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Innovating and redesigning the healthcare model:

The key role of physicians in enhancing patient treatment adherence through patient empowerment stimulation

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Abstract

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"The era of paternalistic medicine, where the doctor knew best and the patient felt lucky to have him, has ended."
Michael Specter, *New Yorker, 2013*

The future of healthcare is being rethought and new paradigms have emerged placing a heavy focus on patient-centricity. Today, a shift in the role on the doctor-patient relationship in the medical decision-making is taking place and strong benefits are expected. Healthcare quality is a social matter and the lack of treatment adherence is an ever-present reality with major consequences on individual's health and on economies worldwide. Strongly rooted on the Self-Determination Theory, this study aims to identify the antecedents and outcomes of patient empowerment. Therefore, data was collected by means of an online survey and 164 responses were gathered. The obtained results revealed that physician's ability to support patient's autonomy and relatedness needs is fundamental to motivate patients caring for themselves, and, together with the physician, co-create value. Interaction is thus critical and physicians need to be supportive in order to increase the capacity of patients to become more active, able to make decisions about their health and enhance treatment adherence levels. Furthermore, this research also contributes to the existent literature on patient empowerment once new variables are explored and bases for future research are provided.

Key words: patient empowerment, treatment adherence, physician support, healthcare

Resumo

"A era da medicina paternalista, na qual o médico sabia o que era melhor para o paciente e este se sentia um sortudo por tê-lo, acabou."
Michael Specter, *New Yorker, 2013*

O futuro dos cuidados de saúde está a ser repensado e novos paradigmas têm emergido enfatizando a centralidade do paciente. Verifica-se atualmente uma mudança de papéis na relação médico-paciente da qual são esperados grandes benefícios. A qualidade dos cuidados de saúde é uma matéria importante para todas as nações e a fraca adesão a tratamentos médicos é uma realidade presente com repercussões quer para a saúde do individuo, quer para as economias de todo o mundo. Fortemente enraizado na Teoria da Autodeterminação, este estudo tem como objetivo identificar simultaneamente os antecedentes e resultados da capacitação dos pacientes. Assim, foi colocado um questionário online e recolhida uma amostra de 164 respostas. Os resultados obtidos revelaram que a capacidade dos médicos em apoiar a autonomia e em desenvolver uma relação mais próxima com os pacientes, são fundamentais para os motivar a cuidarem de si mesmos e, em conjunto com o médico, co-criarem valor. A interação é crítica e torna-se necessário que os médicos sejam cooperantes de forma a tornar os pacientes mais ativos, capazes de tomar decisões sobre a sua saúde e potenciar o nível de aderência a tratamentos. Este estudo contribui ainda para a literatura existente no âmbito da capacitação do paciente, uma vez que novas variáveis foram exploradas e foram lançadas bases para estudos futuros.

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Despite being mainly an individual research project, a MSc dissertation is also a result of the contribution from several people, from whom I have obtained a great support, feedback and advice.

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Chapter 1. Introduction

Universally consumed, healthcare is a highly complex and expensive service (Berry and Bendapudi, 2007), which affordability and quality poses as primary challenges affecting individual's daily life. The ageing population and the increasingly heavier burdens on the healthcare system are a reality threatening economies worldwide, especially in times of financial crisis. Adding to this, the lower revenues, increasing expenditures and the overloaded environment of healthcare, are likely to be reflected on a poorer quality of the service provided and on patient safety (World Health Organization, 2010).

Another predominant reality, and a tremendous challenge to the healthcare system, is the lack of patient treatment adherence all over the world. Besides bringing disastrous consequences to the society, due to its major impacts on individual's health, it also strengthens the existing economic constraints (Vermeire et al., 2001). Adherence problems are perceived when individuals are required to self-administrate their treatment and fail to complete the agreed recommendations from the prescriber, despite the type of disease they are suffering, its severity and access to health resources (WHO, 2003). Chronic diseases, for example, are one of the leading causes of death worldwide, accounting every year for approximately 17 million lost lives. They result from the adoption of unhealthy and harmful habits such as drinking, smoking and lack of exercise (Jiang et al., 2013). Evidence on poor adherence levels has been identified by Schulz and Nakamoto (2013), who highlighted that only 50% of patients suffering from chronic conditions adhere to their treatment in developed countries. Further, when looking to developing countries, adherence is even lower and the scenario is more worrying. An examination over the magnitude of treatment adherence in healthcare services is thus paramount in order to alleviate the social and economical consequences of this major public concern.

Fortunately, a bold and optimistic view is expected for the future of the healthcare system. Following the pace of change of the world, value creation in healthcare is being rethought and the system is witnessing a shifting in its landscape over the last decades (Johnson, 2011). The paternalistic model of healthcare, traditionally known for being a health professional-centered care model where physicians assume a dominant role, is loosing ground to a patient-centered care model, where healthcare professionals work together with patients and assist them to be self-effective, self-aware, autonomous, and to develop the necessary knowledge and skills so that individuals can manage their health to further achieve the desired outcomes (Aujoulat, Hoore and Deccache, 2007; Lee et al., 2015; Prigge et al, 2015).

This model has been gaining a widespread appeal not only by researchers, but also by patients, healthcare leaders, carers and other health and life sciences organizations and communities that consider the new culture centered on the patient, a key strategic goal to foster in order to enhance healthcare sector quality and effectiveness (Estacio, 2013; McColl-Kennedy et al., 2012). For the World Health Organization (WHO), patient involvement in decisions about their care is more than a right: involvement is desirable and is also a social, economic and technical necessity (Waterworth and Lucker, 1990).

Furthermore, nowadays individuals, either collectively or individually, have been demanding for a greater say in the care decision-making. The ground breaking technological advances, the volume and spread of health information, wide access to it, easiness of communication and the range of treatment options available in the current days, have heavily contributed to reshape the role individuals are playing in the healthcare system from passive listeners to active voices (Ouschan, Sweeney and Johnson, 2006). The fundamental essence behind the patient-centered care model was presented by Delbanco et al. (2010) under the maxim "nothing about me without me", reflecting the way patients conceive themselves as self-determined individuals aiming to gain mastery over their lives and control over their own health. Patients can no longer be seen merely as submissive recipients but rather as key partners in the redesign of care, therefore as first step, a crucial answer should be addressed: How can physicians and patients cocreate value and together contribute to the achievement of positive health outcomes?

Despite the pressing problems that modern healthcare faces, new paradigms have emerged, with a special emphasis on patient empowerment, the key component of the patient-centered approach to healthcare (Prigge, J, -K., et al., 2015). This construct is defined by the WHO as the individual's adoption of self-determined behaviours towards the fulfilment of autonomy and competence needs in managing their own health. It has become the new canon for healthcare theory and practice (Ouschan et al., 2008) and is expected to pave the way for a shared decision-making between patients and healthcare professionals (Camacho, De Jong and Stremersch, 2012). Patient involvement in their own care embodies a series of benefits, including the adoption of healthier behaviours, greater satisfaction with the received care, and it has even been positively correlated with higher levels of treatment adherence (Martin et al., 2005; Camacho et al., 2014; Vermeire, 2001).

However, although there is a growing literature about the conceptualization of this construct, it has been understood and defined in different ways by researchers and healthcare professionals, leading to dubious misconceptions (Holstrom and Roing, 2010) that make physicians, pharmaceutical companies, public policy makers and other healthcare stakeholders reluctant

regarding its holistic dimension. According to Aujoulat, d'Hoore and Deccache (2007) empowerment is in most cases defined in line with its anticipated outcomes rather than its antecedents. As such, once the principle of self-determination is not taken into account, the considered outcomes and the evaluation measures often cited are not specific to empowerment. APPG's report on Global Health (2014) underlines the need to involve patients in their own care and stress that the big challenge of patient empowerment lies in agreeing how to put it into practice.

Literature has been enlightening about the major role of physicians in facilitating patient empowerment and encouraging self-management (Soafer, 1994; Feinbgerg, 1988; Deci & Ryan 2000). Hence, this research attempts to address the gaps existent on this complex dimension and aims to clarify its holistic dimension by taking into consideration physician's support of patient's individual needs of autonomy, competence and relatedness as a driver for patient empowerment and its influence in enhancing patient adherence to the prescribed treatment. In short, the aim of this research is to answer to the following research question:

"Can physicians shape the direction of patient adherence by stimulating patient empowerment?"

Chapter 2. Theoretical framework and hypothesis development

This chapter will evolve around the existent academic literature on patient empowerment, human motivation and treatment adherence, by enhancing the reliability of the theoretical fundamentals. The first part will address patient's empowerment by taking into account what is embedded within such a complex dimension. The second part regards an overview on human motivation and behaviour change, applied to the healthcare domain. This examination will be grounded on the Self-Determination Theory, a leading psychological theory on motivation that has been widely applied to the healthcare setting. Lastly, a theoretical study on patient treatment adherence will be conducted. In each part, for every variable discussed in literature, hypothesis will be developed. Finally, the complete conceptual model will be presented.

2.1 Patient Empowerment

Popularized by the Brazilian scholar Paulo Freire, empowerment has been acknowledged as the capacity to deal critically with reality and the ability to discover new ways to participate in the transformation of the world (Anderson and Funnell, 2010). From a theoretical point of view, the construct has been widely explored and multiple definitions have been conceptualized. In the organizational context, Spreitzer (1995) elucidated about the presence of a "psychological empowerment". He argues that employee empowerment enhances owns perceptions on the capacity and willingness to achieve an outcome we are expected to be able to accomplish. For the scholar, empowerment should be considered a continuous variable, since individuals can either be more or less empowered rather than merely empowered or not empowered. A second meaning developed regards "situational empowerment", indicating that individuals can be delegated with specific responsibilities that will provide them decision-making autonomy. Both terms were linked to marked improvements in employee satisfaction and performance (Schulz and Nakamoto, 2013). According to Conger and Kanungo (1988), while empowered individuals are more likely to achieve the desired outcomes, powerlessness individuals see their outcomes being redirected by the ones owning the power.

Nonetheless, unanimity exists in defining empowerment as a relational construct associated with concepts of power, equity and control over situations that require problem-solving capabilities (Schulz and Nakamoto, 2013; Conger and Kanungo 1988).

