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PERCEIVED HEALTH STATUS AND PHARMACOLOGICAL ADHERENCE OF PATIENTS WHO UNDERWENT PERCUTANEOUS CORONARY INTERVENTION[a]

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ABSTRACT

The objectives of this study were to evaluate the perceived health status and pharmacological adherence, and to verify the correlation between these measures in patients who underwent percutaneous coronary intervention, after hospital discharge. It was a cross-sectional study carried out from May 2011 to July 2012. The instruments used were: SF-36 and Measurement of Adherence to Treatment, with 101 patients, 54 (53.5%) of which were men; average age of 59.5±10.3; and 32 (32.7%) with previous cardiac treatment. All study participants were using antihypertensive drugs; the majority 99 (98%) used antiplatelet drugs; 98 (97%) used cholesterol reducers, and 59 (58.4%) used coronary vasodilators. The average number of drugs used was 6.8±2.1. Pharmacological adherence was observed in 98 (97%) patients. The participants presented best perceived health status in Social Functioning and Physical Functioning. Positive correlations of moderate magnitude were found between measurements of pharmacological adherence and Physical Functioning, General Health and Social Functioning. There was correlation between pharmacological adherence and perceived health status.

Descriptors: Quality of life, medication adherence, angioplasty, nursing.

RESUMO

Os objetivos foram avaliar o estado de saúde percebido e a adesão farmacológica, e verificar a correlação entre essas medidas em pacientes submetidos à intervenção coronária percutânea, após alta hospitalar. Trata-se de estudo transversal realizado no período de maio de 2011 a julho de 2012. Utilizaram-se os instrumentos SF-36 e Medida de Adesão aos Tratamentos, com 101 pacientes. Destes, 54 (53,5%) eram homens, a idade média era 59,5±10,3 e 32 (32,7%) haviam passado por tratamento cardíaco prévio. Todos utilizavam medicamentos anti-hipertensivos; 99 (98%) utilizavam antiagregantes plaquetários; 98 (97%), redutores de colesterol e 59 (58,4%), vasodilatadores coronarianos. A média do número de medicamentos utilizados foi 6,8±2,1. A adesão farmacológica foi verificada em 98 (97%) pacientes. Os participantes apresentaram melhor estado de saúde nos componentes "Aspectos sociais" e "Capacidade funcional". Constataram-se correlações positivas e de moderada magnitude entre as medidas de adesão e "Capacidade funcional", "Estado geral de saúde" e "Aspectos sociais". Houve correlação entre adesão farmacológica e estado de saúde percebido.

Descritores: *Qualidade de vida. Adesão à medicação. Angioplastia. Enfermagem.*
Título: *Estado de saúde percebido e adesão farmacológica em pacientes submetidos à intervenção coronária percutânea.*

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RESUMEN

Las finalidades fueran evaluar el estado de salud percibido y la adhesión farmacológica y, verificar la correlación entre esas medidas en pacientes sometidos a intervención coronaria percutánea, tras el alta. Estudio transversal, realizado en el periodo de mayo/2011 a julio/2012. Los instrumentos utilizados fueron: SF-36 y Medida de Adhesión a los Tratamientos, con 101 pacientes, 54 (53,5%) hombres; promedio de edad 59,5±10,3; con tratamiento cardiaco previo 32 (32,7%). Todos estaban usando medicación antihipertensiva, la mayoría utilizaba antiplaquetario, 99 (98%); reductores de colesterol, 98 (97%); y vasodilatadores coronarios, 59 (58,4%). El número promedio de medicamentos utilizados fue 6,8±2,1. Se observó la adherencia farmacológica en 98 (97%) pacientes. Los participantes mostraron mejor estado de salud en los Aspectos Sociales y Capacidad Funcional. Fueron encontradas correlaciones positivas y moderadas entre la medida de adhesión farmacológica y Capacidad Funcional, Salud General y Aspectos Sociales. Hubo correlación entre adhesión farmacológica y estado de salud percibido.

