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IS PATIENT SATISFACTION THE KEY TO PROMOTE COMPLIANCE IN THE HEALTH CARE SECTOR?

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ABSTRACT. According to the research, non-compliance is a therapeutic and economic problem with a strong consequences affect not only the success of a single patient's therapy but also the costs of the entire health care system. It would be worth identifying factors limiting non-compliance. Therefore, purpose of the paper is recognize the correlations between compliance and the patient's satisfaction with the medical services they receive. The study was carried out using the CATI method on a national representative sample of 982 Polish respondents, who declared that they had used health care services within the last 6 months. It turned out that satisfaction had a statistically significant effect on both the dimensions of behavior linked to patient compliance. This effect, however, was stronger for arbitrariness, i.e. the more satisfied the patient was the less inclined they were to arbitrarily change their doctor's recommendations.

JEL Classification: D02, O17, P31

Keywords: health care sector, patient-doctor relationship, satisfaction, costs, health economics, Poland

Introduction

Patient compliance is a serious challenge not only on the microscale of the doctor-patient relationship, but also the society as a whole. Non-compliance, on the other hand, is as much a therapeutic problem as it is an economic one, because its consequences affect not only the success of a single patient's therapy but also the costs of the entire health care system. This is so, as non-compliance reduces the effectiveness of therapy, and thus increases the risk of disease exacerbation, thus leading to higher consumption of medical services (more appointments, unplanned hospitalization). According to Food and Drug Administration (FDA) reports, 30-50% of patients do not strictly adhere to physician recommendations, while approx. 20% of the sick use non-prescribed medicines. It is estimated that up to 50% of chronically ill patients do not adhere to the prescribed treatment. The risk of death for those patients may be even two times as high as it is for high adherence patients (Simson et al., 2006, p. 15).

Numerous studies of adherence barriers and stimulants have shown that compliance with physician recommendations is a multi-factor phenomenon, determined by successful cooperation between the patient and the doctor. From this point of view, it has become essential to recognize the correlations between compliance and the patient's satisfaction with the medical services they receive.

1. Patient compliance and satisfaction – literature review

Patient compliance usually relates to the degree of patients' medication adherence (Brown and Bussell, 2011, p. 306; De Geest and Sabate, 2003, p. 323). The broader definition of the term also covers their adherence to all physician recommendations, including the requirement to adapt their lifestyles to their health status (observance of a diet, involvement in physical activity) (WHO, 2003). It is worth noting that adherence to physician recommendations entails the introduction of changes to the given patient's behavior after the medical service has been received (in the case of a one-off disease episode) or between appointments (in the case of chronic diseases). This means that the physician's control of the actual modifications introduced by the patient to his or her behavior is very limited (apart from cases where modern technology is used), whereas the degree in which medical guidelines are in fact implemented by the patient is often of a declaratory nature.

After leaving the physician's office, the patient's behavior with regard to adapting to the recommendations received can be treated as the patient's contribution to the co-creation of the medical service. Indeed, the outcome of the service, i.e. recovery, or an ability to control an incurable disease, will not only depend on the service-provision process itself, but also on the role (whether active or passive, involved or uninvolved) that the patient chooses to play (McKee at al., 2006).

So far, research into patient compliance has concentrated on the patient, in most cases assuming a negative perspective (why do they not comply?). Such factors have been indicated to determine non-compliance as the patient's age, sex, educational background, the number of different drugs they are supposed to take, the severity of their illness, and even their race (Sharkness and Snow, 1992).

The view that medication adherence is allegedly the function of a single variable, especially one that is attributable to the patient, has been questioned in many studies (Cropley, 2009, p. 118). Their authors suggest that patient compliance is the resultant of multiple factors, including those attributable to the physician and the mutual doctor-patient interaction. Among the determinants attributable to the physician, there are psycho-demographic variables such as their age, sex, or experience, and system variables such as the types of drugs they prescribe (a syrup / an injection / a tablet), or the type and size of medical practice they run (Ren at al., 2002). Other conceptualizations of non-compliance shift the research focus to the behavioral aspects of the doctor-patient relationship (Cropley, 2009). In particular, some authors emphasize the significance of such factors as the quality of the doctor-patient communication, the physician's attitude towards the patient, allowing the patient to take over control of their own health (health locus of control), or the patient empowerment strategy. The value of the doctor-patient relationship has been described as being characterized by such variables as understanding the patient's needs, empathy, openness, fairness, and respect for the patient's concerns (Alfonso et al., 2009).

