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COMPANION COCREATION: IMPROVING HEALTH SERVICE ENCOUNTERS OF THE ELDERLY

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ABSTRACT

- ***Purpose***

The increase of life expectancy leads to the elderly living with one or more chronic illnesses. Communication between the elderly and the healthcare professional is fundamental, but can be difficult. For that reason, it is common to find the patient with an accompanying family member in the doctor's surgery. This work analyzes one of the possible actions of the companion during the provision of the medical service: the cocreation of value (through its two dimensions: coproduction and value in use) and its effects on the satisfaction of both the companion and the elderly patient.

- ***Design/methodology/approach***

A model has been tested through a system of structural equations using the statistical package EQS 6.2. The sample used is made up of 1,814 informants (907 companions and 907 patients).

- ***Findings***

The importance of coproduction between the accompanying person and the healthcare professional is shown, in order to obtain greater levels of satisfaction (of the companion and the patient), whereas a negative role is conferred to the dimension value in use. The work shows a positive impact of the satisfaction of the companion on that of the patient.

- ***Practical implications***

It is necessary to have healthcare professionals who play a proactive role when facilitating the participation in the appointment with the doctor, so as not to leave the initiative of participation in the hands of the companions.

- ***Originality/value***

Chronic illnesses are an important focal point of medical attention. Good management of the relations between those involved is fundamental for the diagnosis and adherence to treatment.

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1. INTRODUCTION

According to the World Health Organization WHO (2019), between 2000 and 2050 the proportion of the world's inhabitants over the age of 60 will have doubled, rising from 11% to 22%. In absolute numbers, this age group will increase from 605 million to 2 billion people over the course of half a century. This extension of life expectancy offers opportunities, not only for the elderly and their family environment, but also for societies as a whole. Not in vain, in this stage of life they can undertake new activities and contribute to their communities in different ways. Notwithstanding, the extent of those opportunities and contributions largely depends on one factor: health. In this sense, the progressive aging of the population in developed countries is accompanied by a marked increase in chronic illnesses, to the extent that many specialists speak of this phenomenon as the pandemic of the XXI century (Roter *et al.,* 2018).

Peñaranda-Pabón *et al.* (2018, 8) define chronic illness as "*that which shows its own clinical characteristics, where the symptoms of the person are prolonged over time, are of a non-reversible and progressive character, that require observation and permanent treatment for an indefinite number of years*". It is precisely in this context that the management of the doctor-patient relationship acquires vital importance, since various factors are involved, mainly psychological and social, linked to age which could prevent satisfactory communicational interaction and, consequently, give rise to a negative result or valuation of the provision of the service.

However, the problem of communication between doctor and elderly patient seems to be attenuated when a relative accompanies the patient to the doctor's appointment (García-Vera *et al.*, 2016). In fact, previous research has identified a specific set of facilitating communication behaviors usually carried out by companions, such as note taking, clarifying the instructions and recommendations of the healthcare professionals, asking questions and the provision of current

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and historical information on the medical condition and the treatment of the patient, among others (Clayman *et al,* 2005; Wolff *et al.,* 2017).

From this point of view, the presence of a relative of the patient in the doctor's appointment turns the dyadic relationship (doctor-patient) into a triadic relationship (doctor-companion-patient) in which the collaboration and the communication between all participating parties are important aspects (Ishikawa *et al*, 2005).

The main objective of this study is to delve deeper into the analysis of the relationship formed by the healthcare professional (doctor), the patient (person over the age of 65 with a chronic illness) and the companion (relative of the patient present at the appointment with the doctor). This general aim is reflected in the following specific objectives: a) to determine if the value of the cocreation of the companions of the chronically-ill elderly patients with the health professional in consultation affects their satisfaction and that of the patients and b) to learn how the satisfaction of the companion of the chronically-ill elderly patient can affect the satisfaction of the patient. The study of these issues may yield results that lead to a greater knowledge in terms of the patient's health and well-being and that allows the healthcare professional to provide attention that is coherent with the objectives of the patient and his/her family.

Specifically, the starting point of this research, that differentiates it from previous work (Cegala et al., 2007; Chan et al., 2010; Gallan et al., 2013), is to analyze the cocreation of value between the companion and the doctor. In fact, the aforementioned studies evaluate the role of the cocreation of value between the patient and the health professional, without taking into consideration the role of a possible companion of the patient in the consultation. Taking this distinction as a reference, our contribution consists in evaluating the extent to which said cocreation of value can influence the satisfaction of the companion and that of the patient. In addition, the analysis and determination of the different components of the concept of

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cocreation may lead to establish more concise causal relationships between the considered variables.

Following the development of the theoretical framework of the work and the formulation of research hypotheses, the empirical study will be presented. The study is based on 907 paired surveys, 1,814 in total, which provide data from two different informants: companion and patient. This double-informant procedure reveals another differentiating element of the study. Finally, with the presentation of the results obtained from the testing of the hypotheses, the conclusion of the research will be established and future lines of work will be planned to continue advancing in this field.

2. THEORETICAL BACKGROUND AND DEVELOPMENT OF HYPOTHESES

Chronic illnesses are a common health problem, with high costs for health systems (Coronado-Vázquez *et al*., 2018). As a result of increased patient demand and changing expectations, health services have had to adapt to respond to chronic illnesses. Health systems have been oriented towards integrated care models, supported by information technologies and directed towards care focused on the patient and family (Police *at al*., 2010).

Traditionally, the provision of health services has been considered as a process through which patients receive passive care from the health professionals. However, increasingly patients are seen as active contributors to the results of their medical attention, and there is growing evidence that supports the benefit of a patient-centered approach (Porter and Lee, 2013; Dreesens *et al.*, 2019).

Thus, patient participation in healthcare is fundamental to shape the process and to the results of the service encounter (Hausman, 2004). In fact, patients are expected to participate, providing

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information on their situation, on how they feel, and on their particular preferences for certain treatment options (Gallan *et al*., 2013).