In the field of healthcare, the individual's adoption of health behaviours together with the development of specific health related beliefs and attitudes, is often spoken as "patient empowerment". Schulz and Nakamoto (2013) define the empowered patient as an autonomous individual who is willing to participate, take responsibility and embrace an active role in the decision-making of health related concerns. According with Rappaport (1987), patient empowerment has become the underlying principle for healthcare theory and practice. Also, Rafiq and Ahmed (1998) highlighted that due to the complex needs of patients, patient empowerment is extremely pertinent for doctors who have superior levels of authority.

However, a comprehensive and accurate understanding of this dimension is still missing (Anderson R. M., Funnel M. M., 2010). Literature has been seeking to clarify the construct and suggestions on definitions have been developed mostly relying on the individual's capacity to make decisions and willingness to take control over their own health. However, doubts arise while trying to generalize the concept since differences in empowerment and in individual's willingness to be empowered are argued to be visible depending on the individual's culture and socio-economic conditions (McAllister et al., 2012).

Patient empowerment is also recognized in the literature either as a process and/or an outcome. As a process, it is argued that empowerment based interventions are delivered through education and counselling by healthcare providers and other health communities, aiming to increase patient's critical thinking and autonomy. As an outcome, patients are expected to empower themselves through self-education, facilitated by the information available on the Internet or participation in patient's organisations. Ultimately, this will lead to a measurable increase in patient's ability to engage in autonomous and informed decisions (McAllister M. et al, 2012). The approach that regards empowerment as a process derives from the argument that emergent states do not rise spontaneously and thus, have to be triggered. McAllister et al. (2012) even reinforce that patient empowerment is an emergent state that is a consequence of individual's cognitive, motivational and affective circumstances. A third interpretation of this dimension comprises patient empowerment as the active engagement in a behaviour change. As suggested by Fumagalli et al. (2015), these differences can be summarized into "being empowered" and "exerting the power", respectively for the emergent state and the behaviour change adoption.

Although it is clear that a central feature on empowerment relies on the individual competence and autonomy to collectively contribute to changes in care, a universal definition is thus, hard to conceive.

2.1.1 Patient Empowerment Dimensions

Despite the lack of a generalized conceptualization and visible differences in frameworks, literature has revealed some common standards that should be examined. As Gibson (1991) points, patient empowerment is a multidimensional construct, therefore, for this study, the definition of patient empowerment developed by Prigge et al. (2015) has been adopted. Rooted in the Self-Determination Theory, a theory that has been consistently adopted in health studies, patient empowerment was defined as the range of self-determined behaviours, in order to actively deal with diseases. In accordance with their review, there are three dimensions encompassed in the concept, namely: (i) patient's information search, (ii) participation in knowledge development and (iii) patient's decision participation, which takes place during encounters with the physician.

Besides the need to develop a cohesive construct comprising the individual's willingness to engage in healthcare, the reason why these dimensions have been adopted is due to their evident support on patient empowerment literature.

(i) Information search

The traditional paternalistic model of healthcare is characterized by a low decisional and informational empowerment between experts and patients. However, nowadays, the empowered patient assumes an on-going effort to develop a good understanding of healthcare. The proliferation of online health information, the volume of info available and the speed to which it is communicated, facilitated patients' access to health related content. Individuals are thus more demanding and no longer merely satisfied with physician's expertise.

Akerkar and Bichile (2004) talk about an "e-patient revolution", referring to the boom of online health information seekers. They argue that searching for health and medical information is nowadays one of the most popular online activities together with e-mail and product/service online reviews seek out.

Armstrong and Powell (2009) developed a study aiming to evaluate patient's perspectives on health advices submitted on online platforms. After reviewing their findings, an interesting quotation was extracted, highlighting a reason explaining why patients are willing to engage in health information search:

"The more information you can get the better.
You learn very quickly that just because it worked for somebody else, it won't necessarily work for you, but you can always start to think in that direction and you can always try it".

Also, research developed by Berkel et al. (2015) on patient empowerment and their participation in online message boards evolving patients with three kinds of chronic diseases (diabetes, amyotrophic lateral sclerosis and hyperactivity disorder), found that the three most frequent empowerment processes included: providing information, sharing information and requesting information. In line with this, Camacho, de Jong and Stremersch (2014) stressed that empowerment may have different strands. One of the components is the customer initiated informational empowerment, which takes place when a patient requests relevant health related information from the expert.

In the managerial field but apt to be applicable to the healthcare context, Kanter (1979) stated that access to information, support and the needed resources, creates an empowering workforce and environment.

In their study, Awé and Lin (2003) also highlighted the need to increase patient empowerment as a method to prevent medication errors. They argue that patients should become informed so that they can track their medical history, work closely with doctors and share information with them. In fact, patients' exhibiting willingness, motivation and desire to gather information concerning their condition are more likely to follow a specific treatment advice (Martin et al. 2005).

In this study, information search goes in line with the definition provided by Prigge et al. (2015) and comprehends patient's active and systematic role in collecting disease and treatment related information from different sources.

(ii) Knowledge development

Empowered patients feel encouraged and autonomous to actively search for information in order to develop a deep knowledge on treatment alternatives and ultimately make the adequate choices. Knowledge development appears as an attempt to alleviate the asymmetry gap existent between patients and health professionals' expertise. For Bandura (2004), knowledge is a precondition for change. If patients lack the knowledge about health risks, they will hardly embrace in new behaviours that will guarantee the adoption of a healthier lifestyle.

Schulz and Nakamoto (2013) even refer to the empowered patient as an individual who does not passively receive information. Instead, he is someone who strives to comprehend the information he considers relevant and appropriate for his current health condition.

Within the managerial context, Hsieh and Hsieh (2015) state that customer's knowledge is vital to assist enterprises in developing solutions for problems since capturing customer's knowledge may facilitate innovation. The same way, it is fundamental to ask for patient's evaluations and feedback. They also highlighted that the major goal of customer participation is to satisfy their own needs, therefore business should develop engagement strategies that will allow co-creation. In healthcare, co-creation is achieved through the adoption of a shared decision-making model, as it is going to be explained hereinafter. Martin et al. (2005) state that in order to have a fully and clear understanding about the treatment regimen and pursue an effective adherence, patient's knowledge is paramount.

For this research, knowledge development will comprehend patient's active role in organizing and trying to comprehend the information acquired about their disease with the goal of achieving the expertise that will allow to keep up with physician's explanations (Prigge et al, 2015).

(iii) Decision participation

As Charles, Grafni and Whelan (1999) stress, there are several diseases that have no best treatment and frequently, these treatments have different kinds of trade-offs between its benefits and risks. Therefore, once patients are the ones who have to deal with these trade-offs, the assumption that healthcare professionals should be in charge of the treatment evaluation and final decision has been sharply challenged. New approaches to treatment decision-making have been emerging and the decisional context is currently evolving, incorporating a larger and more active role from patients. Grounded on a "partnership model", empowered patients, besides seeking out for alternative sources of information, are expected to develop a dialogue with doctors, questioning them and making their own judgements.

Findings reveal that lower levels of interpersonal connection between health providers and receivers lead to a decrease on treatment adherence and effectiveness, which compromises individual's well-being (Gudzune et al, 2013). Also, one of the most frequently mentioned factors for patient dissatisfaction regards the patient not feeling properly involved in their care (Coulter, Parsons and Askham, 2008) hence, it is vital that doctors and patients

work together as active partners in order to mutually choose the appropriate treatment. In literature, this patient-physician relationship has been strongly reviewed and supported (Charles, Gafni, Whelan 1999; Deshpande, Menon, Perri and Zinkhan, 2003; Awé, Lin, 2003). Scholars have translated it in the term "shared-decision making", which has been generally adopted. For Brody et al. (1989) the shared decision-making is the ideal standard for the relationship between the patient and the health professional. The American Medical Association 2010 has defined shared-decision making as a collaborative process whereby patients and physicians develop healthcare solutions by examining therapeutic options together in accordance to the appropriate scientific evidence and also by taking into consideration patient's values and preferences.

Camacho, Landsman and Stremersch (2009) define the participative role of patients in healthcare as "patient connectedness". They highlighted five main outcomes resulting from the increased dialogue and participation in the patient-physician relationship: trust, satisfaction, adherence to treatment plan, engagement in preventive behaviours and health improvements. Trust is build due to the sense of partnership developed between patients and physicians. Research showed that individuals are more likely to trust physicians who aim to deeper explore patient's disease, ask for feedback and expectations. According to their study, besides the health outcome, trust has even an impact on the social and economic panorama since patients with lower confidence levels are usually more dissatisfied with the received care and therefore, have lower adherence levels. Adding to this, with higher levels of trust, patients have a larger appetence to spread positive word-of-mouth and the effectiveness of care raises. Also, patient's efforts to search for information, develop knowledge about their health status and discuss the collected information with physicians, will allow professionals to better understand patient's needs and expectations and design a much personalized and patient-centered treatment program.

Patient's decision participation is defined, for this study, as the patient's active work with healthcare providers in the development of a treatment strategy and discussion of treatment decisions (Prigge et al.,2015).

2.1.2 The power of empowerment on treatment adherence

Allowing patients to have a more autonomous and participative role in their own care, proved to be one of the most remarkable trends in the healthcare sector for the 21st century. The shift in the decisional context and the strengthening of patient's statute, will bring strong implications for patient's health and wellness. Empowered patients who seek to discuss and collaborate with healthcare professionals are usually more satisfied, have an increased knowledge over their disease and therapeutic options, and can achieve better treatment outcomes (Deshpande, Menon, Perri and Zinkhan, 2010).

Empowered patients have the motivation to reflect upon the range of consequences and options available for their own life, which leads to a higher ability to come up with health decisions. By becoming knowledgeable and by developing the right skills and confidence to make decisions, patients become increasingly committed to their treatment (McAllister et al., 2012) and will develop a greater sense of discipline and self-efficacy, which will positively influence their treatment adherence. Bandura (2004) highlights the importance of self-efficacy in mobilizing the motivation and the perseverance to achieve successful outcomes.

