces different concerns when trying to construct a system for health care provision. No health care system is entirely the same, and none is free of challenges. A system that works for one country is not likely to be entirely adaptable to another because different countries have different health concerns and priorities (Leite et al., 2022).

2.2. Drivers of transformation in healthcare

The healthcare industry experiences remarkable growth, as innovative products treat a wider array of diseases experienced by patients. Currently, the focus is shifting from reactive healthcare and responding to patient illness after diagnosis, to health prevention and well-being promotion (Allen, 2022; Singhal et al., 2020).

Currently, healthcare is facing a collision of forces (Gutiérrez-Hernández and Abásolo-Alessón, 2021; Rana et al., 2021; Singhal et al., 2020; WHO, 2021): (1) Uncertainty around global challenges such as the pandemic, new virus strains, vaccines, and supply chain disruptions; (2) Fast-paced advances in medical science, supported by investments in research and development; (3) An explosion of digital technologies, data access, and analytics; (4) Informed, empowered, and demanding patients, which are increasingly acting as consumers; (5) The ongoing challenges of clinical and administrative staff regarding availability, qualification, physical, mental, and emotional well-being; (6) A movement from disease care to prevention and well-being; (7) Demographic and social changes affecting the well-being of the population. There has been an overall increase in both global life expectancy and healthy life expectancy. The ageing demographic, as a result of decreased birth rates and increasing life expectancy and changes in the standard of care demanded by patients, are introducing major challenges in the

healthcare sector.

These forces are the catalysts for the clinical, financial, and operational transformation that health care is currently experiencing while creating an imperative for stakeholders to move toward an ecosystem-based model of care (Allen, 2022; Singhal et al., 2020).

2.3. Patient Satisfaction

Customer satisfaction is a KPI that drives quality and profitability in the service industry. Assessing satisfaction represents a baseline standard performance and a possible standard of excellence for any business organisation, including in the healthcare business (Farzianpour et al., 2015; Grigoroudis and Siskos, 2010).

Currently, the patient finds himself as a buyer of health care services (Prakash, 2010). The patient is more aware and educated, has access to information, and has expectations from the health system. Patient-centred care has been increasing in significance. Despite there is no one definition of patient-centred care, most definitions have several common elements (Busse et al., 2012; Vaz, 2018): (1) The health care system's mission and values are aligned to patient-centred goals; (2) Individual's specific health needs and desired health outcomes are the driving force behind all health care decisions and quality measurements; (3) Care is collaborative, organised, cohesive and accessible; (4) Care focuses on physical comfort as well as emotional support and well-being; (5) Patient and family preferences, values, cultural traditions, and socioeconomic conditions are respected; (6) Care encourages active collaboration and shared decision-making between patients, families, and providers; (7) The presence of family members in the healthcare facility is promoted; (8) Information is continuously shared and communication flows in a timely manner so that patients and their family members can make informed decisions; (9) Assured continuity between and within services.

Patient satisfaction has become largely studied by several authors since the 1980s. Even so, research has not been explicitly guided by a well-supported definition (Batbaatar et al., 2017). It is defined differently and it has been given different theories in the literature, which makes its measurement a complex task, raising issues in the interpretation of survey results (Crow et al., 2002). There are a couple of important aspects which embody the complexity of this matter. First of all, in healthcare satisfaction itself does not imply a superior service, i.e., satisfaction can be achieved by an adequate or acceptable standard of service. Secondly, whenever different individuals are asked to evaluate a service, they usually compare their personal sub-

jective standards with their own perception of care received, meaning that the concept of satisfaction assumes a relative, rather than an objective nature (Crow et al., 2002). The wide diversity of services constitutes another factor that poses measurement difficulties. Services can also differ in the degree of technical knowledge and skill required. Patients may be asked to perform a single global summary judgement and/or to evaluate a set of aspects individually.

Given this complexity, it is generally agreed that satisfaction is a multidimensional concept, under the influence of several internal and external aspects of health service (Crow et al., 2002; Gill and White, 2009). It comprises the degree of patient's positive feelings on satisfaction, interpersonal behaviour, communication, financial aspects, time spent with physicians, nurses, administrative staff, services, accessibility to health care services, convenience, availability of care and condition of facilities (Batbaatar et al., 2017).