Nevertheless, communication with elderly patients poses difficulties due to several circumstances that may interfere (Adelman *et al*., 2000). For example, it is common that this group has several chronic illnesses and, therefore, the patients have more complex medical records. Another added difficulty lies in the fact that the treatments are usually more numerous and sometimes difficult to comprehend. In addition, cognitive impairment markedly affects the understanding of the health instructions (Serra, 2003).

This shows the difficulty that the elderly patient may encounter in developing cocreative activities in collaboration with the doctor, despite the numerous advantages that this would entail in the scope of healthcare (Osei-Frimpong *et al*., 2018). These cocreative activities could include aspects such as: discussing the patient's current condition and symptoms, cooperating with the diagnosis efforts, sharing knowledge on possible treatment options or expressing their level of comfort with specific therapies and procedures (Gallan *et al*., 2013).

In this respect, Turabián and Franco (2015) maintain that the quality of the relationship between the doctor and the family member who accompanies the patient may have a crucial influence on the cooperation that is developed between the doctor and the patient. Companions can contribute the following functions: help the patient express their concerns, remind the patient of the clinical recommendations, help in decision making, and, especially with elderly patients and/or comorbidities, serve as support for the improvement of the therapeutic fulfillment and adherence to medical appointments (Clayman *et al*., 2005; Jansen *et al*., 2010). In short, the companions, through their contributions during the appointment, can cocreate value collaborating with the healthcare professional. In line with the research of McColl-Kennedy *et* al. (2012), in this work the cocreation of value is understood as a "*benefit realized from the*

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integration of resources through activities and interactions with collaborators in the customer's service network" (p.375).

Value Cocreation: Coproduction and Value in Use

In the scope of business management, value cocreation (VCC) has gained the attention of academics and professionals as a global concept that describes collaboration between multiple interested parties (Prahalad and Ramaswamy, 2000). For Xie *et al*. (2008), to co-create involves developing a process of cooperation between the company and stakeholders to create unique experiences that contribute mutual value. Much of its development arises from Service Dominant Logic (SDL) (Vargo and Lusch, 2004). In fact, one of the basic premises on which this approach is based is that companies do not deliver value, but rather they make value proposals, since value is created through the use or consumption of products or services by customers (Lusch *et al*., 2010).

Therefore, and following the investigation of Ranjan and Read (2016), in this work we will consider two dimensions of VCC: coproduction and value-in-use (ViU).

Coproduction

Coproduction consists of direct or indirect "coworking" with clients by the service provider (Hu and McLoughlin, 2012), or client involvement in the product or service design process (Lemke *et al.* 2011). This participation may be passive, facilitating the performance of the organization, or active, through the exchange of knowledge and information.

When coproduction takes place, the process is normally controlled by the service provider, which will determine the nature and extent of the coproduction (Vargo and Lusch, 2004).

Ranjan and Read (2016) argue that coproduction consists of three dimensions: knowledge sharing, equity and interaction. Knowledge sharing is considered the basic element for identifying current and future needs (Zhang and Chen, 2008). Equity entails the provider's willingness to share control in favor of consumers, facilitating their empowerment. Finally, the

interaction between the parties provides an opportunity to understand, share and meet their needs, as well as to increase the possibility of generating satisfactory solutions (Aarikka-Stenroos and Jaakkola, 2012; Bagozzi *et al*., 2012).

Value in use

The "value in use" dimension refers to the value created jointly by the client and the company involved. In other words, the client is seen as a resource that can act and create value. Chandler and Vargo (2011) redefine this concept as value in context, where value is conceived as something that is collectively cocreated by multiple stakeholders.

In this way, value can arise through a consumption process, which can largely be independent of the intervention or exchange of the company (Grönroos 2006; Moeller 2008). Its meaning extends beyond coproduction, exchange and possession of an asset or service, and requires that individuals learn how to use and make a proposal of use of a product or service. It is therefore derived from the context of use and it is precisely the user who evaluates and determines the value of a proposition on the basis of the specificity of its use (Edvardsson *et al.,* 2011).

Ranjan and Read (2016) argue that the ViU dimension is also composed of three dimensions: experience, personalization and relationship. Experience is an empathetic, emotional and memorable practice, derived from the union of the individual with the products and services of the company, providing value (Ballantyne and Varey 2008). Personalization refers to the uniqueness of the use process based on the individual’s own characteristics (Karpen *et al,.* 2012). It strengthens the idea of process exclusivity and allows for future planning of the exchange of value between the company and the client. The relationship dimension is linked to the existence of an iterative process of active communication between the parties, in which collaboration and commitment lead to empowerment of the client to find solutions adapted to their requirements (Bonsu and Darmody, 2008).

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It is necessary to emphasize that active participation of the clients in the VCC allows them to achieve a higher level of satisfaction (Grönroos, 2008; Grissemann and Stockburger-Sauer, 2012; Cossio-Silva *et al.,* 2013). This relationship, which is empirically found in a number of research studies linked to the discipline of business management, leads us to delve deeper into the concept of satisfaction in the field of the provision of health services in the following section.

Satisfaction

Consumer satisfaction is one of the most studied aspects in marketing literature (Fournier and Mick, 1999; Szymansky and Henard, 2001). Existing research on this variable shows that there is a high degree of variability in its definition and the delimitation of the concept, which makes its research considerably more difficult (Giese and Cote, 2000).

In the health sector, the patient has become the essential element to promote the quality of services, which justifies that the patient's degree of satisfaction is an ideal indicator to evaluate the provision of medical services (Di Palo, 1997; Díaz, 2002; Hernando *et al*., 2011).

The satisfaction of those that accompany the patient should also be taken into account as a key aspect of the quality of the service provided. In fact, the need to implement actions to improve the provision of healthcare must be defined according to the results of their satisfaction (Marconi *et al*., 2017). Effective communication with both the patient and his or her family can generate peace of mind and assuredness, improve the psychological and mental well-being of both parties and promote the recovery of the patient (Hupcey, 1998).