Furthermore, the existence of an effective and cordial dialogue between doctors and patients is one of the main drivers of patient's participation and adoption of autonomous and lasting behaviours. A study developed by Mendonca and Brehm (1983) on 15 overweight children showed that children who though to have participated in their treatment program presented a higher adherence to the treatment and lost more weight than the ones who assumed they hadn't participated. Also, research on diabetes education revealed that being informed and having the right knowledge is the key for an effective self-management behaviour, which may strongly influence health outcomes, either clinically or psychologically (Mantwill et al., 2015).

This research applies a methodology that allows to explore the impact of patient empowerment on patient's adherence. Therefore, the following hypothesis will be tested:

H1 a: Patients' information search will positively affect their treatment adherence.
H1 b: Patients' knowledge development will positively affect their treatment adherence.
H1 c: Patients' decision participation will positively affect their treatment adherence.

2.1.3 Challenges to empowerment

The old paradigm and the adoption of new techniques

The redefinition of the healthcare system, translated in the shift from a paternalistic model towards a patient-centered model with intrinsically confident patients actively involved in discussing and evaluating their health status and treatment options, means a challenge for healthcare professionals who have to readapt their role in the health system. Anderson and Funnel (2005) highlighted that healthcare professionals need to operationalize their techniques in accordance with the new paradigm that has emerged. The effectiveness of the service provided by physicians is primarily influenced by the way they interact with patients which is prominently shaped by the teachings professionals have received during their training. Therefore, the biggest challenge will be to employ a collaborative approach that will have not only the support from patients but also from their colleagues and from the whole healthcare system.

Another relevant issue has been raised by Schulz and Nakamoto (2013) in their research on health literacy and patient empowerment. Their conclusions derive from the fact that there might be a disproportion within patient empowerment's dimensions. When accessing patient behaviour, they highlighted that a psychologically empowered patient who doesn't own the proper knowledge and judgment skills may become a dangerous self-manager, someone who adopts inadequate behaviours that can endanger life. In addition to this, developing a shared decision making with patients who don't own the proper abilities and knowledge puts them in jeopardy and providing them the abilities without allocating the responsibilities not only frustrates them but also costs money. Therefore, vigilance must be exercised and physicians should face empowerment not as a strategy but mainly as an approach for health promotion.

McAllister et al. (2012) further stressed the fact that there are individuals who simply don't want to be empowered at all times. Therefore, if the physician tries to force the patient in changing his lifestyle, this may result in tensions and possibly, a breakdown on the healthcare relationship.

2.2 Patient adherence

2.2.1 A shift in the approach, a shift in the terms

The fast paced world we live in fuels the constant emergence of new ideas, approaches, practices and constructs. The healthcare field is not an exception, therefore medical terminology needs to be in constant process of change and adaptation in order to be accurate and stay updated. Literature has been discussing the terms of "compliance and "adherence (Anderson and Funnel, 2010; Vermeire et al., 2001; Aronson, 2007). For years, compliance has generally been applied to situations where healthcare professionals establish a medical treatment by taking into consideration prior biomedical research for what was statistically proved to be patient's best interest taking into account the segment to which the patient belongs (Sandman et al., 2011). However, this construct has been accused of not giving credence to patient's participation, preferences and perspectives. Furthermore, compliance has been majorly associated to the paternalistic paradigm model of healthcare, characterized by the authoritarian profile of the health professional towards the patient, the passive role of the patient and the physician deciding on behalf of him.

A shift from a compliance-focused scenario towards an empowerment approach is needed in order to embed patient's perspectives, needs and emphasize the collaborative and active role of the patient in the healthcare decision making context. Hence, the adoption of the term adherence allowed to overcome the negative connotations previously mentioned.

Horne et al. (2005) argue that using the term "patient adherence" as a substitute for "patient compliance", allows to highlight patient's freedom and the need for agreement. On their report for the National Co-ordinating Centre for NHS Service Delivery and Organization R&D, adherence is defined as "*the extent to which the patient's behaviour matches agreed recommendations from the prescriber."* Delamanter (2007) also related the term with availability of choices and support in goal setting.

For the above mentioned reasons, although much literature is still giving use to the term "patient compliance", the term won't be used in this study since it won't be aligned with the all new behavioural change that is mirrored over the entire dissertation.

2.2.2 Non-adherence risks and consequences

Positive healthcare outcomes are largely dependent upon patient's adherence to the prescribed treatment. However, non-adherence is often a veiled problem that patients prefer to not disclose and which is hardly perceived by healthcare professionals. In fact, non-adherence is an ever present and complex problem identified as a major public concern since it can be a prevalent threat to health and wellbeing, carrying out an astonishing economic burden for the society. Besides inhibiting patients from receiving the best treatment (Horne et al, 2015), non-adherence highly interferes with medical therapeutic efforts, reduces the benefits and efficacy of medication, promotes the unnecessary usage of means of diagnosing and treatment (Bugalho and Carneiro, 2004) and is also associated to adverse healthcare outcomes (Culig and Leppéé, 2014). Adding to this, large costs for care are also a consequence of patient lack of adherence. In accordance to Bugalho and Carneiro (2004), direct costs of therapy associated to non-adherence is three to four times greater than if the patient would have followed the treatment regimen.

In their study about adherence to therapy in Portugal, Cabral and Silva (2010) stressed the importance of the doctor-patient relationship for the therapeutic success. Their research revealed that the main reasons for non-adherence included the fear of asking questions and requesting clarifications to the healthcare professional and paying no attention to the physician's explanation. Also, a research developed by Fernandes et al. (2014) estimated that 57,7% Portuguese failed to adhere to the prescribed antibiotics. Further, a similar study conducted by Alves da Costa (2015) on non-adherence of patients with chronic diseases accounted 22.8% for primary non-adherence (failing to purchase prescription) and more than 50% for secondary non-adherence (not taking the medicines as prescribed).

2.3 Understanding the human behaviour

2.3.1 Motivation definition

Motivation has always been a central study-object for psychology researchers due to its undeniable power in generating outcomes (Ryan and Deci, 2000). Graham and Weiner (1996) define motivation as the study of why individuals tend to think and behave in specific ways. For Bandura (1997), motivation is a more complex construct since it refers to self-regulatory processes comprising the selection, activation and sustained direction of behaviours towards specific goals.

Although it is often treated as a single construct, motivation encompasses a wide range of factors that will end up in different experiences and consequences. On one hand, people can be urged to get into action by showing their inner interest and appetence, but they can also feel motivated if they value a reward or if they might face an external coercion.

Comparisons should then be made between people since different motivations lead to different outcomes. As Ryan and Deci (2000) stress, individuals externally controlled for an action have less interest, excitement and confidence than individuals authentically motivated. Thus, this will have consequences on performance, persistence and effectiveness. Usually, in order to determine and capture the essence of motivation, psychologists examine the chronological sequence since the moment the individual engaged in a certain behaviour, till it is finally finished. Emotional reactions, individual's choices, persistence and latency of behaviour are then analysed in order to access the level of motivation (Graham and Weiner, 1996).

2.3.2 Self-Determination Theory

Self-Determination Theory (SDT) is a macro approach to human motivation and personality initiated in 1970s (Deci and Ryan, 2008) that has received a growing attention and has been applied to a variety of field' studies such as health, education, work and sport (Ng. et al., 2012).

Whilst most of the historical and contemporary theories on human behaviour conceptualize motivation as being an unitary construct and try to explain the direction of an individual's behaviour without accessing how it was triggered, SDT highlights the importance of measuring a person's motivation quality rather than the total amount of motivation, as an antecedent for psychological health and wellbeing (Patrick and Williams, 2012; Deci and Ryan, 2008). Whereas traditional approaches usually limit to distinguish between intrinsic and extrinsic motivation (Deci and Ryan, 2008), SDT places motivation in a continuum, ranging from high to low self-determination and posits that motivation levels depend on whether it is autonomous (self-determined) or controlled. While controlled behaviours are caused by external forces and are enacted by coercion or interpersonal forces, autonomous behaviours are freely initiated by the self. Three types of motivation arise from these distinctions: Intrinsic motivation, extrinsic motivation and amotivation (Edmunds, Ntoumanis and Duda, 2006).

Intrinsic motivation is defined by Ryan and Deci (2000), as the most autonomous form of motivation. They describe it as a spontaneous, self-emanated and inherent interest of the individual towards mastery and exploration of novelty and challenges in order to extend his/her capabilities, which represent the major source of enjoyment and vitality through life.

Regarding extrinsic motivation, SDT has developed a multidimensional conceptualization of the construct by placing it in a continuum (Edmunds, Ntoumanis and Duda, 2006). Starting with external regulation, the motivation is enacted with the aim of meeting an external demand or attaining a reward. With a slightly more self-determined component, introjected regulation refers to the internalization of behaviours that although are not inherently engaging, allow avoiding negative states such as anxiety and guilt. A more autonomous form of extrinsic motivation refers to identified regulation, which comprehends the participation in an activity that one encompass as leading to personally significant and appreciated outcomes although one doesn't find the activity itself pleasant. Finally, integrated regulation takes place when the identified regulations are congruent with the self's values and needs (Ryan and Deci, 2000). Although still in the extrinsic baseline, since it aims to attain outcomes that don't conduct to enjoyment, this type of motivation shares some similarities with intrinsic motivation.

In the last position of the continuum, after extrinsic motivation is amotivation. It encompasses the most non self-determined form of motivation, referring to the state where there is no intention to engage in the behaviour (Edmunds, Ntoumanis and Duda, 2006).

In addition to the different types of motivational regulations, Self-Determination Theory further specifies three essential psychological needs that are critical to heighten motivation (Patrick and Williams, 2012) and that are the foundations for individual's well-being (Miquelon and Vallerand, 2008): The need for autonomy, competence and relatedness. Deci et al. (2001) reinforce that these are universal needs and that the fulfilment of these needs will end up in positive outcomes in every culture.

The need for autonomy reflects the desire to have multiple choices, to feel volitional and to engage in activities originated by one's self interest and predisposition. On what concerns the need for competence, it refers to the need of having a sense of being capable to achieve the desired outcomes (Patrick and Williams, 2012). Ryan and Deci (1985) stress that the need for competence is originated by the inner desire of interacting effectively with the surrounding context, achievement of the desired outcomes and prevention of undesired events. Finally, the need for relatedness refers to the need to feel connected and understood in

a given social setting. When individuals see these needs satisfied in a specific context, they are expected to adopt more autonomous behaviours, relevant to these contexts.