Health care organizations have been measuring satisfaction to create accountability and set standards. The emergence of continuous quality improvement initiatives has led healthcare organizations to use satisfaction data to identify process problems, improve performance in key processes, monitor improvement efforts, provide benchmarking information, and identify best clinical practices so that high levels of patient satisfaction are achieved (Torres and Guo, 2004).

3. Literature Review

Over the past decades, the broadly adopted customer-oriented strategies and continuous improvement principles have enhanced the importance of consumer satisfaction in many sector services (Grigoroudis and Siskos, 2010). As seen previously, superior customer satisfaction provides a strategic advantage for companies (Busse et al., 2012). Thus, it is important to understand satisfaction and related concepts as well as what has been published regarding the subject.

3.1. Reviews on patient satisfaction determinants

Whilst there are numerous specific patient satisfaction studies published in peer-reviewed journals, there is a substantially smaller number of reviews assessing the topic of determinants of satisfaction. From the research made on the determinants of patient satisfaction, only a few studies were found focusing on the subject. The critical review conducted by Crow et al. (2002) identified 37 studies investigating methodological issues and 139 studies providing evidence about the determinants of satisfaction. The population involved were categorised into four groups: outpatients/ambulatory care, in-

patients, primary care/general care including family practice and healthcare in general. Two groups of factors that influence patient satisfaction were identified: (i) factors related to the characteristics of the respondents, (ii) factors related to the health providers' policies. It was stated that health status and health outcomes affect satisfaction. The most important health service factor affecting satisfaction is the relationship between physicians and patients. Concern remained about the patients ability to judge technical aspects and uncertainty exists about what they are evaluating when they report satisfaction. Furthermore, expectations were found to be correlated in some studies, meaning satisfaction implies that expectations are met. Standards need to be set, meaning the choice of criteria and the determination of an appropriate benchmark is required.

According to the systematic review of Naidu (2009), the dimensions that determine patient satisfaction are health care output, access, caring, communication, hospital room appearance and comfort and trust. Each of these factors has the capacity to create a positive or negative patient experience. Patient involvement is an inherent feature in healthcare services influencing outcome quality through compliance, describing the right symptoms, and physically undergoing treatment.

The review conducted by Al-Abri and Al-Balushi (2014) assessed 29 articles concerning patient satisfaction determinants. There was a common salient determining factor between the studies which was interpersonal skills in terms of courtesy, respect by healthcare providers in addition to communication skills, explanation and clear information, which are more essential and influential than other technical skills such as clinical competency and hospital equipment.

The meta-narrative review concluded by Batbaatar et al. (2017) assessed 109 studies published between 1980 and 2014. The review found that the potential determinants playing important roles in patient satisfaction varied across studies both between and within fields, owing to no globally accepted formulation of patient satisfaction. The most consistent and strong determinant was interpersonal care. Further determinants found to be associated were quality of health care service, staff competence, the physical environment of the facility, accessibility, continuity of care, hospital characteristics, and outcome of care, which are all associated with patient satisfaction positively. There is evidence that socio-demographic factors of patients affect their satisfaction with health services. However, the strength and direction of the effects on patient satisfaction were varied.

The systematic review conducted by Salehi et al.

(2018) included articles related to inpatients in public hospitals. 85 articles were reviewed, mainly from Iran and USA. The main factors affecting consumer satisfaction in hospitals were grouped into two categories: patient attribute factors, which involved expectations, health status, demographic and socioeconomic; health system factors, which involved service quality, hospital features, staff satisfaction and insurance.

The review conducted by Sarfraz et al. (2020) included studies assessing the satisfaction of children and adults in emergency, outpatients and inpatient departments. The dimensions that determine patient satisfaction are the effectiveness of treatment/education measures, the efficiency of care, accessibility to services, acceptable/patient-centred nature of care, equitability, and safety.

All reviews concluded that patient satisfaction is a multi-dimensional healthcare construct affected by many variables. It was also consistent in all six reviews (100%) that the most important determinant of patient satisfaction is interpersonal relationships with staff regarding communication and information sharing from staff to the patient. Technical care, the physical environment and the outcome of care were found to be associated to patient satisfaction in four reviews (67%). Access, cost, age and health condition of the patient were found to be determinants associated to patient satisfaction in two reviews (33%). The less consistent determinants to be associated to patient satisfaction were organizational characteristics, gender, education, income and marital status, which were only found in one review each (17%). Patient satisfaction and healthcare service quality, though difficult to measure, can be operationalized using a multidisciplinary approach that combines patient inputs as well as expert judgement.