The review of the relevant literature in the business environment confirms the existence of a strong link between the value generated, consumer satisfaction and the commercial results obtained (Guenzi and Troilo, 2007; Wu, 2011; Dabholkar and Sheng, 2012). It is therefore clear that client satisfaction is essential to the success of companies. In addition, clients are active participants in the value cocreation process (Vargo and Lusch, 2008) and they interact with the company to achieve greater satisfaction (Grönroos, 2008; Grissemann and Stockburger-Sauer,

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2012; van der Meer *et al*., 2018; Clauss *et al*., 2019). Authors such as Moretta Tartaglione *et al.* (2018) and Kuipers *et al.* (2019) corroborate the direct and positive relationship between the cocreation of value and satisfaction with the service provided in the health service environment.

In addition, satisfaction in triadic health service encounters is achieved to the extent that professionals respond to the challenges of patients and companions and adapt the provision of the service accordingly. The development of successful relationships between the three parties involved depends, to a great extent, on the perception that the patient and companion have about the management of their participation by the healthcare professional in their encounter (Keeling *et al*., 2018).

However, when evaluating the role of the variable satisfaction, it is necessary to take into consideration that cumulative satisfaction is different from the satisfaction that the consumer obtains in a specific transaction, since the latter satisfaction is an evaluation made immediately after the purchase, which generates an affective reaction in the customer by virtue of the most recent experience they have had with the firm (Bitner and Hubbert, 1994; Olsen and Johnson, 2003).

In this research, and considering the context of the study, we have decided to include the global satisfaction of the patients, as since they are regular users of the health system, their perception of satisfaction will be determined by the perennial contact with it (Naidu, 2009; Grub et al., 2020).

Therefore, in this work, the variables considered are the overall satisfaction of the patient and his/her companion, that is, the satisfaction that both obtain from the evaluation of all the experiences maintained with the health service professional in the past.

The aforementioned arguments lead to the formulation of the following research propositions:

P1: The value cocreation of the companion of the chronically-ill elderly patient has a direct and positive influence on the satisfaction of the companion.

P2: The value cocreation of the companion of the chronically-ill elderly patient has a direct and positive influence on the satisfaction of the patient.

Vogus and McClelland (2016) recognize the need to advance the analysis of the relationship between satisfaction and cocreation in the field of health services. Thus, since this work has taken into account the dimensions of coproduction and value in use proposed by Ranjan and Read (2016), the aforementioned research proposals are reflected in five research hypotheses helping to expand the knowledge on the role of the companion as a cocreator.

H1a: The coproduction of the companion of the chronically-ill elderly patient has a direct and positive influence on the companion's satisfaction.

H1b: The value in use created by the companion of the chronically-ill elderly patient has a direct and positive influence on the companion's satisfaction.

H2a: The coproduction of the companion of the chronically-ill elderly patient has a direct and positive influence on the patient's satisfaction.

H2b: The value in use created by the companion of the chronically-ill elderly patient has a direct and positive influence on the patient's satisfaction.

Different studies in the field of the provision of health services have analyzed the determinants of companion and patient satisfaction (Comstock *et al.,* 1998; Bull *et al*., 2000; Steele *et al*., 2002; Calabro *et al*., 2018). However, to the best of our knowledge, no previous research has considered the relationship between the satisfaction of the patient's companion and the satisfaction of the patient.

Consequently, and to highlight a possible relationship between the companion's satisfaction and that of the patient, we have considered the research of Ekwall *et al*. (2008), Morales-Guijarro *et al*. (2011) and Parra Hidalgo *et al*. (2012). The authors corroborate in their work that the presence of the companion in the appointment with the healthcare professional is highly valued by the patient, as the companion's satisfaction with the service provided may have an influence

on the patient's health. In addition, the companions are often the patient's carers, and their participation in the consultation facilitates compliance with the treatment and, consequently, impacts the satisfaction of the patient (DuBenske *et al*., 2014). Also, the relevance of the commitment of the family in the medical decisions has been linked to results such as the satisfaction with the medical attention (Clayman *et al*., 2005), with adherence to the treatment (Wolff and Roter, 2008), with the quality of the healthcare process (Dimatteo, 2004), with physical (Glynn *et al*. 2003) and mental well-being (Vickrey *et al*., 2006) and with mortality (Seeman, 2000).

Therefore, in order to try to contribute with empirical evidence, we formulate the following hypothesis[1].

H3: The satisfaction of the companion of the chronically-ill patient directly and positively influences the satisfaction of the patient.

The conceptual model proposed is shown in Figure l.

INSERT FIGURE 1 HERE

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3. METHODOLOGY

In order to test the formulated hypotheses, and according to the objectives of the study, information has been gathered from two sources: the companion of the chronically-ill elderly patient and the corresponding patient. Both have provided information through two online questionnaires devised for this purpose.

The procedure carried out to develop the measurement scales included in the questionnaire has followed the principles generally accepted for the design of such a measuring scale (Churchill, 1979; Kim and Eves, 2012). To be exact, the following steps have been taken: a) identification of the construct under study; b) generation of items through adequate sources; c) initial gathering of data; d) Exploratory Factorial Analysis (EFA), to identify underlying factors, with

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the support of the software IBM SPSS v.23; and e) Confirmatory Factorial Analysis (CFA), to test the reliability and validity of factors with the support of the software EQS v.6.2.

In the preparation of the questionnaire, and in relation to the variables coproduction and value in use created by the companion, the studies carried out by Etgar (2008), Moeller (2008), Heinonen and Strandvik (2009), Merz *et al*. (2009), Chen *et al*. (2011), Lemke *et al*. (2011), Macdonald *et al*. (2011), Chathoth *et al*. (2013), Parry *et al*. (2012) and Rajan and Read (2016) have been considered. The measurement scales have been adapted to the specific context of the analysis, healthcare, considering the research of Laidsaar-Powell *et al*. (2013), Osei-Frimpong *et al*. (2015) and Sweeney *et al*. (2015). In all cases a 7-point scale was used.