2.3.3 SDT applied to the healthcare setting: the importance of physician's support

Researchers have been extensively applying SDT in studies concerned with health behaviour change over the last decade (Ryan et al., 2008; Williams, Freedman and Deci, 1998). Primary care doctors support over the needs for autonomy, competence and relatedness is indicated as essential for patient's engagement in more autonomous behaviours regarding the recommended health advices such as diet modification, for example (Patrick and Williams, 2012). Therefore, practitioners are expected to engage in patient-centered approaches in order to enhance the existent interaction and therefore maximize patient's experience of autonomy, competence and relatedness (Ryan et al., 2008). Physicians are thus expected to attempt to understand and relate with patient's perspectives through listening and reflexion (Ryan and Deci, 2008).

When individuals perceive their psychological needs to be supported, positive outcomes are proved to intensify. Besides better mental health, greater quality of life and improved adherence to prescribed medications (Ryan et al., 2008), behaviours are also expected to be maintained over time, requiring patients to internalize values and capabilities and thus, experience self-determination.

i) Autonomy support

Health related behaviours are usually extrinsically motivated since typically, they are not inherently enjoyable tasks. Although many people tend to engage in health behaviour changes on what SDT calls controlled motivation, behaviours should be endorsed by the individual in order to be successfully nurtured outside the treatment setting or controlled environments (Ryan et al., 2008). The reason why individuals engage in this type of behaviours relies on the fact that many times, healthcare professionals create external regulation and try to motivate patients through the power of authority. Other reasons are related with the individual's willingness to get external rewards or compliance with social pressures. The predominance of controlled motivation and external regulation will, according to SDT, inhibit patients once they feel more pressured, less autonomous and thus, less likely to seek for health information, develop knowledge about their disease and actively work together with physicians. A study developed by Ryan, Plant and O'Malley (1995) regarding

the motivations for alcohol treatment revealed that autonomous individuals feel more motivated in actively participating in treatment programs.

Prior studies also support and reinforce the importance of autonomy, the central principle of the SDT. Deci et al. (2001) developed a study on work environment and suggested that the fulfilment and satisfaction of individual's psychological needs is intrinsically linked to a higher motivation and well-being. Also, Michalak, Klappheck and Kosfleder (2004) revealed that autonomy is positively correlated with goal progress and with sustained efforts, therefore patients experiencing more autonomy will easily overcome difficulties and barriers to change. Support for autonomy is afforded when healthcare professionals break down external controls and pressures (Ryan et al., 2008) and acknowledge patients by providing them with relevant information and meaningful rationales for a given advice, strive to understand patient's emotions, or simply support patients when they find barriers to change by helping them to identify pathways to maintain a healthy behaviour.

Taking into account the above literature review, the following hypothesis now arises:

H2 a: Patient's autonomy need fulfilment, will positively affect information search.
H2 b: Patient's autonomy need fulfilment, will positively affect knowledge development.
H2 c: Patient's autonomy need fulfilment, will positively affect decision participation.

ii) Competence support

In order to foster internalization, promoting a sense of autonomy is not sufficient per se. In accordance with Williams, Freedman and Deci (1998), higher adherence is also a consequence of patient's feelings of competence in carrying out the prescribed treatment. Patients need to experience confidence and competence to adopt autonomous behaviours and engage in information searching, be more active and change (Ryan et al., 2008). According to SDT, practitioners should support competence by allowing patients to ask questions and provide feedback, enhance patient's skills and by providing them the right inputs. Presenting patients a feasible structure, by setting and implementing goals and strategies, also leads to their effectiveness and enhances their appetence to gather useful information on their disease (Ryan and Deci, 2008). Besides, professionals should also focus on patient's accomplishments and highlight the importance of those progresses so that they can keep their good performance (Patrick and Williams, 2012).

By having their competence need supported, patients become aware of their role and consequently strive to strengthen their skills by acquiring information, possessing the right knowledge and by adopting a more participative position during the medical encounter (Fumagalli et al, 2015).

Consequently, the following hypothesis derives:

H3 a: Patient's competence need fulfilment, will positively affect information search.
H3 b: Patient's competence need fulfilment, will positively affect knowledge development.
H3 c: Patient's competence need fulfilment, will positively affect decision participation.

iii) Relatedness support

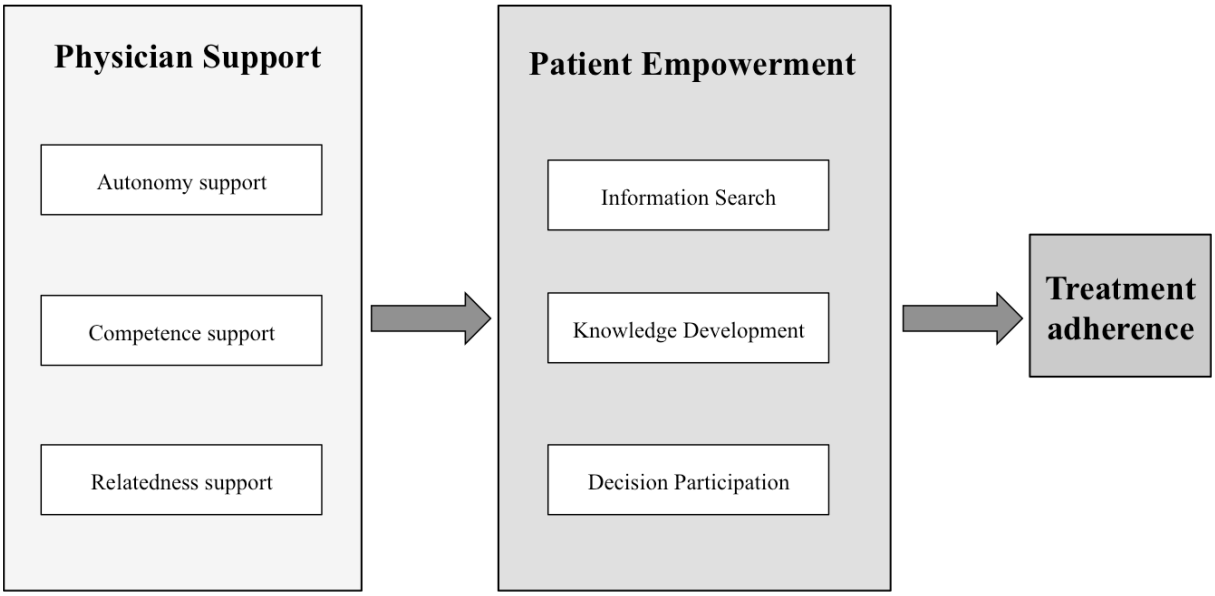
SDT also suggests that the need for relatedness should be guaranteed (Ryan and Deci, 2008). Patient's vulnerability due to the lack of technical expertise usually generates guidance assistance seeking towards the healthcare professional. Relatedness is paramount to internalization. It refers to a sense of being respected, cared, understood and connected with the practitioner and could be conveyed by being emphatic with patient's concerns and by providing a warm and genuine interpersonal environment (Patrick and Williams, 2012). Patient' sense of "being cared" will engender multiple consequences: trust on physician will be enhanced, patients will experience openness and security towards the physician and consequently, a feeling of working as partners will emerge (Fumagalli et al., 2015). Involvement will increase and patient's willingness to take part in this process of partnership will be clear. Consequently patients will feel the need to become more active and become more information and knowledge driven.

Following what has been presented, the following hypothesis will be tested:

H4 a: Patient's relatedness need fulfilment, will positively affect information search.
H4 b: Patient's relatedness need fulfilment, will positively affect knowledge development.
H4 c: Patient's relatedness need fulfilment, will positively affect decision participation.

2.4 Conceptual framework

Based on the theoretical framework, a complete conceptual model with the constructs hypothesized as antecedents and outcomes of patient empowerment was created, as presented in the figure below.



Chapter 3. Methodology

In chapter three, the research methodology is presented. Firstly, the decision of conducting a quantitative research will be explained. After, data collection procedure and measurement scales are described. Finally, the study design and plan of analysis will be elaborated.

3.1 Research Method

With the purpose of testing the hypothesis derived from the literature concerning the influence of physician's support on patient empowerment dimensions and consequently, their impact on treatment adherence, a quantitative research has been developed by resorting to a web-based survey questionnaire.

Quantitative research methods allow facilitating the acquisition of quantifiable information (Carr, 1994). Thus, by combining the collected data with the results obtained from the qualitative approach, valuable, deep insights and richer findings will be elaborated.

Particularly for healthcare, mixing both methods will increase the comprehensiveness of the phenomenon of interest and allow to infer on how statistical data can be explained by qualitative analysis. Adding to this, dimensions on the study topic will also be broadly explained, which will provide the study rigour and consistency (Chow, Quine and Li, 2010).

3.2 Data collection

3.2.1 Research sample

The data collection procedure arose as the most problematic and time-consuming part of this study. The initial intention was to administer questionnaires in a healthcare setting since "going into the field" allows to be more purposeful oriented and to target information-rich participants with characteristics and experience relevant for the study (Curry, Nembhard and Bradley, 2009).

Due to its strong focus on innovation and for considering research and training fundamental for healthcare activities, the initial idea was to collect data from CUF hospitals. Therefore, I have contacted Ana Casaca from the Innovation and Sustainability Department as well as Sofia Araújo Fernandes, from the Strategic, Innovation and Management Control of Grupo José de Mello Saúde. Although they revealed to be very enthusiastic about the idea and ready to help with further investigation, a response directly from CUF Hospitals was needed in order to proceed the administration of the questionnaires. After waiting two weeks, the lack of response forced me to change my previous strategy. Hence, e-mails have been sent to Hospital de Santa Maria and Curry Cabral, which are teaching-hospitals and one of the main Portuguese universities in the fields of Medicine and Health Science. It was expected that both could have interest in collaborating in this study. Hospital da Luz and Administração Regional de Saúde de Lisboa e Vale do Tejo have also been contacted. Unfortunately every tentative had no success in obtaining feedback and response.