Recommendations from these studies point to the need to develop a standardized questionnaire and satisfaction measurement method to improve comparisons and to enable the establishment of relationships between determinants. In addition, there is a need for more studies on how cultural, behavioural, and socio-economic differences affect patient satisfaction with a standardised questionnaire which is adaptable to specific groups and countries for further comparisons. Furthermore, across all studies, it is unmistakable the link between the evaluation of patients' satisfaction, the data that can be obtained through the measurement of patient satisfaction and the improvement action plans that can be developed as a result of data analysis.

3.2. Gaps in the literature

Patient satisfaction is a multi-dimensional healthcare construct influenced by many variables. Some

literature reviews were found that gathered research regarding the determinants of patient satisfaction. Two reviews conducted the analysis and presented the results separating outpatient and inpatient data (Crow et al., 2002; Sarfraz et al., 2020). Two reviews considered patients as a broad term, meaning there is no identification nor separation of the patients' hospital staying nature included in the study – outpatient or inpatient (Al-Abri and Al-Balushi, 2014; Batbaatar et al., 2017; Naidu, 2009). Only one review assessed determinants that influence inpatient satisfaction exclusively in public hospital settings (Salehi et al., 2018). This segmentation is important since inpatients stay at the hospital longer than outpatients and the factors that influence satisfaction are likely different. In addition, only two reviews conducted their search through a systematic process, both using PRISMA. There is still a clear gap in the patient satisfaction determinants literature. Specifically, there is a lack of reviews concerning the determinants that influence inpatients' satisfaction. Furthermore, there is a lack of reviews that assesses both public and private hospital studies. No review was found to address the type of healthcare system operating in the country. There is a lack of reviews that apply and present a systematic searching process. In addition, existing reviews regarding inpatient satisfaction determinants have only used articles until the year 2019. A further gap exists of reviews that address the type of healthcare system operating in the country and its influence on patient satisfaction determinants. This is particularly relevant because patient satisfaction represents not only but also their degree of satisfaction with their perception of a hospital's quality management regarding the services provided. If currently there are four main healthcare systems in the world each one operating differently, it is important to evaluate which determinants influence patient satisfaction in each type of healthcare system. These determinants can then be converted as performance indicators of the health system and can have a major influence on the national decision-makers to understand the characteristics and processes that contribute to the relative levels of patient satisfaction. While improving and excelling the factors that make patients satisfied, patients are more likely to follow treatment and care plans and attend follow-up appointments, which results in better health outcomes. In addition, providers that manage to keep patients satisfied will increase patient loyalty, attract new patients, increase their staff satisfaction and strengthen their market reputation.

In sum, existing gaps in the literature can be briefly presented as follows:

- Lack of literature reviews on the determinants

of inpatients satisfaction;

- Lack of meta-analytical reviews;
- Lack of reviews that analyze more recent studies;
- Lack of reviews that follow a systematic search process, such as PRISMA
- Lack of reviews that address the influence of the type of healthcare system, the medical speciality, and the country on the determinants of inpatient satisfaction.

4. Methodology

This section presents the methodology applied to develop the search strategy. The main steps of the systematic review are explained in section 5.1. Section 5.2 presents the PRISMA methodology and section 5.3 presents the process applied to conduct the meta-analysis.

4.1. Systematic review steps

The steps involved in the systematic review are as follows (Green et al., 2006; Higgins et al., 2019):

1. Formulate review question - The question that arises in the present work is - Which dimensions determine the satisfaction of inpatients?
2. Define search keywords - The electronic databases were searched using the following terms: “predictors”, “determinants”, “factors affecting”, “dimensions”, “aspects”, “attributes”, “inpatient satisfaction”, and “hospitalized patient satisfaction”. Boolean operators like “AND” and “OR” were used to combine search terms.
3. Define inclusion and exclusion criteria
 - (a) Inclusion criteria: (i) Written in english; (ii) Published from January 2012 and February 2022; (iii) Studies that reported at least one associated factor of patient satisfaction; (iv) Studies that present results through statistical data; (v) Studies in which the participants included were inpatients;
 - (b) Exclusion criteria: (i) Studies without full text; (ii) Government or organisational reports, books or book chapters, conference abstracts or proceedings, dissertations, theses, reviews, commentaries, editorials, notes, expert opinions, and letters; (iii) Studies with poor methodological quality and (iv) Studies that did not meet the eligibility criteria.