The works of Hayduk (1996) and Hayduk and Glaser (2000) were considered for the measurement of the satisfaction of the companion and the satisfaction of the patient. These authors argue that a latent construct can be measured by a single observable indicator if that item is sufficiently representative of the underlying latent construct. The satisfaction of both the companion and the patient have been measured through a single item scale that captures the essence of the measured construct, by asking directly for their overall satisfaction level on a 7-point scale. In order not to lose too much information, and to be rigorous in measuring the factors involved, we have established the margin of error to a certain percentage of their variance. This percentage reflects the lack of total reliability in the measurement of the factors with the proposed scales and is calculated for each case as (1- Composite Reliability Coefficient) (Hibbard *et al*., 2001).

Prior to the gathering of the information through the questionnaire, two qualitative studies were undertaken in order to corroborate the validity of the content of the used items. This is fundamental to determine if the used items entail what we really want to measure in the study (Cella *et al*., 2019). Specifically, 10 at-home personal interviews with patients and 10 at-home personal interviews with their companions were carried out. Participants were selected by students of a services marketing research course through purposive sampling. The proposed

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measurement scales were used as stimuli as the basis for open-ended questions and think aloud was employed as a cognitive research method (Bolton, 1993; Prigge *et al*., 2015). In fact, cognitive interviews are among the different methodologies that allow to determine the validity of the content of a measurement instrument, since they examine how the interviewees understand, interpret and respond to the questions of the questionnaire (Shiyanbola *et al.,* 2019). In this way, it is possible to identify problems that may lead to a survey response error and obtain a better idea of the perception that the interviewees have with respect to the items that will be used in the quantitative study De (Willis, 2005).

The interviews were not recorded in order to ensure the participants' comfort levels, and also to avoid any possible effect they might have on the quality of the answers obtained. Although recording would help the researchers to maintain precise records of the interviews, its effect on the quality of the data is not clear in studies carried out in the area of health services (Al-Yateem, 2012). In this same line Clausen (2012) maintains that simultaneous notetaking while the interview takes place would not necessarily affect the reliability, validity and transparency of the study undertaken.

The results obtained from the qualitative studies indicate the adaptability of the proposed measurement scales to the selected environment, without it having been necessary to carry out any modifications in the adaptation of the items to the context of analysis undertaken by the authors.

After this stage, the quantitative phase of the research consisted of a cross-sectional quantitative study through an online survey. A pre-test was carried out with 90 members of the target population (45 patients/45 companions) according to the intended survey administration method. The results of these pre-tests led to the elimination of some items that were initially included in the questionnaire and which appear in italics in the Annex of this work.

The data collection was started by trained collaborators who were full-time business students, and, in exchange for course credits, recruited respondents via convenience sampling in their own environment as well as health centers. A similar sampling approach has been used in

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previous studies focused on health services (Náfradi *et al.*, 2018). The subjects were asked to fill out an online questionnaire. The surveys were available through a link to a Google Form document. Patients had to fulfill the following criteria in order to participate in the study: be over the age of 65 (the age limit was based on the profile of elderly people in Spain (Abellán *et al.*, 2019) and visit a doctor to treat a chronic illness neither associated with dementia nor involving a loss of mental capacities. The inclusion criteria for companions were: be over the age of 18, not receive money or any other reward for their companion role and act as a companion at least once during the 12 months before the study. Data gathering took place between November 2017 and April 2018. The editing procedure resulted in 907 responses of chronically-ill elderly patients and 907 responses of their companions. All participants were informed of the objectives of the study and the confidentiality of the data provided was assured.

Description of the sample

Of the 907 patients over the age of 65, 44% are men and 56% are women. The average age of the patient sample is 75. In addition, the most common chronic illness for both sexes is related to the medical specialty of cardiology, followed by orthopedic surgery and traumatology, endocrinology and nutrition and medical oncology. These characteristics of the sample are reflective of the current situation of chronically-ill elderly patients in Spain, from the perspective of the information provided by the Online Aging Laboratory in March 2019 (CSIC, 2019). The average age of the companion is 39.5. In addition, 61.2% of the companions are women.

Reliability and validity of the measurement scales

Before testing the conceptual model represented in Figure 1, the psychometric properties of the measurement scales used were evaluated. To that end, an EFA with the set of employed items was carried out, with support of the software IBM SPSS v.23. The results obtained permit the corroboration of the boundary of postulated cocreation at a theoretical level: two principal factors are appraised that make reference to the coproduction and the value in use, respectively.

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However, given the exploratory character of the analysis, a CFA was carried out, by means of the EQS program in v. 6.2 for Windows, in order to examine the reliability and validity of the scales, as shown in Table I. This analysis showed the need to eliminate some of the items initially proposed for the measurement of cocreation, but demonstrated the existence of the two dimensions proposed, coproduction and value in use, highlighted in numerous studies (Chunyan *et al.* 2008; Etgar, 2008; Grönroos and Voima, 2013; Rajan and Read, 2016).

The results shown in Table I allow to verify the convergent validity, since the standardized factorial loads are significant and higher than 0.5. The reliability of the scales is also shown, taking into consideration the composite reliability index (CR) and the average variance extracted (AVE), which exceed the recommended levels (Bagozzi and Yi, 1988). The discriminant validity is corroborated when verifying that the square correlation between the studied concepts is less than the respective AVE of each (Fornell and Larcker, 1981), and also when verifying that the confidence interval created around the correlation between the factors does not include the unit.