The decision to launch a web-based survey questionnaire was thus taken forward and hypotheses have been tested on a sample of 164 people. Survey participants have majorly been recruited through facebook posts. Between them, health related groups have been selected to collect data such as "Saúde & Acupuntura", "Esclerose Multipla e Outras Doenças Auto Imunes - Tratamento com Vitamina D", "Dicas de Saúde" as well as

"Menos Peso Fitness Nutrição Musculação Crossfit". Plus, other web platforms have also been used such as "Fórum Saúde.com" and "Fórum Men's Health".

3.2.2 Measurement of the variables

Physician Support on Basic Psychological Needs

For this study, the three basic psychological needs - autonomy support, competence support and relatedness support - have been considered as potential influences of patient empowerment. These variables stem from the Self-Determination Theory, which focus on how these innate needs should be supported so that individuals experience high levels of motivation and engagement in fostering goal pursuits for diverse activities (Deci and Ryan, 2000).

Much research has already been developed nowadays on the Self-Determination Theory, including laboratory experiments and field studies in a variety of contexts. These have led SDT theorists to create model questionnaires that allow to access and measure different constructs explored by the theory. However, although literature strongly highlights the key role of healthcare professionals in supporting human's fundamental needs for autonomy, competence, and relatedness (Ryan et al.,2008; Senécal, Nouwen and White, 2000; Patrick and Williams, 2012) a scale for measuring these variables is still missing specifically for the healthcare setting. Therefore, in order to accurately assess these dimensions, the existing questionnaires considered for this study were The Basic Psychological Need Scale at Work (BPNS) and The Health Care Climate Questionnaire (HCCQ). Regarding the BPNS at Work, it comprises individual's need satisfaction in the work domain. The HCCQ aims to assess patient's perceptions on the degree to which healthcare providers are autonomy supportive. By integrating both questionnaires with the reviewed literature on the subject developed by SDT theorists (Ryan et al., 2008), a complete questionnaire to measure the three psychological needs has been developed.

Comprising the same length of the original BPNS Scale at Work, 24 items, eight statements for each need category have been considered. In order to ensure the validity of the questionnaire, the scale used was the same as the original, ranging from 1 (Strongly Disagree) to 7 (Strongly agree). Scores were obtained by averaging the individual item scores. In order to score reversed items, it was necessary to subtract the score on the item from 8 and the ending result would be used in the average counting. Higher averages represent a higher level of autonomy, competence and relatedness support.

Empowerment dimensions

On what concerns information search, knowledge development and decision participation, statements have been adapted from the scale developed by Prigge et al. (2015) on their research, together with the existing literature on patient empowerment. The scale ranges between "1 - Strongly Disagree" to "5 - Strongly agree" with "Strongly Agree" scores representing a higher patient empowerment. In order to obtain the individual level of each item, averages of each construct have been computed.

Treatment adherence

Finally, for capturing patient adherence, the Medication Adherence Scale (MMAS-4) built and tested by Morisky (1986) has been used in order to guarantee the validity of the obtained results. However, since this study aims to measure patient treatment adherence, and not exclusively medication adherence, the term "medicine" existent in the original questionnaire has been substituted by "treatment prescribed by my physician", once it is aligned with the definition adopted for this variable, outlined in the point 2.2.1.

For patient adherence questions, "yes" or "no" option has been considered, with each "yes" scoring "0" and each "no", "1". Reversed items needed to be subtracted from 1. In accordance with Morisky (1986), to compute the adherence level of each individual, the constructs need to be sum. Hence, a sum of 0 corresponds to a "high adherence", between 1 and 2, "medium adherence" and between 3-4 it represents a "low adherence" level.

3.3 Study Design

Conducted with the help of the online tool Qualtrics, the online survey questionnaire was divided into three main sections. In the first part, an informed consent guaranteeing the protection of the participant's identity and explaining the purpose of the survey was presented. In the second part, respondents were asked to rate statements aimed to measure physician's support, patient empowerment and treatment adherence, respectively. In the final section, demographic information of respondents such as age, gender, level of education as well as health status information and chronic diseases diagnosis have been gathered. The whole survey questionnaire is available in the Appendix.

It was accessible 24h/7, with the duration of one week and the collected data was processed with the help of the statistical software IBM SPSS Statistics 23 as well as STATA 14, as it is going to be explained in the forward sub-sections.

3.4 Plan of analysis

3.4.1 Construct validation and reliability

To ensure the validity of the study, the questionnaire has been built by taking into account previous questionnaires developed for relevant researches in healthcare, as it was previously explained. Therefore, once the dimensions and constructs which have been considered for this model have already been tested in the literature (Deci & Ryan 2000; Prigge et al. 2015), performing a construct validation by resorting to a Principal Component Analysis (PCA), will not add or produce any additional value.

However, there were some cases in which the construct measurement had to be adapted in accordance with the subject in analysis. Thus, before starting the hypothesis testing, a reliability test of each scale item was assessed by measuring Cronbach's alpha in SPSS Statistics 23, in order to guarantee the model consistency. Cronbach's alpha depicts how a range of variables focuses on a single construct (Cronbach, 1951) and is a powerful tool to examine if the different constructs supported in the literature, share a considerable percentage of variance. According to Tavakol and Dennick (2011), acceptable values of alpha range between 0.70 and 0.95.

3.4.2 Structural Equation Modelling

A confirmatory factor analysis is going to be performed since information has already been gathered from the literature. Given the nature of this research's conceptual model, the statistical methodology adopted was the Structural Equation Modelling (SEM). In accordance with Grewal, Cote and Baumgertnet (2004), SEM has become increasingly popular once it accounts with the measurement error and can manage multiple endogenous constructs. The model has the capacity to examine the relationship between one or more independent and dependent variables, which can either be observed or latent variables (LVs) (Ullman, 2006). Latent variable is the term used to describe variables that refer to phenomena that cannot be observed or directly measured. The integration of LVs in analytical approaches for investigations has been particularly visible in behavioural sciences. Inferences on these

variables are developed by assessing to direct variables, also known as manifest variables, which are indirect observations of the LV (Masyn et al., 2010).

It is also important to differentiate between exogenous and endogenous latent variables. Latent exogenous variables refer to independent variables that lead to variations in other latent variables values. Changes in exogenous variable' values are due to factors external to the model. Regarding latent endogenous variables, these function either as exclusively dependent or both dependent and independent variables and variations in their value is explained by the model since the variables that influence them belong to the model.

In this research, a micro and a macro analysis are going to be performed in order to enrich the study and develop a deeper analysis of the phenomenon studied and on the collected data, both using SEM on STATA 14. Firstly, the observed variables will be examined: each dimension's constructs will be analysed separately in order to understand to what extent "autonomy", "competence" and "relatedness" support will influence "information search", "knowledge development" and "decision participation", respectively. After, the impact of patient's empowerment constructs on treatment adherence will also be interpreted. By resorting to this micro analysis, a more objective and conclusive analysis will be performed.

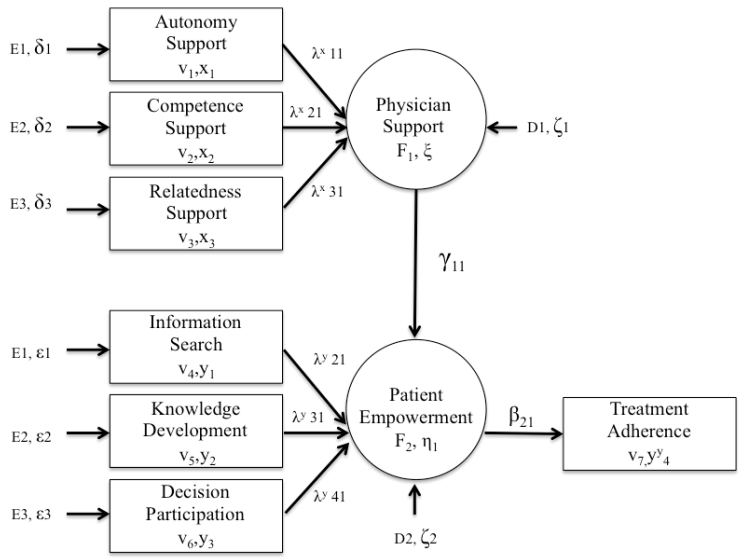
Thereafter, the main model is going to be examined and the individual coefficients for each dimension will be generated. The dimensions of "Physician Support" and "Patient Empowerment" are considered as latent variables and will be reflected by assessing to the respective constructs – manifest variables.

The estimator chosen for the SEM analysis was the maximum likelihood estimator (ML) since it is a full information estimator with the capacity of estimating every parameter and, at the same time, uses information from the whole system of equations (Kolenikov, Steinley and Thombs, 2010). This makes ML the most widely used estimator for SEM models.

3.4.3 Model specification

The diagram of the model is presented bellow on Figure 1 and takes into account the Structural Equation Model specification provided by Bagozzi, Yi and Singh (2011).
As the illustration shows, latent variables are represented by ellipses and connected to manifest variables by arrows, which are represented by rectangles.

Main model specification illustration:



Main model specification equation:

$x_1=\xi+\delta 1$

$x_2=\lambda^x\ 21+\delta 2$

$x_3=\lambda^x\ 31+\delta 3$

$y_{1=}\eta_1+\varepsilon 1$

$y_{2=}\lambda^y\ 31+\varepsilon 2$

$y_{3=}\lambda^y\ 41+\varepsilon 3$

$y^y{}_{4=}=\beta_{21}\eta_1+\zeta 2$

Chapter 4. Results

In the following chapter, an analysis of the results from the collected data is discussed. Firstly, general results from the sample will be addressed. After, the outcomes from the descriptive statistics that will provide an insight over the studied dimensions will be presented. Finally, the results of the hypothesis testing will be developed and discussed.

4.1 General Results

4.1.1 Sample Characteristics

Table 1 presents the general characteristics of the sample. In total, 164 people have participated in this research. The completion rate was of 91%: from a total of 180 who have

started the survey, 164 respondents have completed and have been considered for further analysis. Although researchers often recommend a sample size of at least 200 (Hogarty et al., 2005), due to time constraints, it was not possible to collect such sample size.