Descriptores: *Calidad de vida. Cumplimiento de la medicación. Angioplastia. Enfermería.*
Título: *Estado de salud percibido y la adhesión farmacológica en pacientes sometidos a intervención coronaria percutánea.*

INTRODUCTION

Cardiovascular diseases are the leading cause of death in both high-income and low-income countries. In 2010, in Brazil, there were more than 326 thousand deaths from circulatory system diseases, corresponding to 28.7% of total deaths.[1-2]

Balloon angioplasty (percutaneous transluminal coronary angioplasty), the implantation of intracoronary stents and other interventions that use catheters to treat coronary atherosclerosis make up an important group of technologies for the treatment of coronary artery disease (CAD), called Percutaneous Coronary Intervention (PCI).[3-4] The therapeutic effect of the PCI is reduction of the target stenosis with maintenance or reestablishment of blood flow in the coronary vessel. The use of coronary endoprostheses (stents) as a finished device for myocardial revascularization has increased consistently. In the beginning of 2000, in Brazil, coronary stents were incorporated onto the list of materials reimbursed by the public Unified Health System.[3] The stent is an orthesis meant to increase the diameter of the obstructed vessel, and has benefits in comparison to balloon angioplasty. Yet one limitation of the stent is the risk of intrastent stenosis. With the objective to prevent and treat late coronary restenosis (reduction of myointimal hyperplasia), drug-eluting stents were developed and are based on the principle of local drug administration, making possible the controlled release of drugs into the target stenosis.[3]

The success of a PCI is evaluated considering angiographic success (reduction of the target stenosis to one with a diameter less than 30%, with maintenance or reestablishment of flow), and absence of major clinical complications, such as death, acute myocardial infarction, and emergency coronary artery bypass graft (CABG) surgery.[3] The intervention is not curative, and should be accompanied by other pharmacological and non-pharmacological therapeutic measures, aiming to control progression of the CAD with consequent improvement of quality of life and increased survival of patients.[5-6]

Pharmacological adherence can be defined as the degree to which a patient uses drugs in accordance with times, frequency and dose prescribed in a therapeutic regimen.[7-8] In patients diagnosed with acute coronary syndrome, six months after hospital discharge, the majority of participants (69.5%) reported medium or high pharmacological adherence. The primary reason for non-adherence was forgetfulness (23.2%).[5] There are many variables that can influence pharmacological adherence, including patient attributes (psychological, cultural and behavioral factors), therapeutic scheme (number of drugs used), professional-patient relationship (patient's trust in the physician), and access to the drugs (whether adequate or not).[5,8] The patient is the primary focus in adherence to a therapy and his/her perception in regard to the importance of adherence and how much his/her health status influences correct use of the drugs.[8]

Evaluation of health-related quality of life (HRQOL) and perceived health status can be done through the use of instruments classified as generic or specific. The generic instruments can be applied in the general population, independent of illness or condition, and are concentrated on physical symptoms, seeking to encompass all of the important health-related aspects of the individual. Specific

instruments are those directed toward a particular illness or condition.[9] Individuals with established CAD present endangered HRQOL, which can be attributed to a group of factors that include the condition of the disease itself, physical limitations, depressive symptoms, and risk of death, which may intensify progression of the disease.[2,10]

Patients who underwent myocardial revascularization (PCI or CABG surgery) present better HRQOL six months after an acute coronary event when compared to the group of patients who were not revascularized. Improvement of HRQOL is related to improvement of physical functioning, reduction of symptoms and, consequently, better coexistence with the chronic illness, which requires efforts by the patient to retard its evolution.[11]

There is a scarcity of studies that evaluate the pharmacological adherence and perceived health status of patients who undergo PCI, despite the importance of these measures for controlling CAD. Thus, the objective of this study was to evaluate the perceived health status and pharmacological adherence of patients submitted to PCI, and to verify possible correlations between these two measures, in the period from two to six months after hospital discharge.

MATERIALS & METHODS

This cross-sectional study was performed in a teaching hospital in the interior of the state of São Paulo, Brazil, with patients who underwent PCI, in outpatient monitoring from two to six months after hospital discharge. The period chosen is justified by the fact that two months after the PCI, patients would already have returned to routine activities and previous employment.[3]

A convenience sample was established, considering the period from May 2011 to July 2012 for data collection. In this period, the patients in outpatient monitoring who underwent PCI were invited to participate in the study. Inclusion criteria were: aged equal to or greater than 18 years, having outpatient return in the period from two to six months following the PCI, to have the capacity to communicate verbally and/or in writing, to demonstrate understanding of the free and informed consent form (FICF) and the questionnaires, and showing coherent responses that consider the questions asked by the researcher. Exclusion criteria were: presence of a motor dissability (for example, use of wheelchair), due to the influence of the dissability on the responses to questions about physical activities.