INSERT TABLE I HERE

In order to evaluate the global fit of the measurement model, we proceeded to analyze the different statistics and indices. The estimation method used was corrected maximum likelihood (ML) (Bentler, 1995). This procedure allows us to calculate the global fit of the proposed model using various statistics that have been corrected to assume non-normality. Smith and McMillan (2001) maintain that the three criteria most used to evaluate the global fit of the models are: null hypothesis tests, absolute fit indices and incremental fit indices. Tests of the null hypothesis are assessed using a chi-squared statistic (Hu and Bentler, 1995). Due to the fact that the overall model test that is represented by the chi-squared statistic has a number of difficulties associated with it (such as the aforementioned sample size problem), researchers began to look at other means of assessing model fit (La Du and Tanaka, 1995). Thus, firstly the so-called “absolute fit indices” have been considered. The two best-known absolute fit indices are the goodness of fit

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index (GFI) and adjusted goodness of fit index (AGFI). Subsequent to the development of the absolute fit indices, other researchers developed what are currently termed "incremental or relative fit indices". Several of these indices have been developed, but the most widely used are: comparative fit index (CFI), normed fit index (RNFI), and the relatively new root mean square error of approximation (S-RMSEA). Furthermore, evaluating R-RMSEA 250 and SRMR jointly is particularly recommended when the sample size exceeds 250 elements (n>250) (Hu and Bentler, 1999). Taking into account the acceptance values reflected in Table II, the CFA model created produces acceptable and good results according to the statistical fit indices.

INSERT TABLE II HERE

4. RESULTS

In the estimation of the causal model, we applied linear structural equations, using EQS in v. 6.2 for Windows. Structural equation models have been developed in a number of academic disciplines to substantiate theory. This approach involves developing measurement models to define latent variables and then establishing relationships or structural equations between the latent variables. EQS 6.2 operates upon the normalized variance–covariance matrix derived from the raw database (Bentler, 1995). Applying structural equation models has the advantage that all the links can be examined simultaneously in the same analysis. Table III shows the results of this analysis.

INSERT TABLE III HERE

In this way, it can be observed in Table III how the coproduction carried out between the companion and the healthcare professional has a direct and positive effect both on the satisfaction of the companion (H1a) and on the satisfaction of the patient (H2a). On the other hand, the dimension value in use of the companion directly and negatively influences the two satisfactions considered (H1b and H2b). Thus, the relation found between said dimension of the cocreation value of the companion and the satisfaction of the companion and that of the patient

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is significant but of an opposite sign to that postulated. In addition, the direct and positive influence of the satisfaction of the companion on the satisfaction of the patient has been corroborated (H3).

The results obtained are discussed in detail in the next section.

5. DISCUSSION

The impact of chronic illnesses on the functional status is greater in elderly patients who find difficulties to fully develop their autonomy and suffer an increase in the relationship of dependency with their environment (Duran *et al*., 2010). Specifically, one of the environments in which the dependence of the elderly patient is most apparent is in the doctor/patient encounter. In fact, there are other people involved apart from the main constituents of the relationship and usually they are family members. Thus, it is becoming more common to find three chairs during health service encounters: the doctor's, the patient's and the companion's. This justifies that the quality of the relationship between the doctor and the patient's family can have a crucial influence on the cooperation that develops between the doctor and the patient (Shield *et al*., 2005; Turabian and Pérez Franco, 2016). In these circumstances, the interest of studies that help to manage the role of companions of elderly patients with chronic illnesses increases.

In recent years an important change has taken place in doctor-patient relations. One of its effects is that healthcare results are measured today in terms of effectiveness, efficiency, well-being of the patient and, also, through the patient's satisfaction with the results obtained (Ng and Luk, 2019).

In this sense, it is well known that the way in which the doctor/patient appointment develops is related to the satisfaction of the patients and to their adequate fulfillment of the therapeutic recommendations. In fact, the appointments in which the professionals allow the patient to express themselves freely, in which the healthcare professional transmits sufficient information and in which the patients feel at ease to ask the doctor about all their doubts or fears, are

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associated with a higher level of satisfaction and fulfillment of medical prescriptions. In short, the cocreation of value of the patient and the healthcare professional in the medical consultation is associated with positive outcome measures (Pham *et al*., 2019). However, to date we have not found any studies that aim to determine the role that the companion can have in a medical consultation on the satisfaction of the chronically-ill elderly patient. This fact is of great interest, since the increase in life expectancy makes this type of situation more and more frequent. The present work tries to fill this gap, gathering information on the chronically-ill elderly patients and their companions in order to determine if the cocreation of value of the companion with the healthcare professional in the consultation influences the final satisfaction of the patient and that of the companion, as well as to know if the chronically-ill elderly patients are more satisfied when their companions are also.

More specifically, our work contributes in four relevant aspects within the study of the role of companions of chronically-ill elderly patients: (1) the two-dimensional nature of the concept of cocreation of value, that the previous literature proposed in the study of the relationship patient-healthcare professional, has been extended to the study of the companion-healthcare professional interaction. (2) the positive impact of the co-production of the companions on the satisfaction both of the companions and of the patients has been demonstrated; (3) the value in use, on the other hand, is revealed as a variable with a negative effect on the satisfaction of patients and companions; (4) the benefits of the companion's satisfaction are shown in terms of greater patient satisfaction.

Thus, in this work, the analysis of the value cocreation between the companion of the elderly patient and the healthcare professional has been further analyzed through its two principal components: coproduction and value in use (Chunyan *et al.*, 2008; Etgar, 2008; Grönroos and Voima, 2013; Ranjan and Read, 2016), testing a model of causal relationships that link these dimensions with two types of satisfaction: that of the companion and that of the patient. In particular, the direct and positive influence of coproduction on the satisfaction of the companion

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of the chronically-ill elderly patient and on the satisfaction of the patient has been found. On the other hand, the value in use dimension has a direct and negative effect on both types of satisfaction studied.

The two-dimensional nature of the cocreation of value of the companion concept is an aspect of great interest. Although the dimensions coproduction and value in use have been widely used in other works, they have normally been applied to the relationship between the service provider and the user. Their extension within the specific field of the cocreation of value of the companion, to the best of our knowledge, has not been considered. From a theoretical point of view, this result reinforces the two-dimensional conception of cocreation, even in contexts of complex services in which the presence of a companion is commonplace and which, in addition, are marked by an imbalance in the information available to the service provider, the user and the companion. From an applied point of view, this result suggests that the cocreation of value of the companions of chronically-ill patients affects the exchange process that can take place between the doctor and companion and, moreover, to the value that can be generated in the moment at which the service is provided.