As it can be seen, there were more females participating in the study (62,2% females and 37,8% males). Regarding age categories, the category 18-29 stands out. However, as the table indicates, although the concentration in this age range is high, data is well distributed within 30-39, 40-49 and 50-59 categories. Only ten individuals have more than 60 years old.

On what concerns the educational level, the largest share comprehends "Bachelor's Degree", followed by "Master's, Doctorate, PhD".

As for health status, 45,7% of the respondents defined their health as "Good", followed by 28,7%, who considered it "Very Good" and 15,2% "Fair". In this sample, the majority of the respondents don't suffer from any chronic disease (68,3%).

	#	%
Age		
18-29	67	40,9
30-39	25	15,2
40-49	31	18,9
50-59	31	18,9
60-69	8	4,9
>70	2	1,2
Gender		
Male	62	37,8
Female	102	62,2
Educational level		
Basic Education	8	4,9
Secondary Education	32	19,5
Bachelor's Degree	72	43,9
Masters, Doctorate, PhD	52	31,7
Health Status		
Very Poor	2	1,2
Poor	8	4,9
Fair	25	15,2
Good	75	45,7
Very Good	47	28,7
Excellent	7	4,3
Chronic Disease		
Yes	52	31,7
No	112	68,3

Table 1. Sample characteristics

4.1.2 Construct Reliability

Table 2 reports the reliability of each construct through the measurement of the Cronbach's Alpha. As one can verify, every construct of this research presented values of alpha above 0.7, which will guarantee accuracy while interpreting the data.

Reliability Statistics			
Cronbach's Alpha	**N of Items**	**Items**	
0,830	8	Autonomy Support	Physician Support
0,930	8	Competence Support	
0,945	8	Relatedness Support	
0,861	3	Information Search	Patient Empowerment
0,794	3	Knowledge Development	
0,902	3	Decision Participation	
0,722	4	Treatment Adherence	Treatment Adherence

Table 2. Cronbach's Alpha measurement

4.1.3 Physician Support

Physician support on patient's autonomy, competence and relatedness has been accounted as a precedent of patient empowerment, therefore it was the first construct to be analysed as represented in Table 3.

Firstly, it should be highlighted that the majority of perceptions associated with relatedness support exhibited above the average scores, specifically "I don't feel very good about the way my physician talks to me" (reversed item), "I feel the relationship between me and my physician is based on respect", "I feel that my physician cares about my concerns" and "I feel a warm environment during the medical encounter". In contrast, seven out of the eight tested perceptions on competence support presented below the average scores. With a special attention for the items ranked lastly, patients neither agree or disagree that their physicians are supportive when they fail to follow the prescribed recommendations and encourage them to ask questions.

	Mean	Std. Deviation	Rank
During medical encounters I feel my physician provides me choices and options.	4,53	1,710	20
I feel a sense of openness with my physician.	5,06	1,653	7
I feel my physician conveys confidence in my ability to make changes.	4,83	1,447	11
I feel that my physician cares about my concerns.	5,27	1,499	3
Most of the things I do for my health derive from my physician's pressure.	4,68	1,612	16
My physician makes sure I really understand about my condition and what I need to do.	4,94	1,546	8
My physician handles people's emotions very well.	4,81	1,630	12
I don't feel very good about the way my physician talks to me.	5,39	1,704	1
My physician provides me meaningful rationales for his/her advices.	4,77	1,645	13
I feel my physician forces me to do many things related to my health that I wouldn't choose to do.	4,85	1,644	10
I feel my physician encourages me to ask questions.	4,36	1,616	23
I feel my physician tries to understand how I see things before suggesting a new way to do things.	4,50	1,682	21
My physician listens and provides feedback on how I would like to do things.	4,69	1,596	15
Together with my physician, we set goals and strategies in order to effectively achieve the desired outcomes.	4,62	1,552	17
I feel pressured by my physician.	5,10	1,634	6
I feel that my physician cares about me as a person.	5,11	1,716	5
I feel my physician focuses on my accomplishments and progresses.	4,57	1,559	19
My physician's recommendations feel like a chain of obligations.	4,38	1,681	22
I feel that my physician tries to understand what is meaningful to me.	4,71	1,600	14
I feel able to share my feelings with my physician.	4,59	1,820	18
I feel my physician encourages me in completing his recommendations.	4,87	1,415	9
I feel the relationship between me and my physician is based on respect.	5,31	1,675	2
I feel my physician gives me support when I fail to follow his/her recommendations.	4,31	1,533	24
I feel warm environment during the medical encounter.	5,23	1,610	4
Mean Physician Support	**4,81**		

Table 3. Physician Support analysis

4.1.4 Patient Empowerment Dimensions

Regarding the three constructs under patient empowerment, respondents manifested as being motivated to further collect information (mean of 4,01) on their disease and actively participate with physicians on their treatment (mean of 4,05), as Table 4 reports. Slightly bellow the mean, respondents shown to be less interested in developing knowledge on their disease.

Within information search, respondents revealed to be interested in searching for health related information on their disease and request information from the physician, but less motivated in collecting information from other patient's experiences with the same disease. Regarding knowledge development, although the mean of this construct reflects some indifference from respondents, they portrayed interest in comprehending the health information provided by their physician. Finally, within decision participation, the majority of respondents reported motivation in developing a sense of partnership and a closer relationship with the physician.

	Mean	**Std. Deviation**
Information Search	**4,01**	**0,89**
I am interested in searching for health related information (online, health magazines, books, etc.) concerning my disease.	4,22	0,97
I am interested in knowing more about other patient's past experiences with that disease.	3,79	1,12
I usually request disease related information from my physician.	4,01	0,91
Knowledge Development	**3,85**	**0,71**
I am interested in developing a deep knowledge on different treatment alternatives.	3,68	0,95
I try to comprehend the obtained health related information.	4,02	0,77
I try keep up with my physician's explanations and expertise.	3,85	0,80
Decision Participation	**4,05**	**0,97**
I am interested in contributing with suggestions concerning my disease during the medical encounter.	4,04	1,01
I am interested in developing a dialogue with my physician, ask questions and make my own judgements.	4,10	1,03
Together with my physician, I participate extensively in planning the right treatment for me.	4,00	1,13
Mean Patient Empowerment	**3,97**	

Table 4. Patient Empowerment analysis

4.1.5 Treatment Adherence

The mean for treatment adherence is 1,03, which represents "medium adherence" following Morisky Medication Adherence Scale (1986). Interesting results can be observed in Table 5 on the last two questions: Although the large majority of respondents indicated that they effectively follow the treatment prescribed and manifested intentions in following the treatment, they assumed to interrupt the treatment before the recommended time, especially if they start feeling better (81%).

	% Yes	**% No**
Effectively follow the treatment prescribed by your physician?	74	26
Care about following the treatment prescribed by your physician?	88	12
Interrupt the treatment prescribed by your physician if you feel worse?	53	47
Interrupt the treatment, if you start feeling better?	81	19
Mean Patient Empowerment	**1,03**	

Table 5. Treatment adherence analysis

4.1.6 Correlation and Multicollinearity

Before diving deeper into the dimension's analysis, firstly it was necessary to check whether the conditions regarding the construction of the model were reunited and therefore, confirm the existence of linear dependences between the study variables, as literature reported. Hence, Pearson's r correlation has been computed and is displayed on Table 6.

As one can verify, there is a positive correlation between the variables of interest, with a significance of 0.000, which means that effects of physician support on patient empowerment and of patient empowerment on treatment adherence are expected.

Correlations								
		1	2	3	4	5	6	7
Autonomy	Pearson Correlation	1	,683**	,718**	,735**	,568**	,671**	-,694**
	Sig. (2-tailed)		,000	,000	,000	,000	,000	,000
Competence	Pearson Correlation	,683**	1	,903**	,595**	,556**	,549**	-,594**
	Sig. (2-tailed)	,000		,000	,000	,000	,000	,000
Relatedness	Pearson Correlation	,718**	,903**	1	,664**	,590**	,635**	-,669**
	Sig. (2-tailed)	,000	,000		,000	,000	,000	,000

Information.Search	Pearson Correlation	,735**	,595**	,664**	1	,754**	,848**	-,798**
	Sig. (2-tailed)	,000	,000	,000		,000	,000	,000
Knowledge.Development	Pearson Correlation	,568**	,556**	,590**	,754**	1	,704**	-,635**
	Sig. (2-tailed)	,000	,000	,000	,000		,000	,000
Decision.Participation	Pearson Correlation	,671**	,549**	,635**	,848**	,704**	1	-,777**
	Sig. (2-tailed)	,000	,000	,000	,000	,000		,000
Treatment.Adherence	Pearson Correlation	-,694**	-,594**	-,669**	-,798**	-,635**	-,777**	1
	Sig. (2-tailed)	,000	,000	,000	,000	,000	,000	
**. Correlation is significant at the 0.01 level (2-tailed).								

Table 6. Person's r correlation matrix

However, the displayed results also exhibited strong relationships within physician support constructs' of autonomy, competence and relatedness, as well as within information search, knowledge development and decision participation, which may raise a problem of multicollinearity.

Multicollinearity refers to the presence of linear relationships among explanatory variables (Silvey, 1968) and may generate Type II errors since the standard errors of the coefficients are often large and consequently, lead to mistakes in the regression model estimates. According to Grewal, Cote and Baumgartner (2004), when multicollinearity is very high (over 80%), Type II errors are excessively high and the outcome cannot be accepted. When it is between 60% and 80%, errors are considerable if the composite reliability is weak, R^2 is low and the sample size is short. Nonetheless, when reliability is high (0.8 or more), R^2 increases (over 0.75) and the sample size is high, type II errors become insignificant. Also, literature agrees that multicollinearity can also be accessed by the measurement of variance inflation factors (VIFS) as well as condition indeces (Belsley, Kuh, Welsh, 1977; Grewal et al., 2004, Chennamaneni et al., 2015). If values of VIF are above 10 and condition indices are above 30, this indicates the presence of multicollinearity. When VIF is lower than 10, multicollinearity is insignificant. According to Grewal et al. (2004), multicollinearity might not arise as a problem in SEM.

This way, a primary concern for this study was the measurement of the degree of multicollinearity. Therefore, collinearity diagnosis has been computed for each predictor as Table 7 reports.