Patient empowerment, one of the factors mentioned above, is a very capacious construct. A smooth information flow between the medical staff and the patients, joint planning of the therapeutic process, and the patients' participation in decision making can be interpreted as constituting significant elements of the mechanism that in a way incorporates patients into the service provider's organization. In fact, relationships based on structural ties allow the customer to play an important role in shaping the service provision process even where the relationship is characterized by a substantial information asymmetry. Such circumstances make the patient's acceptance of physician recommendations easier to achieve (de Koka et al., 2018).

Additionally, other authors have pointed to the role that the patients' expectations and their perception of messages sent out by the physicians play in the adherence mechanism

(Taylor and Crocker, 1981). Here, expectations act as filters (perceptual filters) determining whether the message is accepted or not. Such considerations fit into expectancy violation theory (EVT), which explains patient compliance from the point of view of adaptation of the service provider's communication behaviors to patient expectations. According to EVT, people shape their expectations and preferences taking into account other people's communication strategies adopted in their persuasive messages (Burgoon et al., 1991). In the medical context, the physician's sex and the communication strategy implemented by him or her (affiliative versus verbally aggressive) have been shown to have a positive or a negative impact on expectancy violation and, consequently, to increase or decrease compliance (Cropley, 2009). In view of the above, adaptation to the patient's expectations is a function if his or her satisfaction resulting in patient compliance.

Other studies, however, brought contrary results showing that the physician's friendly attitude towards the patient does not always translate into patient satisfaction leading to adherence (Klingle and Burgoon, 1995). A doctor's positive regard for the patient despite the latter demonstrating non-compliance does not have a motivating effect on him or her. Consequently, the patient's abuse of the physician's friendly behavior may reduce the service provider's ability to impact the patient's conduct and push it in the desired direction. This phenomenon is interpreted using reinforcement expectancy theory (RET). The theory assumes that the patient's motivation to comply with physician recommendations is based on the perception that a specific type of message can be obtained depending on whether the patient responds in an appropriate manner. As research proves, for the so-called reward value to be obtained it is important that the sequence in which the messages are sent (positive / negative / natural) and the sender's (here the doctor's) sex should be appropriate. The highest effectiveness in evoking patient satisfaction leading to compliance is characteristic of those relationships where the physician first sends a positive message, which is then followed by a neutral one.

The correlation between patient satisfaction and compliance is the subject-matter of numerous studies, although there is no consensus among their authors as to the direction and power of the relationship between these two notions (Manary et al., 2013; Zgierska et al., 2014). Firstly, there is a lack of a uniform position on what satisfaction actually is (Junewicz and Youngner, 2015). Most often, it is defined as a positive assessment of the individual attributes of the health care experienced by the patient, as confronted with the patient's expectations (Owens and Batchelor, 1996). According to some researchers, satisfaction is less a derivative of the patient's experience than it is the result of his or her expectations, personality and health status (Bleich, et al., 2009). On the other hand, Johanson et al. indicate that satisfaction with medical services is affected by the patient's expectations and his or her sociodemographic profile on the one hand, and by the physician's interpersonal skills, style of communication and strictly medical competence on the other hand (Johansson et al., 2002). It is indeed the initial mindset and aspirations of the patient, reflecting his or her assumptions with regard to the standard of the service, that are strongly linked to the category of compliance.

Customer (here: patient) satisfaction is a complex process demonstrating different aspects interacting with one another in a cohesive manner and shaping the service recipients' attitude towards the service providers (Belás et al., 2015). This phenomenon describes the patient's situation after he or she has used the given service. It is some sort of mental state of the patient, or his or her affectively underpinned attitude towards a past interaction with the service provider. Patient compliance, in turn, is a transparent behavior on the part of the patient. Some researchers have reported that both these phenomena are in a strong positive correlation with each other (Conlee et al., 1993), while others demonstrate a moderate correlation (Burgoon and Burgoon, 1990). However, a contrary position is adopted by Klingle and Burgoon, who have showed that the relationship between these two categories is indirectly accidental (Klingle

and Burgoon, 1995). The patient's satisfaction affects the so-called reward value perceived by them, and thus the effectiveness of the actions they undertake. Therefore, the degree of the patient's satisfaction may have an impact on the service provider's persuasive ability by shaping the reward value, which value is a prerequisite for patient compliance to occur (according to RET). Unfortunately, the problem is that the reward value is hard to measure and dependent on the patient's idiosyncratic personality traits. Additionally, the patient's perception may also be affected by his or her past experience, worldview, or sensitivity to other people's opinions. These characteristics that distinguish patients from one another are a partial answer to the inconsistency and ambiguity of satisfaction research results.