In relation to the effects of the cocreation of value of the companions of chronically-ill patients, the results obtained from the testing of hypotheses H1a and H2a are in line with the initial proposal. Thus, the coproduction of the companion of the elderly patient with the health professional has repercussions both on the companion's satisfaction and on that of the patient. Consequently, we can affirm that in situations in which the doctor takes the initiative to provide adequate information to the companions of the chronically-ill patient, in which a pleasant atmosphere is created during the appointment or in which the relative-companion is encouraged to participate while the service is being provided, are questions which are well-valued both by the chronically-ill elderly patient and by the accompanying relative, with a direct impact on their satisfaction. In this sense, it is important to emphasize that this result suggests that, in terms of satisfaction, the boundaries between the roles of service provider and companion are

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not clear. That is to say, the coproduction of value that generates patient and companion satisfaction supposes a mutual exchange and collaboration between the latter and the medical service provider. Therefore, it requires a health professional who is able to provide information and answers to the demands of the companion, able to yield part of the control over the process of the provision of the service in favor of the companion and to interact with said companion.

However, testing hypotheses H1b and H2b shows that, contrary to what was proposed in these hypotheses, the value in use generated by the companion of the patient in consultation with the healthcare professional (i.e. when it is the companion who directs or shapes the type of relationship, meaning that the healthcare professional has to adapt to the companion's requirements), diminishes the satisfaction level appreciably, both for the patient and for the relative.

Although the obtained results could seem quite counterintuitive, they are in line with the research of Grönroos (2011), who argues that the clients are not always cocreators of value. In the same way, our results indicate the limits of the cocreation of the companions. The behavior of the value in use, different from that found in other contexts, could be explained by the information asymmetry between the service provider and receiver. Cocreation only affects the satisfaction of patients and companions when it is a process controlled by those who it is assumed are capable of doing so. Thus, the coproduction, led by the healthcare professional, positively influences the satisfaction of patients and companions. However, the proposals that arise from the participation of the companions not only reduce their own satisfaction, but also that of the patients they accompany. Hence the negative effect of the value in use, this is to say, of the creation of value through the initiative of the companion, without the backing or control of the healthcare professional.

In other words, the less active performance of the healthcare professional in favor of the companion or of the patient is not ideal in the field of health. In the interpretation of this result it should be taken into account that the concept cocreation of value and its two dimensions were

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initially proposed in the context of the relationship between service provider and the user. Our work indicates that when extended to the relationship between the service provider and the companion, the value in use of the latter negatively affects satisfaction. It should be taken into account that the companion is not the end user of the service. Therefore, the value that can be generated with the experience itself of the service, and that can be a source of satisfaction, is that which could arise from the interaction of the patient, not of the companion. However, it is possible that the value generated by the experience of the companion could be a source of other results, different from satisfaction. Both questions (comparing the value in use of the patient and the companion and considering possible effects of the value in use of the companion) are outside the scope of this work, but could lead to future extensions of great interest.

In addition, in this work the relationship between the satisfaction of the companion and that of the patient has been studied, and the direct and positive influence of the satisfaction of the companion on that of the chronically-ill elderly patient has been corroborated. This is consistent with studies that indicate that there is a significant impact of social support on health indicators (Pozo *et al.,* 2007; Martos *et al*., 2008). Thus, patients with a higher level of social support report better health (Pozo *et al*., 2005) and greater well-being (Bukov *et al*., 2002; López-García *et al*., 2005), which implies a higher level of satisfaction with the health service provided, indicative of therapeutic success (Fernández *et al*., 2019). This result opens the door to an indirect channel to improve the satisfaction of the users of complex services, that is, to make an explicit effort to improve the satisfaction of their companions. The interest of this result increases if it is taken into account that it has been obtained in the context of chronically-ill elderly patients for whom, in comparison with other less vulnerable groups, it may be difficult to manage tools with the capacity of direct impact on their satisfaction.

Recommendations for health professionals and health management

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Interest in the patient experience is closely linked to social movements (rights of the disabled or patient activism) and to a shift in the healthcare model from paternalism to empowerment and the responsible role of each person in relation to their health.

The demographic trend towards aging means that the prevention policies should be strengthened in order to try to reduce the number of those who are ill, ever on the rise as life expectancy increases, and the severity of their illnesses. In addition, the aging of the population frequently results in chronic multipathology, in a certain disability or dependency and a decrease in resources, resulting in a strong impact on the sustainability of the health system. As a consequence, carrying out actions of improvement in different areas should be a priority, with the purpose of bettering the results in health and quality of life of the aged, while also promoting a better use of the health services.

In order to achieve the goals indicated, the following recommendations are proposed for both healthcare professionals and for those in charge of health management.

Thus, from the position of the healthcare professional, it would be useful to give precise information to the interlocutor, using terms that adapt to their level of understanding. In addition, practicing active listening, showing empathy towards the other part of the relationship and using non-verbal language (gestures, tone, facial expressions, movements) that inspires confidence, would be aspects that would aid communication between the parties. Finally, proposing different alternatives faced with difficult situations or in situations that generate anxiety, giving time and creating areas of dialogue and joint evaluation, would facilitate the achievement of better results linked to the treatment to be followed. Other previous works have pointed out the need for this improvement in communication of the healthcare professionals. Our work clarifies this approach in two ways. On the one hand it indicates the benefits of convincing the companions to play their part as such, interacting in the process of the provision of the medical service. However, on the other hand it suggests that this collaboration cannot supplant the role of the person who is really the user of the service, the patient. As has been

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seen, the experience of the companion as a source of the generation of value not only influences negatively his/her own satisfaction but also that of the patient. For this reason, and since in this work the role of the elderly patient's companion in the consultation has been analyzed, one of the work areas that needs further study is that of the communication between health professionals and those that accompany elderly patients. In fact, it has been postulated that actions directed towards enhancing this communication will have a direct impact on the satisfaction and adherence of the patient to the treatment, on the fulfillment of the medical indications and, in general, will produce better results in the healthcare model of the future.