On what concerns the composite reliability, this measure was not computed given that Cronbach alpha was already calculated. According with the research of Peterson and Kim (2013) on the relationship between both estimators on reliability, there is little practical difference between them, therefore, Cronbach's alpha scores were high enough to guarantee the reliability of the model.

As it is displayed, variance inflation factors (VIF) range from 1,875 to 5,3999 and condition indexes are not above 30, which indicates that multicollinearity among the variables is not an issue for this model.

Collinearity Diagnostics[a]		
	Condition Index	**VIF**
Autonomy	1,000	
Competence	8,112	5,3999
Relatedness	20,902	5,3999
*Dependent Variable: Autonomy R Square: 0,522		
Competence	1,000	
Relatedness	8,853	2,062
Autonomy	13,317	2,062
*Dependent Variable: Competenc R Square: 0,817		
Relatedness	1,000	
Autonomy	9,099	1,875
Competence	12,674	1,875
*Dependent Variable: Relatedness R Square: 0,834		

Table 7. Multicollinearity Diagnosis

4.2 Hypothesis Testing

Constructs and dimension's estimation

Firstly, the model comprising each dimension's constructs will be discussed, which gives a fundamental indication of how important the distinct constructs are in influencing patient empowerment dimension and treatment adherence. After the initial estimation of the model[1] (1), it turns out that the construct "competence support" is highly insignificant for "information search" (p=0.280), "knowledge development" (p=0.623) and "decision participation" (p=0.094), which means that this variable doesn't play a relevant role in this model, being its presence equated. Besides, the construct "knowledge development" also exhibited a p-value over 0.05 and thus the null hypothesis, which states that the coefficient equals zero cannot be rejected. This way, in a first instance, the construct "competence" has been omitted from further analyses and

[1] The estimation of model (1) and model (2) are presented in the Appendix.

the model was again re-estimated on STATA 14 to check whether the relationship between "knowledge development" and "treatment adherence" presented now a p-value lower than 0.05.

After re-estimating again the model[1] (2), the construct "knowledge development" continued to exhibit a high p-value, therefore the coefficient is not statistically significant and was also omitted from the model. Finally, a third model was re-estimated as it is presented bellow in Table 8.

	Coefficient	Std. Error	Z	P> |Z|	[95% Conf. Interval]	
Information Search						
Autonomy	0.4235688	0.0578167	7.33	0.000	0.3102502	0.5368875
Relatedness	0.1768548	0.0458454	3.86	0.000	0.0869994	0.2667102
Decision Participation						
Autonomy	0.3844395	0.0685671	5.61	0.000	0.2500505	0.5188286
Relatedness	0.2161317	0.0543699	3.98	0.000	0.1095686	0.3226948
Treatment Adherence						
Information Search	-0.6760561	0.1159189	-5.83	0.000	-0.903253	-0.4488592
Decision Participation	-0.4541622	0.1065478	-4.26	0.000	-0.662992	-0.2453324

Table 8. Construct's model estimation

The results exhibited show that both effects of autonomy and relatedness support were positively significant (p > 0,05) for patient's information search behaviour and decision participation. However, the effect of physician's autonomy support is stronger for both patient's empowerment constructs, with a coefficient of 0,424 and 0,384, respectively. Hence, both hypothesis *H2 a*, *H2 c* and *H4 a*, *H4 c* were supported.

Furthermore, the SEM model performed for this analysis also revealed a significant main effect of information search and decision participation on treatment adherence (coefficient of -0.676 and -0.454), indicating that patients who actively search for medical information from different sources and who aim to collaborate in a shared decision making on their care together with the physician, tend to present a greater adherence to treatment plans, therefore hypothesis *H1 a* and *H1c* are also supported.

Following the previous coefficient's estimations and after having eliminated both "competence" and "knowledge development" constructs, the main model was then estimated as presented in Table 9, which provides an overview over the dimensions in study. "Physician Support" exhibits a considerable effect on "patient empowerment" with a γ_{11} = 0,747 and a p=0.000. Reminding that the closer to 0, the higher the adherence, the results also revealed that patient empowerment was found to be strongly significant for treatment adherence, exhibiting a β_{21} = -1.27.

	Coefficient	Std. Error	Z	P> |Z|	[95% Conf. Interval]	
Physician Support						
Patient Empowerment	0.7471813	0.0605003	12.35	0.000	0.6286029	0.8657597
Patient Empowerment						
Treatment Adherence	-1.269654	0.0749069	-16.95	0.000	-1.416469	-1.12284

Table 9. Main model estimation

Chapter 5. Discussion

In essence, the purpose of this study was to perceive to what extent physician's support on individual basic needs of autonomy, competence and relatedness, influenced adherence to the treatment prescribed by means of patient empowerment stimulation. Different constructs have been distinguished in accordance with the Self Determination Theory and relevant studies developed with similar purposes. Thus, this research aims to fulfil the existing gaps in the existing literature on patient empowerment by simultaneously identifying antecedents and outcomes of this dimension. Besides, by examining the impact of the support on each individual's needs in reinforcing patient's empowerment, it is also exploring new territory still not reported in the literature. In the following section, conclusions, limitations and directions for future research will be discussed.

5.1 Conclusions

An important finding gathered by this study, concerns the positive effect of physician support on individual's basic needs in stimulating patient empowerment, in particular, autonomy support, which is the central principle of the Self Determination Theory. In concordance with Ryan, Plant and O'Malley (1995), the adoption of autonomy supportive styles are fundamental for an increased internalized motivation, which leads to the adoption of self-regulated and inner motivated behaviours. In this study, these kinds of behaviours refer to "information search" and "decision participation". Although with a lower contribution, relatedness support is also expected to trigger the above mentioned patient-initiated activities. These findings are especially remarkable given that research linking both dimensions lacks for the healthcare environment. Aujoulat et al. (2007) even refer that the existing gaps on patient empowerment literature are due to the fact that this dimension is often defined in line

with its anticipated outcomes rather than its antecedents, and the principle of self-determination is frequently not taken into account.

Unfortunately, although it was hypothesized that competence would positively influence patient empowerment, no significant result was found. The same happened for knowledge development.

Next, this research also confirms the critical contribution of an empowerment-based approach in the enhancement of treatment adherence, as relevant studies have previously indicated. In line with what has been discussed in the beginning of this study, patient non-adherence is a persistent challenge and is often very difficult to identify since patients prefer to not disclose this kind of information to physicians. The results from this research revealed that, even though patients are concerned and admit to effectively follow the treatment prescribed, a large percentage states that interrupts the treatment before the scheduled date and therefore, fails to complete the agreed recommendation, contributing to a lower level of adherence. These kind of behaviours might end up in poorer health outcomes, lower quality of life and increased healthcare costs. One may suspect that the lack of fundamental health knowledge may be contributing to the "medium adherence" level identified in the sample's research. In fact, results exhibited that even though individuals strive to find and gather health information from different sources, they don't feel as motivated to develop knowledge and thus they have difficulties interpreting the information gathered, since they don't own the necessary qualifications and skills. Physicians need to intervene at this level and effectively support individual's competence needs, a component that has exhibited bellow the average scores in this research' sample. As reported by Schulz and Nakamoto (2013) if patients lack the knowledge and judgement skills, there will be a disequilibrium between "information search" and "knowledge development" that might bring serious consequences if the individual engages in dangerous choices and behaviours he assumes as correct and acceptable.

Rooted in the Self-Determination theory, a great contribution of this research is the clear and practical implications that arise. Firstly, the need for the adoption of a more collaborative model where patients and physicians can, together, discuss and develop strategies regarding the best treatment solution. The asymmetry gap between patients and physicians should be minimized and thus, the re-distribution of power is fundamental in order to achieve better health outcomes and to alleviate the consequences of the once adopted paternalistic model of healthcare. On one hand, physicians can facilitate the achievement of these results by providing relevant information to the patient, understanding patient's

emotions and by supporting patients when they find barriers in their goal achievement. Also, by conveying relatedness support and thus communicating care and affection towards the patient, physicians can meet individual's psychological needs, critical to the adoption of health behaviours.

After all, the main research question has been addressed and confirmed. It's time to re-think the value of healthcare and the empowerment-based approach has been gaining momentum. Physicians, thus play a key role in triggering patient-initiated health practices and thus, in enhancing patient adherence.

5.2 Limitations and future research

Even though this research provides useful insights, it also presents some limitations. The first one regards the sample collected. The initial struggle in collecting data forced to change the previous planned strategy of gathering data within a healthcare setting. Although strong efforts were put to obtain statistics from health related platforms, a considerable share of respondents correspond to ages ranging between 18-29 years old, therefore considerations should be interpreted with some caution since the results of the current study might be different if the participants consisted of different demographics, specially since usually in this age group, medical appointments are not as frequent.

Besides, a relevant construct of SDT – "competence support" – as well as patient empowerment dimension of "knowledge development" revealed as non-significant for this study. This means that taking into account the collected sample, one cannot conclude that they might be different from zero for the population, and therefore they are not relevant for justifying this model. These are conclusions from this research' sample, however literature strongly supports the importance of both variables in behaviour change and in the achievement of important health outcomes (Ryan et al., 2008; Prigge et al, 2015; Schulz and Nakamoto, 2013). Perhaps if the sample would have been collected within a medical field as initially planned, stronger estimates on physician support and on patient empowerment's dimensions as well as significant results for competence support and knowledge development would have been obtained.

Furthermore, much research on patient empowerment is conducted using samples of patients suffering from chronic diseases (Prigge et al, 2015; Small et a., 2013; Berkel et al. 2015). In this research, only 31,7% of the respondents suffer from these kind of diseases. Although the results presented important findings that are aligned with previous studies, it is

likely that even stronger results would have been found if patients suffering from these diseases would have been selected. Hence, future research could perform a similar study targeting chronic disease patients.

Also, one should also take into consideration the "approval motive" as Crowne and Marlowe (1991) present on their study. They refer that studies on personality tests often reflect individual's perception on being evaluated and therefore they usually incorporate responses biased by social desirability and need for approval. For future studies, personality assessment tests could be integrated within questionnaires in order to identify self-appraisals.