Some studies have shown that patient satisfaction is linked to the communication style adopted in the doctor-patient relationship (Kumari et al., 2013; Liu et al., 2007; Adhikary et al., 2018; Crandall et al., 2014). An analysis of those studies renders the conclusion that a positive and pro-social attitude demonstrated by the physician (expressed in his or her openness, ability to listen, commitment, interest, ability to overcome barriers put up by the roles assigned) favor higher patient satisfaction as compared to contrary postures. When using communication strategies based on a positive attitude, one should take into account the limitations arising from RET and EVT, so that patient compliance is not reduced by saturating the relationship with partnership.

In view of the foregoing literature review, the following research question can be posed: Is satisfaction with medical services a variable contributing to patient adherence?

2. Methodological approach

As the research carried out so far suggests, patient compliance depends on a number of conditions attributable to the patient, including his or her demographic characteristics, on the one hand (Murphy et al., 2000; Roberts, 2000), and those resulting from how the therapeutic process develops, on the other hand (Ostrop et al., 2000). Also, studies have shown that there is a correlation between patient compliance and satisfaction (Conlee et al., 1993), although these results are not unambiguous. They are not, as some research points to the fact that such a correlation may be determined by the patient's demographic characteristics (Sharkness and Snow, 1992).

Therefore, the objective of this study was to describe the correlations between patient satisfaction and compliance, and to identify the moderating influence of the patient's demographic characteristics (sex and educational background) on the correlation concerned.

The items used in the questionnaire, measuring individual concepts (satisfaction, patient compliance), had been developed on the basis of literature analysis (Table 1). The respondents were asked to assess each of the items using the 5-point Likert scale.

Table 1. References

CONCEPT	REFERENCES
Perception of physician recommendations (*Adherence to Refills and Medications scale - ARMS*) - 13 items	Kripalani et al. 2009
Patient satisfaction – 8 items	Elleuch (2008); Schee, Groenewegen, Friele (2006);

Source: authors' own work based on literature review

The scales used to examine the individual concepts were verified with the help of factor analysis. Further analysis only included items with a load value above 0.48. For the scale measuring the patient compliance, two factors were singled out (Table 2). The first one,

composed of five items, was described as patient arbitrariness, or the patient's inclination to arbitrarily change their medication doses (Q6), withdraw from taking medications completely (Q7), interrupt treatment whatsoever (Q9), or fail to observe recommendations to change their lifestyle (Q12). This category also included a declared failure to buy medication as prescribed (Q3). Cronbach's alpha reliability coefficient for this factor was 0.59.

Table 2. Results of the factor analysis of the 'patient compliance' scale

Variables	Factor 1 – arbitrariness	Factor 2 – forgetting
Q_1		0.53
Q_2		0.62
Q_8		0.69
Q_11		0.63
Q_3	0.61	
Q_6	0.54	
Q_7	0.76	
Q_9	0.70	
Q_12	0.48	

Source: own work

The second factor, referred to as 'forgetting', was composed of four items covering the patient's behavior taking the form of forgetting to come to an appointment or to take medication as prescribed by the doctor. Cronbach's alpha reliability coefficient for this factor was 0.59, as well. However, satisfaction is a one-dimensional construct, and was studied using eight items, also on the 5-point Likert scale (Cronbach's alpha = 0.85).

On the basis of the assumption formed on the basis of our literature review, a theoretical model was constructed (Figure 1) and research hypotheses were proposed.

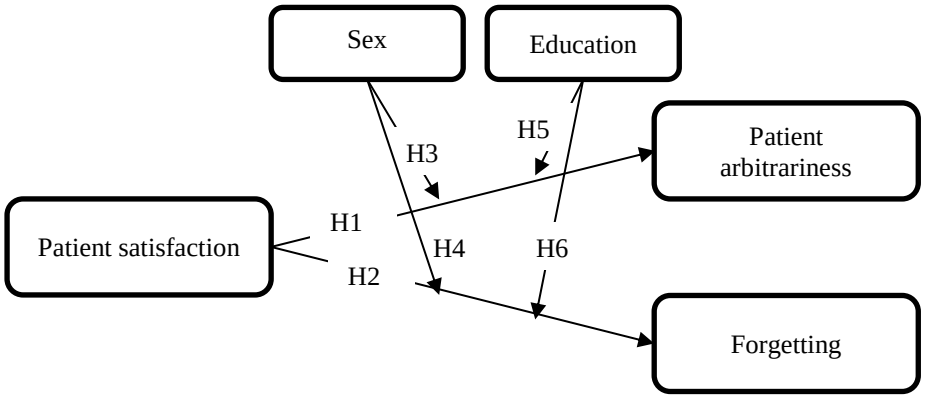

Figure 1. The effect of patients' satisfaction and demographic characteristics on patient compliance – a theoretical model
Source: own work