However, the task is not easy. Special skills are required to involve members of the family efficiently and respectfully, while maintaining the patient as the focal point of the visit. These skills include creating a good relationship with all the participants through the identification of their individual problems and perspectives, as well as fomenting participation by means of listening to and addressing the worries of all concerned. In addition, considering that people are becoming more and more informed and aware, which in itself demands active participation in the management health and a greater joint responsibility in decision making, and that health professionals have a less paternalistic role, a model of health communication is required that responds to the current needs of all the parties who make up the system.

In this sense, previous studies such as those of Prahalad and Ramaswamy (2003, 2004), from a point of view of management, emphasize the importance of the "context of the experience" to refer to the space in which a dialogue between company and consumer takes place. When the right conditions are met in such a context of experience, the clients can fully develop, thus becoming direct participants of their own cocreation experiences.

Therefore, redesigning the area of patient attention in health centers to make their stay more pleasant, continuous formation of the socio-healthcare professionals in communicational values and aspects or providing channels for the formation and information of the patients, family and companions, are areas that would result in a better relationship between the healthcare

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professional and the patients. In addition, including the evaluation of the communication abilities and skills of the students and professionals in the field of healthcare and creating indicators to evaluate the communication of the active professionals, could be issues that encourage the correct performance of the healthcare professional's activity. Our work indicates that a key objective of the improvement of the communication capacity is the interaction with the companion. But, in addition, this strategy may be of special interest in those cases in which it is difficult to improve the satisfaction of the patient directly, offering a route to tackle the problem through the improvement of the satisfaction of the companions. Therefore, creating environments that improve the interaction with the companions is not only a way to take care of the informal care network, it is also an investment in the improvement of the satisfaction of the end users of the service.

Limitations of the study and future lines of research

The presented results represent an initial approach to the system of cocreation relationships, involving different parties in the field of health, on which further work is necessary. Moreover, the study has limitations that stem from the research context, for which reason it would be interesting to test the validity of the results in other different settings. In addition, the relation between cocreation of value and satisfaction is analyzed, and an aspect that could doubtless be of interest is to consider how the expectations of collaboration of both the patient and the companion can moderate said relation.

There are many future lines of research that may arise from this work. In fact, we find ourselves at the beginning of the phenomenon of participative medicine, which will undoubtedly continue its course inexorably. In addition to the aspects already commented in the discussion of the results of this work, other questions such as patient empowerment, literacy and its relation to the cocreation of value and patient well-being are expected to play a prominent role in healthcare research in the following years.

ENDNOTES

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[1]It could be equally interesting to consider this causality in the reverse sense, although this work focuses on the actions of the companions on the patients, with, as explained, a theoretical support for this relationship. The authors are grateful to an anonymous reviewer for his/her comment on this issue.

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APPENDIX: MEASUREMENT SCALES EMPLOYED

COPRODUCTION: EXCHANGE OF KNOWLEDGE
Adapted from: Chen *et al*. (2011); Rajan and Read (2016)

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1. The doctor is receptive to my opinions and suggestions that may help to improve the medical care that my relative needs.
2. The doctor provides me with sufficient information to understand my relative's illness.
3. I would gladly spend time sharing ideas and suggestions with the doctor that could improve the medical care that my relative needs.
4. The doctor creates a pleasant environment that allows me to present my ideas and suggestions in relation to the illness of my relative.
COPRODUCTION: EQUITY Adapted from: Etgar (2008); Chathoth *et al.* (2013); Rajan and Read (2016)
5. The doctor can easily know my preferences with regard to the healthcare my relative needs.
6. The doctor's manner of proceeding is in line with what I consider to be correct.
7. The doctor considers my role as equally as important as his/hers as far as my relative's healthcare is concerned.
8. *The doctor and I jointly decide the final decisions that affect my relative.*
COPRODUCTION: INTERACTION Adapted from: Chen *et al.* (2011); Hunt *et al.* (2012); Parry *et al.* (2012); Rajan and Read (2016)
9. During the doctor's appointment I can easily express my requests related to the healthcare that my relative needs.
10. The doctor tends to give the companions relevant information regarding the illnesses of the relatives they accompany.
11. The doctor permits the participation of the companions during the course of the appointment.
12. *I have taken an active role in my interaction with the doctor during the course of the appointment.*
VALUE IN USE: EXPERIENCE Adapted from: Heinonen and Strandvik (2009); Rajan and Read (2016)
13. I remember perfectly my experience as a companion in the doctor's appointment.
14. My own participation during the doctor's surgery could make my experience as a companion different to that of other companions.
15. The doctor is open to introducing changes to the healthcare that the patients need following suggestions of the patients' companions.
VALUE IN USE: PERSONALIZATION Adapted from: Moeller (2008); Lemke *et al.* (2011); Rajan and Read (2016)
16. The usefulness of the doctor's appointment depends on the participation of the patient's companion.
17. During the appointment the doctor adapts to the specific needs of each companion.
18. Different types of companions tend to show different levels of involvement in the course of the appointment or in the healthcare of their relatives.
19. *During the appointment the doctor makes the experience of the companions pleasant, offering them more than just the usual benefits derived from the appointment.*
VALUE IN USE: RELATION Adapted from: Merz *et al.* (2009); Macdonald *et al.* (2011); Rajan and Read (2016)
20. When the doctor encourages the participation of the companions, it improves both the appointment and the healthcare of the patient.
21. Nowadays I have a good relationship with the doctor I accompany my relative to.
22. The companions are very pleased with the doctor.
23. The doctor has a good reputation (other companions say positive things about him/her).