4. Locate studies - The main search for this review was conducted from December 2021 to February 2022 in two central databases – Science Direct and PubMed. In addition reference lists of included studies were also searched.
5. Select studies - have eligibility criteria checked for each study and for those studies which do not fulfil eligibility criteria, maintain a record of excluding reasons;
6. Assess the validity of the findings of the included studies;
7. Extract data - data from relevant studies were extracted using a data extraction table prepared in a Microsoft Excel spreadsheet. Mendeley v1.19.8 reference management software for Windows was used to download, organize, review, and cite the articles. Studies were characterized by the author(s), country of research, year of publication, journal, SCIMAGO index, methods of analysis, type of healthcare system, medical speciality, satisfaction associated determinants and main conclusions.
8. Consolidate the information in a logical and coherent statement - A table was constructed providing an overview of the collected studies and enabling the comparison between studies;
9. Analyse and present results - tabulate results from individual studies, examine forest plots, explore possible sources of heterogeneity, and consider meta-analysis;
10. Interpret results - consider limitations, applicability and implications for future research.

4.2. PRISMA

In order to facilitate transparent and complete reporting of systematic reviews and meta-analyses, the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement was developed (Page et al., 2021). It consists of a 27-item checklist that details reporting recommendations for each item and a four-phase flow diagram. The checklist includes items essential for transparent reporting of a systematic review and covers all aspects of the manuscript, including title, abstract, introduction, methods, results, discussion, and funding. Its recommendations have been widely adopted (Page et al., 2021). The procedure for this systematic review and meta-analysis was designed by the PRISMA guidelines.

The first step of the PRISMA is identification. Search keywords were entered in two electronic databases – Science Direct and PubMed, during December 2021 and February 2022. Reference lists

from included studies were hand searched. All included studies were listed to eliminate the duplications and resolve proper reporting guidelines for the selected articles. The initial search identified 1975 titles and abstracts. Of these, 37 were duplicated and removed. After the elimination of the duplicates, there were 1938 titles and abstracts for the screening phase. From these articles, 1719 were excluded since they failed all inclusion criteria or included at least one exclusion criterion. The main reasons for exclusion were articles being related to: (1) Wrong patient population – not inpatient; (2) Review articles; (3) Conference papers; (4) Written in languages different from English (5) Did not measure satisfaction from the patient perspective.

These were identified during the title and abstract reviewing process with eligibility criteria application, and they were removed from the list of eligible full articles. After this step were left 219 potentially eligible full articles and the eligibility criteria were applied to each of them. The reports sought for retrieval were 219, but 116 could not be retrieved. Reports assessed for eligibility were 103, which underwent full-text review. Of these, 33 did not present clear results or had incongruencies within the text and 20 had inefficient analysis or did not present statistical analysis at all, thus were removed. In addition, 13 articles were identified by manually searching cross-references. Of these 13, five articles could not be accessed and two were excluded as they provide unclear results. From this method, six articles were added to the final sample. After these phases, 56 studies were included in the review.

4.3. Meta-Analysis

A meta-analysis works together with systematic reviews. Considering the set of studies selected and included in the analysis, there is a need to use a statistical tool on the data to improve the validity of the results. Through a meta-analysis, data from each of the studies under review is gathered and combined all together in a database. A set of questions was constructed to extrapolate relevant relationships between variables from the present study, as a way to incorporate further information for future researchers. These questions are related to the influence of the type of health system, the country, the medical speciality and the methodology on the determinants of satisfaction. This is particularly relevant because patient satisfaction represents not only but also their degree of satisfaction with their perception of a hospital's quality management regarding the services provided. If currently there are four main healthcare systems in the world each one operating differently, it is important to evaluate which determinants influence patient satisfaction in

each type of healthcare system. Identically, medical specialities differ from one another, thus being important to assess which determinants should be measured and if they vary across medical specialities. These determinants can then be converted as performance indicators of the health system and can have a major influence on the national decision-makers to understand the characteristics and processes that contribute to the relative levels of patient satisfaction. While improving and excelling the factors that make patients satisfied, patients are more likely to follow treatment and care plans and attend follow-up appointments, which results in better health outcomes. In addition, providers that manage to keep patients satisfied will increase patient loyalty, attract new patients, increase their staff satisfaction and strengthen their market reputation.