H1: Patients' satisfaction reduces their arbitrariness in changing physician recommendations
H2: Patients' satisfaction reduced their level of forgetting about physician recommendations
H3: Patients' sex affects the correlation between their satisfaction and arbitrariness
H4: Patient's sex affects the correlation between their satisfaction and forgetting about physician recommendations

H5: Patients' educational background affects the correlation between their satisfaction and arbitrariness
H6: Patients' educational background affects the correlation between their satisfaction and forgetting about physician recommendations

The study was carried out in 2015 and 2016 using the CATI method on a national representative sample of 982 Polish respondents, who declared that they had used health care services within the last 6 months. Table 3 presents characteristics of the study sample.

Table 3. Study sample structure

Income			**Sex**		
	no.	%		no.	%
up to PLN 1,000	84	9.3	female	572	58.2
from PLN 1,001 to 1,400	95	10.5	male	411	41.8
from PLN 1,401 to 1,800	108	12.0	**age**		
from PLN 1,801 to 2,000	113	12.5	18-24	103	10.5
from PLN 2,001 to 2,500	76	8.4	25-34	182	18.5
from PLN 2,501 to 3,000	120	13.3	35-44	163	16.6
from PLN 3,001 to 5,000	139	15.4	45-59	252	25.6
over PLN 5,000	118	13.1	over 60	283	28.8
hard to say	49	5.4			
Place of residence			**Level of education**		
village	356	36.2	elementary	148	15.0
up to 100 thous.	335	34.1	basic vocational	213	21.7
100 - 499 thous.	164	16.7	secondary	345	35.2
500+ thous.	127	13.0	college/university	276	28.1

Source: own work

Research results and discussion

Table 4 shows descriptive statistics of the variables used for further analyses. The theoretical model variables represent latent variables. Therefore, structural equation modeling (SEM) was used to study the correlations between them.

Table 4. Descriptive statistics of the variables

	Forgetting	Arbitrariness	Satisfaction
Forgetting	1.00		
Arbitrariness	0.46	1.00	
Satisfaction	-0.03	-0.16	1.00

Source: own work

The analysis showed that satisfaction had a (negative) effect on both the dimensions of behavior related to the patient compliance, thereby confirming the first two research hypotheses. A higher level of the patient's satisfaction limited their arbitrariness in changing the guidelines given by physicians (H1), at the same time reducing problems linked to the patients forgetting physician recommendations (H2). It is worth noting that the 'weakening' effect of satisfaction on patient arbitrariness was somewhat larger than on forgetting. The fit indices for the model demonstrated acceptable values and spoke in favor of adopting the model (Table 5). The results revealed a $\chi 2$ of 654.65 with a probability level of 0.00. As the indicators show, the goodness-of-fit measures are satisfactory: CFI=0.9, RMSEA=0.04, HOELTER (0.05)=414.

Table 5. A model of the effect of satisfaction on patient compliance – model parameters and fit indices

			Standardized Regression Weights	p	Hypothesis status
H1:Arbitrariness	<---	Satisfaction	-0.28	0.00	accepted
H2:Forgetting	<---	Satisfaction	-0.22	0.02	accepted
Measures of fit of the structural model: Chi-square = 654.65 d=234 p=0.00 CMIN/DF=2.80 CFI =0.90 NFI=0.85 RMSEA=0.04 HOELTER=414					

Source: own work

In the next step of the research, the effect of demographic variable on the aforementioned model was studied. The first independent variable included in the analysis was the patient's sex (Table 6). It turned out that the correlation between satisfaction and patient compliance was far stronger for men, especially in the case of forgetting about physician guidelines. For women, the effect of satisfaction on forgetting about physician recommendations turned out to be statistically insignificant, but in the case of men the more satisfied the patient was the less often he forgot about patient recommendations (H4). A similar correlation was found for patient arbitrariness, although – as mentioned before – the correlation was weaker for women (H3). The results revealed a $\chi 2$ of 665.78 with a probability level of 0.00. As the indicators show, the goodness-of-fit measures are satisfactory: CFI=0.9, RMSEA=0.04, HOELTER (0.05)=407.