Items eliminated as a result of the scale validation process are displayed in italics.

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Figure 1.
PROPOSED CONCEPTUAL MODEL

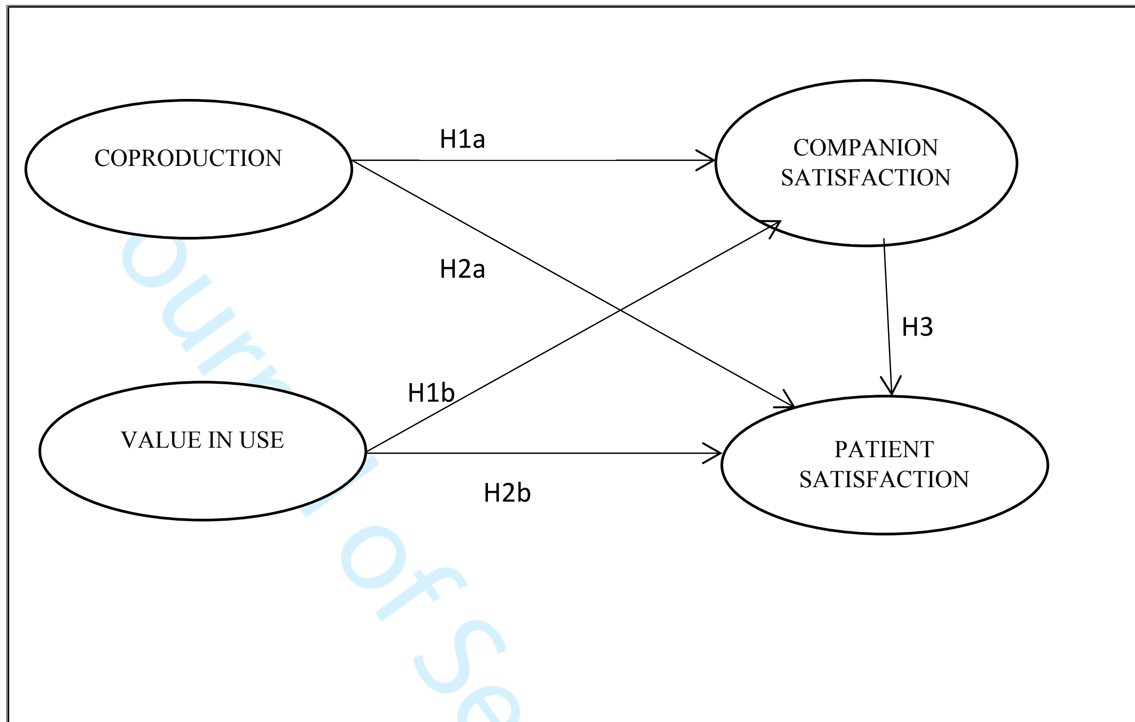

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Table I

VALIDATION OF MEASUREMENT SCALES

CONCEPT	Standardized parameters	Robust t value	Composite reliability	Average variance extracted
COPRODUCTION (F1)			**0.880**	**0.520**
COPRO2	0.659	20.245		
COPRO4	0.749	25.398		
COPRO5	0.737	26.552		
COPRO6	0.682	20.575		
COPRO9	0.777	27.531		
COPRO10	0.701	22.644		
COPRO11	0.682	21.256		
VALUE IN USE (F2)			**0.800**	**0.450**
ViU14	0.580	17.024		
ViU 15	0.757	25.276		
ViU 16	0.651	19.867		
ViU 17	0.727	25.439		
ViU 21	0.612	19.540		
CORRELATION F1-F2 0.657 **STD ERROR** 0.030 **95% CONFIDENCE INTERVAL** (0.597, 0.710)				

Notes: Scale validation with λ standardized values of each scale and its t-values. The table also shows the composite reliability and average variance extracted (AVE) of each scale. As shown, t-values are in all cases over 1.96, composite reliability over 0.7 and AVE values over 0.5.

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Table II
THE SUMMARY OF FITNESS INDEX

GOODNESS-OF-FIT STATISTICS	VALUE	LEVEL OF ACCEPTANCE
S-B χ^2 (df)	259.0296 ($p<0.000$)	$p> 0.05$
Root mean square error of approximation (RMSEA)	0.066	$\leq$0.08
Goodness of fit index (GFI)	0.932	$\geq$0.90
Adjusted goodness of fit index (AGFI)	0.900	$\geq$0.90
Non-normed fit index (N-NFI)	0.925	$\geq$0.90
Comparative fit index (CFI)	0.939	$\geq$0.90
Standardized root mean square residual (SRMR)	0.057	$\leq$0.08

The threshold values for good fit statistics are defined in the studies of Bentler and Bonett (1980), Byrne (1998), Jöreskog and Sörbom (2006).

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TABLE III
TESTING OF THE PROPOSED CONCEPTUAL MODEL

HYPHOTHESES	STANDARDIZED PATH COEFFICIENT (BETA)	t-VALUE	HYPHOTHESES TESTING RESULTS
H1a: The coproduction of the companion ➔companion's satisfaction (+)	+0.767	13.979	Supported**
H1b: The value in use created by the companion ➔companion's satisfaction (+)	+0.178	2.438	Supported**
H2a: The coproduction of the companion ➔ patient's satisfaction (+)	-0.186	-3.576	Reverse Supported**
H2b: The value in use created by the companion ➔ patient's satisfaction (+)	-0.133	-2.599	Reverse Supported**
H3: Companion's satisfaction➔ patient's satisfaction (+)	+0.545	7.834	Supported**
R^2 (Companion's satisfaction)=0.437 R^2 (Patient's satisfaction)= 0.397			
S-B χ^2 (71)=301.4830 (p<0.000) **R-RMSEA**=0.060 **SRMR**=0.057 **GFI**=0.932 **AGFI**=0.900 **R-NFI**=0.884 **R-CFI**=0.908			

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