Data was collected during the outpatient return, through an individual interview that lasted one hour, and through consultation of patient records in the charts. The following data were collected: date of birth, date of interview, data of PCI, sex, marital status, employment, education level, monthly family income, type of PCI, number of PCI locations, previous treatment of cardiac disease, presence of comorbidities (hypertension, diabetes, dyslipidemia and obesity), and type of prescribed drugs used by the patients.

For evaluation of the perceived health status, the validated Portuguese version of the *Medical Outcomes Survey 36- Item Short Form* (SF-36) [12] was used. The SF-36 is made up of 36 items grouped into eight components: Physical Functioning, Role-Physical, Bodily Pain, General Health, Vitality, Social Functioning, Role-Emotional, and Mental Health. Each component has a score from 0 to 100, in which 0 corresponds to the worst general health status and 100 corresponds to the best health status. The values of the Cronbach's alpha coefficient for the instrument SF-36, obtained in one recent Brazilian study done with patients with CAD, varied from 0.71 (General Health) to 0.97 (Role-Emotional), indicating good internal consistency.[2]

The Measurement of Adherence to Treatments (MAT) developed by Delgado and Lima was used, which is composed of seven items that evaluate adherence of the patient in regard to the daily use of drugs. The items question about the patient forgetting to use the drugs for his/her illness, lack of care in regard to correct hour to take the drugs, the choice to not use the medicines due to feeling better or worse, the increase of the prescribed dose due to feeling worse, interruption of the drug therapy because the medicine ran out, and the non-use of the drug due to some other reason that is not prescribed by the physician. Responses to the items are in the form of an ordinal scale of six points that vary from "always" (1) to "never" (6). The final score of the MAT is the mean of the values of the responses to the seven items, with values between 1 and 6. The higher the score, the better the pharmacological adherence.

For this study, the suggestion of the authors of the MAT were followed, by using the converted dichotomous scale, transforming the mean of the values of the responses of each subject in the following manner: values equal to or greater than 5 corresponded to adherents, and values less than 5 corresponded to non-adherents. In the study of the original validation scale, the MAT showed good internal consistency, with Cronbach's alpha of 0.75 on the converted dichotomous scale. The response in the form of the Likert scale revealed greater sensibility and specificity to capture the various adherence behaviors.[13]

Data was entered into and analyzed using the software program *Statistical Package for the Social Sciences* (SPSS), version 20.0 for Windows. Descriptive analyses and calculation of the Spearman correlation coefficient (r_s) were done to evaluate the correlations between the measurements of the perceived health status (eight components of SF-36) and pharmacological adherence. The significance level was fixed at $\alpha = 0.05$.

For analysis of the level of linear correlation between the measurements, the classification proposed by Callegari-Jacques (2003)[14] was used, which suggests that correlation values less than 0.30, even when statistically significant, do not present clinical significance (weak correlation); values between 0.30 and 0.59 indicate moderate correlation; values between 0.60 and 0.89 represent strong correlation; and 0.90 and higher represent very strong correlation.

The study was approved by the Research Ethics Committee of the Univertsity Hospital of the Ribeirão Preto School of Medicine (Process HCRP 7333/2010). The participants signed the FICF according to Resolution 196/96 of the National Health Council.

RESULTS

Of the 101 study participants, 54 (53.5%) were male. There was predominance of individuals who were married or in consensual union, (79, 78.3%). Seventy-eight participants (77.2%) were inactive, and the average age was 50.5±10.3 years. Table 1 shows the results of the sociodemographic and clinical description of the participants.

The mean family income was R$1,200.00. With the exception of one study participant who reported a monthly family income of R$40,000.00, the others reported a monthly family income that varied from R$545.00 to R$4,500.00. The majority (n=83, 82.2%) did not complete primary education.