Table 6. A model of the effect of satisfaction on patient compliance according to the patients' sex – model parameters and fit indices

			Standardized Regression Weights	p-value	Standardized Regression Weights	p-value	Hypothesis status
			women		*men*		
H3:Arbitrariness	<---	Satisfaction	-0.16	0.00	-0.31	0.00	accepted
H4:Forgetting	<---	Satisfaction	-0.01	0.86	-0.17	0.02	accepted
Measures of fit of the structural model: Chi-square = 665.78 d=234 p=0.00 CMIN/DF=2.84 CFI =0.90 NFI=0.85 RMSEA=0.043 HOELTER=407							

Source: own work

The patient's level of education was another variable taken into account in the research. The respondents were divided into two groups, with the first one for patients with elementary education (N=247), and the second one for graduates of secondary schools and colleges/universities (N=752). The analysis results proved that for patients with a poorer educational background satisfaction had a statistically significant limiting effect on forgetting about physician recommendations. For the second group of patients, the correlation was statistically insignificant, which meant that they were not motivated to try and understand their doctors' instructions better. Therefore, hypothesis no. 6 was proven right.

It is worth noting that satisfaction had a similarly powerful impact on the reduction of patient arbitrariness in both lower and higher education groups. This meant that the respondents' level of education did not have an impact on the analyzed correlation (hypothesis no. 5 was negatively verified). The results revealed a $\chi 2$ of 664.65 with a probability level of 0.00. As the indicators show, the goodness-of-fit measures are satisfactory: CFI=0.9, RMSEA=0.04, HOELTER (0.05)=414.

Table 7. A model of the effect of satisfaction on patient compliance according to the patients' educational background – model parameters and fit indices

			Standardized Regression Weights	p-value	Standardized Regression Weights	p-value	Hypothesis status
			lower level of education		*higher level of education*		
H5:Arbitrariness	<---	Satisfaction	-0.28	0.00	-0.21	0.00	rejected
H6:Forgetting	<---	Satisfaction	-0.22	0.02	-0.04	0.47	accepted
Measures of fit of the structural model: Chi-square = 664.65 d=234 p=0.00 CMIN/DF=2.80 CFI =0.90 NFI=0.85 RMSEA=0.042 HOELTER=414							

Source: own work

Conclusion

Researchers' focus on the circumstances affecting patient compliance has been associated with the clear tendencies observed in the contemporary world of medicine, where patients are becoming more and more involved in the therapeutic process and in creating the medical service. Adherence to various sorts of physician recommendations, from the simplest ones to the more complex solutions requiring a change of your lifestyle, is treated as an expression of successful cooperation between the physician and the patient, as well as the latter's informed influence on his or her own welfare, thus leading to an accelerated healing process (McKee et al., 2006).

Patient compliance is dependent on the patient's expectations and perceptions with regard to the doctor, communication with him or her, and the nature of the doctor-patient relationship. However, these expectations are difficult to observe, hence numerous studies have concentrated on analyzing the level of satisfaction as a variable stemming from patient expectations and affecting patient compliance (Manary et al., 2013; Zgierska et al., 2014; Junewicz and Youngner, 2015). A similar approach was adopted in this paper.

The five out of six hypotheses have been positively verified. Only the hypothesis indicating the impact of patients' educational background on the relation between patients' satisfaction and their arbitrariness has not been confirmed.

It turned out that compliance with medical recommendations by patients is two-dimensional. On the one hand, it is associated with a certain scope of patients' arbitrariness, which may consist in changing, without consulting a doctor, his guidelines, or the complete cessation of treatment. On the other hand, it can be manifested in patients forgetting about the procedure appointed by the doctor.

In summary, it turned out that satisfaction had a statistically significant effect on both the dimensions of behavior linked to patient compliance. This effect, however, was stronger for arbitrariness, i.e. the more satisfied the patient was the less inclined they were to arbitrarily change their doctor's recommendations.

Simultaneously, our research results indicated that demographic variables had a moderating effect of the correlation analyzed herein (i.e. differentiate this relation). For women, satisfaction was decisively less effective in modifying their behavior associated with patient compliance than it was for men. The correlation between satisfaction and forgetting about physician recommendations turned out to be statistically insignificant for women.

Moreover, satisfaction had a diversified influence on patient compliance depending on the given patient's level of education. Satisfaction was insufficient in modifying the behavior of people with secondary or higher educational background. Although for this group of patients' satisfaction limited their arbitrariness, it had no effect on forgetting about physician

recommendations whatsoever. For the less educated persons (with elementary or basic vocational background), satisfaction contributed to better patient compliance in both analyzed dimensions.

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