1. Is the evidence regarding each one of the determinants related to the type of healthcare system?
2. Is the evidence regarding each one of the determinants related to the country?
3. Is the evidence regarding each one of the determinants related to the medical speciality?
4. Is the evidence regarding each one of the determinants related to the methodology?

The software SPSS Statistics (version 28) was used to analyse the association between the above-mentioned variables. The statistical analysis was performed using the chi-square test which compares variables in a single sample to determine whether there is an association between them. The null hypothesis H_0 is that the variables of interest are independent; the alternative hypothesis H_1 is that the variables are associated. A significant test rejecting the hypothesis H_0 (p -value < 0.05) would suggest that in the considered sample, the variables analysed are associated with each other.

5. Results and discussion

A total of 56 articles were identified from which evidence was analysed about how individual factors and various health service features affected reported satisfaction. The key characteristics of selected studies were collected in a structured and standardised form. The following relevant data was retrieved from each one of the studies: Author name, publication's year, country of publication, journal, SCIMAGO index, objectives, health system type, medical speciality, year(s) studied, methods of analysis, and main conclusions.

5.1. Statistical overview of inpatient satisfaction determinants

Numerous studies have dived deep into the topic of determinants of patients' satisfaction. Patient-related predictors of patient satisfaction are uncontrollable by the provider but should be also known to provide a better understanding of how satisfaction can be improved in each one of the patient groups and to deliver an accurate interpretation of user evaluations of healthcare delivery. Considering the objectives of this study, variables were extracted from the literature and the individual factors that affect satisfaction were grouped into two categories: (i) healthcare provider-related determinants and (ii) patient-related determinants

5.1.1 Healthcare provider determinants

Fifty-six studies assessing the determinants that may influence inpatient satisfaction were analysed in this work. Of these studies, 55 included healthcare provider determinants in their studies, meaning only one study did not consider these determinants. Of the nine determinants concerning the healthcare provider characteristics, interpersonal care was the most analysed factor being included in 43 studies (77%), followed by organizational characteristics, included in 27 studies (48%) and physical environment, analysed in 26 studies (46%). Figure 1 presents all healthcare provider-related determinants of inpatient satisfaction found in this study.

5.1.2 Patient-related determinants

Fifty-six studies assessing the determinants that may influence inpatient satisfaction were analysed in this work. Of these studies, thirty-eight included patient-related determinants in their studies (68%). Of the ten patient-related characteristics, age, gender and education were the most analysed factors being included in 26 (46%), 24 (43%) and 21 (38%) studies respectively. Figure 2 presents all patient-related determinants of inpatient satisfaction found in this study.

5.2. Meta-Analysis

As announced earlier, a chi-square test of independence is used to answer the questions presented in Section 5.3. Significant correlation results were considered for the p - value < 0.05 . The questions enunciated may be answered as follows:

1. Is the evidence regarding each one of the determinants related to the type of healthcare system? No. According to the results of the present work, relations between each one of the determinants and the type of health system were not significant.

2. Is the evidence regarding each one of the determinants related to the country? No. According to the results of the present work, relations between each one of the determinants and the country were



Figure 1: Mind map of the healthcare provider-related determinants of inpatient satisfaction

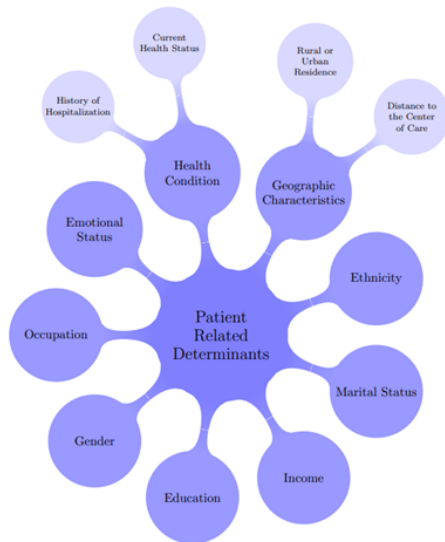


Figure 2: Mind map of the patient-related determinants of inpatient satisfaction

not significant.

3. Is the evidence regarding each one of the de-

terminants related to the medical speciality? No. According to the results of the present work, relations between each one of the determinants and medical speciality were not significant.

4. Is the evidence regarding each one of the determinants related to the methodology? Yes, for two determinants. Specifically, studies that found no correlation between patient income and patient satisfaction, were using Cronbach's test ($p=0,041$). The same result appeared concerning the determinant of patient education ($p=0,040$).