Finally, in terms of model construction, in this study motivation assumes a central role and is achieved through the support and satisfaction of autonomy, competence and relatedness needs. This meaningful support is provided by the physician, however one should recognize that there are motivational factors inherent to the individual that might influence not only patient empowerment behaviours but also treatment adherence levels. Therefore, deeper insights can be obtained if future research used the roles of motivation in mediating the relationship between these variables.

Appendix

	Coefficient	Std. Error	Z	P> |Z|	[95% Conf. Interval]	
Information Search						
Autonomy	0.4309569	0.0580162	7.43	0.000	0.3172472	0.5446665
Competence	-0.094072	0.0836613	-1.08	0.280	-0.2543804	0.073566
Relatedness	0.2452672	0.2006622	3.14	0.002	0.0922542	0.3982802
Knowledge Development						
Autonomy	0.1857047	0.0558125	3.33	0.001	0.0763142	0.2950952
Competence	0.0395232	0.0804836	0.49	0.623	-0.1182217	0.1972681
Relatedness	0.1591705	0.0751039	2.12	0.034	0.0119695	0.3063715
Decision Participation						
Autonomy	0.3979665	0.068464	5.81	0.000	0.2637796	0.5321533
Competence	-0.1655292	0.0987274	-1.68	0.094	-0.3590313	0.027973
Relatedness	0.34139	0.0921283	3.71	0.000	0.1608218	0.5219582
Treatment Adherence						
Information Search	-0.6571348	0.1274651	-5.16	0.000	-0.9069618	-0.4073078
Knowledge Development	-0.0424003	0.1190101	-0.36	0.722	-0.2756557	0.1908552
Decision Participation	-0.4470199	0.1083768	-4.12	0.000	-0.6594346	-0.2346053

Table 1. Model estimation (1)

	Coefficient	Std. Error	Z	P> |Z|	[95% Conf. Interval]	
Information Search						
Autonomy	0.4235688	0.0578167	7.33	0.000	0.3102502	0.5368875
Relatedness	0.1768548	0.0458454	3.86	0.002	0.0869994	0.2667102
Knowledge Development						
Autonomy	0.1889345	0.0554644	3.41	0.001	0.0802264	0.2976427
Relatedness	0.1890783	0.0439892	4.30	0.000	0.1028788	0.2752778
Decision Participation						
Autonomy	0.3844395	0.0685671	5.61	0.000	0.2500505	0.5188286
Relatedness	0.2161317	0.0543699	3.98	0.000	0.1095686	0.3226948
Treatment Adherence						
Information Search	-0.6571348	0.1274651	-5.16	0.000	-0.9069618	-0.4073078
Knowledge Development	-0.0424003	0.1190101	-0.36	0.722	-0.2756557	0.1908552
Decision Participation	-0.4470199	0.1083768	-4.12	0.000	-0.6594346	-0.2346053

Table 2. Model estimation (2)

Online Questionnaire

O presente questionário faz parte da minha tese de mestrado e por isso, as suas respostas são fundamentais. Este estudo tem como objetivo tentar compreender as vivências e os comportamentos adoptados pelo indivíduo enquanto paciente, dentro e fora do contexto médico. Levará cerca de cinco minutos a ser respondido e as suas respostas são totalmente voluntárias e confidenciais.

Caso surja alguma dúvida, por favor
envie um e-mail para inesfnlourenco@gmail.com.
Agradeço desde já a sua participação!

1. A forma de lidar com os pacientes varia de médico para médico, e por isso, este estudo tem como finalidade saber mais sobre as suas experiências durante as suas visitas ao seu médico.
Por favor indique, para cada uma das questões, o seu grau de concordância tendo em conta a sua experiência durante os encontros com o seu médico.

IMPORTANTE: Considere "o seu médico" o médico que visita com maior regularidade.

Por favor responda com base na sua opinião.

	1 Discordo Totalmente	2	3	4 Não concordo nem discordo	5	6	7 Concordo Totalmente
Durante as consultas, sinto que o meu médico me apresenta várias opções e escolhas. **(Autonomy)**	○	○	○	○	○	○	○
Sinto que existe uma relação de abertura com o meu médico. **(Relatedness)**	○	○	○	○	○	○	○
Sinto que o meu médico confia nas minhas capacidades. **(Competence)**	○	○	○	○	○	○	○
Sinto que o meu médico tem em conta as minhas preocupações. **(Relatedness)**	○	○	○	○	○	○	○
A maioria dos meu hábitos de saúde advém da pressão feita pelo meu médico. **(Autonomy, reverted)**	○	○	○	○	○	○	○

O meu médico faz questão de garantir que eu entenda a minha condição e os procedimentos que devo seguir. **(Competence)**	○	○	○	○	○	○	○
O meu médico lida com as emoções das pessoas muito bem. **(Autonomy)**	○	○	○	○	○	○	○
Não me sinto muito confortável com a forma como o meu médico fala comigo. **(Relatedness, reverted)**	○	○	○	○	○	○	○
De forma a suportar os seus conselhos, o meu médico apresenta justificações importantes e significativas. **(Autonomy)**	○	○	○	○	○	○	○
Eu sinto que o meu médico me força a tomar muitas atitudes relacionadas com a minha saúde que eu não escolheria. **(Autonomy, reverted)**	○	○	○	○	○	○	○
Eu sinto que o meu médico me encoraja a colocar-lhe questões. **(Competence)**	○	○	○	○	○	○	○
Eu sinto que o meu médico se esforça para tentar entender a minha perspetiva sobre os assuntos, antes de dar as suas sugestões. **(Autonomy)**	○	○	○	○	○	○	○
O meu médico ouve-me e dá-me feedback sobre a maneira como eu gostaria de proceder. **(Competence)**	○	○	○	○	○	○	○
Juntamente com o meu médico, definimos metas e estratégias de forma a atingir eficazmente os resultados pretendidos. **(Competence)**	○	○	○	○	○	○	○

Sinto-me pressionado/a pelo meu médico. **(Autonomy, reverted)**	○	○	○	○	○	○	○
Sinto que o meu médico se importa comigo enquanto pessoa. **(Relatedness)**	○	○	○	○	○	○	○
Sinto que o meu médico se foca nas minhas conquistas e progressos. **(Competence)**	○	○	○	○	○	○	○
Sinto que as recomendações do meu médico são como que uma corrente de obrigações. **(Autonomy, reverted)**	○	○	○	○	○	○	○
Sinto que o meu médico se esforça por perceber o que é pessoalmente significativo para mim. **(Relatedness)**	○	○	○	○	○	○	○
Sinto-me confortável em partilhar os meus sentimentos com o meu médico. **(Relatedness)**	○	○	○	○	○	○	○
Sinto que o meu médico me encoraja a cumprir as recomendações por ele dadas. **(Competence)**	○	○	○	○	○	○	○
Sinto que a minha relação médico-paciente é sobretudo baseada no respeito mútuo. **(Relatedness)**	○	○	○	○	○	○	○
Sinto que o meu médico se preocupa em dar-me mais apoio quando eu não cumpro as suas recomendações. **(Competence)**	○	○	○	○	○	○	○
Sinto uma sensação de bem-estar durante as consultas com o meu médico. **(Relatedness)**	○	○	○	○	○	○	○

2. As seguintes questões relacionam-se com os seus comportamentos de saúde. Por favor indique o seu grau de concordância com as seguintes frases.

Quando o meu médico me diagnostica uma doença, eu...

Lembre-se: Considere o médico que visita com maior regularidade.

	1 Discordo totalmente	2 Discordo	3 Não concordo nem discordo	4 Concordo	5 Concordo totalmente
Manifesto interesse em procurar informação relacionada com a doença (online, revistas de saúde, livros, etc.) **(Information Search)**	○	○	○	○	○
Manifesto interesse em saber mais sobre experiências vividas por outros pacientes com a mesma doença. **(Information Search)**	○	○	○	○	○
Normalmente tento recolher informação sobre a doença com o meu médico. **(Information Search)**	○	○	○	○	○
Manifesto interesse em ganhar conhecimento sobre tratamentos alternativos. **(Knowledge Development)**	○	○	○	○	○
Tento compreender e aprender mais sobre questões relacionadas com a doença. **(Knowledge Development)**	○	○	○	○	○
Procuro aprender para tentar acompanhar as explicações e sabedoria do meu médico. **(Knowledge Development)**	○	○	○	○	○

Manifesto interesse, durante as consultas com o meu médico, em contribuir com as minhas próprias sugestões relativamente à minha doença. **(Decision Participation)**	○	○	○	○	○
Pretendo desenvolver uma relação de diálogo com o meu médico, colocando-lhe questões e expondo as minhas próprias análises e avaliações. **(Decision Participation)**	○	○	○	○	○
Juntamente com o meu médico, participo no planeamento do tratamento certo para mim. **(Decision Participation)**	○	○	○	○	○

3. As seguintes questões dizem respeito à sua aderência a tratamentos médicos. Por favor responda com base na sua experiência.

Quando o médico lhe diagnostica uma doença...

*Lembre-se: Considere o médico que visita com maior regularidade.

*Por favor considere como "tratamento prescrito" a medicação, dieta, consultas agendadas ou outras instruções dadas pelo seu médico.

	Não	Sim
Segue eficazmente o tratamento prescrito pelo seu médico?	○	○
Preocupa-se em seguir o tratamento prescrito pelo seu médico?	○	○
Interrompe o tratamento prescrito pelo seu medico, se se sentir pior?	○	○
Interrompe o tratamento prescrito pelo seu médico, se se começar a sentir melhor?	○	○

7 Por favor indique a sua idade.

- <18
- 18-29
- 30-39
- 40-49
- 50-59
- 60-69
- >70

8 Por favor indique o seu género.

- Masculino
- Feminino

9 Por favor indique o seu grau de escolaridade.

- Ensino básico (até ao 9º ano)
- Ensino secundário
- Ensino superior – Licenciatura
  Ensino superior - Pós graduação, mestrado ou doutoramento

10 No geral, classifico a minha saúde como...

- Muito fraca
- Fraca
- Razoável
- Boa
- Muito boa
- Excelente

11 Sofre de alguma doença crónica?

- Sim (i.e hipertensão, diabetes, doenças cardiovasculares, enfarte, bronquite, asma, cancro, outra)
- Não

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