Results from the meta-analysis based on the p-value, show that possibly there is no relation between the determinants and the type of healthcare system, the country or the medical speciality. However, this means that these study hypotheses could be true, but there is not enough evidence in this study to support the hypothesis. As the p-value is highly affected by the sample size, it is possible that the design and test combination can be underpowered for detecting hypothetical effect sizes of interest (Visentin et al., 2020). Thus, further studies should be developed including higher sample size.

6. Conclusions, limitations and future work

Through a systematic review and meta-analysis, this work gathered existing information published in a ten years time frame, 2012-2022, following criteria of inclusion and exclusion to retrieve studies that have already been published about the determinants that influence patient satisfaction. The PRISMA method was used to ensure the clarity and transparency of reporting of systematic reviews. Fifty-six studies satisfied all criteria and were included in the analysis.

Finding from the present study indicate that the notion of patient satisfaction is determined by subject characteristics. Interpersonal care, technical care, pain management, the outcome of care and emotional status were the most consistent determinants, being associated to patient satisfaction in all studies where they were included. Specifically, interpersonal care appears repeatedly as the most important and strong determinant of patient satisfaction. To a lesser extent, organizational characteristics, physical environment, access, cost, age, gender, education, health condition, socio-economic status, marital status, nationality and geographic characteristics, occupations and ethnicity have been shown to influence measured satisfaction ratings in some of the studies where they were assessed. However, the strength and direction of the effects of these determinants on patient satisfaction were varied. In fact, study results between and within fields varied on these last-mentioned determinants, which may be explained by the absence of a globally accepted formulation of patient satisfaction. The lit-

erature indicates general acceptance of the notion that various aspects of care, independent of each other to some extent, have an effect on overall satisfaction. It is indicated in the literature the concern regarding the patient's ability to judge technical aspects of care, and uncertainty exists about what they are evaluating when they report satisfaction. Furthermore, it is noted that the socio-demographic factors do not only affect patient satisfaction but may also influence when patients are evaluating the healthcare provider-related factors. Person-related variables should be considered as both potential predictors of patient satisfaction and confounders in the same study to control their roles in the true associations between determinants and patient satisfaction. Regarding the meta-analysis, four questions were hypothesized. No significant correlation was found between each one of the determinants and the type of healthcare system, the country, and the medical speciality. A correlation was only found significant between the methodology used and patient income and education.

All studies have limitations regarding design or methodology that may have influenced the interpretation of the findings from the research. Three limitations were identified throughout the development of this work. First, when conducting the PRISMA screening phase, 116 studies were not retrieved due to a lack of accessibility through the University of Lisbon VPN. This led to the exclusion of those studies, which influenced the number of articles included and the work conclusions, since they may have contributed with additional results and different points of view to this work. Secondly, when assessing studies for eligibility, many studies were found with unclear results, ambiguous conclusions and performing inefficient analysis without clear findings. Third, two databases were used to search for studies - science direct and PubMed. Despite these databases being widely chosen as article providers and being ranked in the top list of academic research databases, there are some other relevant databases which could be also considered. Since this study is academic research with limited time, the exclusion of other databases as a search engine was due to time constraints.

As explained previously, all limitations found thorough this work affected the sample size. The sample size depends on the nature of the research problem and the work's methodology and conclusions are influenced by the sample size. Further research should be done based on a larger sample size, through the search in more databases, which can generate more consistent results. Furthermore, future reviews could be done including the population of patients in each article. This could provide additional insights and different results when evalu-

ating the determinants. In addition, future research should be done to develop a universal and standardized patient satisfaction assessment survey. Many surveys have been developed through the years and it was noticed the use of different surveys in the studies differs from country to country and even within the same country. This can often lead to different results, since the questions are different and the patients can perceive the questions differently depending on how it is written, leading to interpretation errors. Furthermore, it was noted in some studies that patients may say they are satisfied with care because they want to please the interviewer, worrying that care may be suspended in the future, or have some cultural or other reason to fear complaining. This should be considered when developing the survey and the process, setting and circumstances through which the patient answers to the survey so that impartial answers are given. It would also be interesting to develop a similar analysis but considering only the most recent pandemic years, focusing on how Covid 19 pandemic has influenced patient satisfaction and the determinants that affect patient satisfaction.

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