Of the total number of study participants, 33 (32.7%) reported previous treatment for some type of heart disease (myocardial infarction, angina, arrhythmia, congestive heart failure and dyspnea). The mean number of drugs used by the study participants was 6.8 ± 2.1. All of the study participants used drugs for treatment of hypertension, and the majority (n=99, 98%) used antiplatelet drugs; 98 (97%) used cholesterol reducers; and 59 (58.4%) used coronary vasodilators.

Table 2 presents the results obtained from the evaluation of patients' perceived health status. The study participants reported better evaluations in the components Social Functioning and Physical Functioning. The components perceived by the participants as most compromised were Role-Physical, Role-Emotional, and Bodily Pain.

The results obtained from the evaluation of pharmacological adherence by the patients are presented in Table 3. The majority of participants responded "rarely" or "never" for the seven items from the MAT instrument.

The mean of the values of the responses to the seven items from the MAT instrument, which varies from 1 to 6, was 4 for three participants (3%), 5 for 26 participants (25.7%), and 6 for 72 participants (71.3%). In this way, considering the use of the converted dichotomous scale, 98 (97%) participants were classified as adherents (with mean of the values of the responses to the seven items equal to or greater than 5), and only three (3%) as non-adherents (with mean of the values of the responses to the seven items less than 5).

In the analysis of the correlations between the measurements of the perceived health status (components of the SF-36) and pharmacological adherence (MAT), positive correlations of moderate magnitude were verified between the measurements of adherence and the components Physical Functioning, General Health, and Social Functioning. Although statistically significant, the other correlations were of weak magnitude (Table 4).

DISCUSSION

This study had the objective to evaluate the perceived health status and pharmacological adherence

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Table 1 – Sociodemographic and clinical characteristics of the participants. Ribeirão Preto, SP, 2011-2012.

Sociodemographic and clinical characteristics	(n=101)
Sex	
Male	54 (53.5)
Marital status	
Married/consensual union	79 (78.3)
Employment situation	
Inactive	78 (77.2)
Age (years)*	59.5 ±10.3
Presence of comorbidities	
Hypertension	101 (100)
Dyslipidemia	85 (84.2)
Diabetes	39 (38.6)
Obesity	28 (27.7)
Previous treatment of heart disease	
No	68 (67.3)
Number of locations of PCI	
1	53 (52.5)
2	34 (33.7)
3 or more	14 (13.8)
Type of PCI	
Stent	87 (86.1)
Stent and balloon	13 (12.9)
Balloon	1 (1.0)
Number of drugs*	6.8 ±2.1

Data expressed in n (%).
* Variable expressed in mean and standard deviation.

Table 2 – Study participants' mean values for components of the SF-36 (n=101). Ribeirão Preto, SP, 2011-2012.

Components of the SF-36	Median (S.D.*)	Mean (Percentile 25-75)
Social Functioning	73.1 (30.0)	75.0 (50.0-100)
Physical Functioning	66.4 (26.4)	70.0 (45.0-92.5)
Mental Health	64.0 (23.6)	68.0 (46.0-82.0)
General Health	63.8 (20.4)	62.0 (52.0-77.0)
Vitality	60.5 (25.4)	60.0 (45.0-80.0)
Bodily Pain	60.2 (27.2)	61.0 (41.0-84.0)
Role-Emotional	56.1 (40.2)	66.7 (33.3-100)
Role-Physical	41.2 (41.6)	25.0 (0 -93.7)

* S.D. = standard deviation

Table 3 – Results of the instrument for Measurement of Adherence to Treatment (MAT) of the study participants (n=101). Ribeirão Preto, SP, 2011-2012.

Items from the MAT	Always (1)	Almost always (2)	Frequently (3)	Sometimes (4)	Rarely (5)	Never (6)
1. Have you ever forgotten to take the drugs for your illness?	2 (2.0)	3 (3.0)	1 (1.0)	6 (5.9)	40 (39.6)	49 (48.5)
2. Have you ever missed the correct time to take the drugs for your illness?	6 (5.9)	8 (7.9)	2 (2.0)	4 (4.0)	34 (33.7)	47 (46.5)
3. Have you ever stopped taking the drugs for your illness because you felt better?	2 (2.0)	0	2 (2.0)	2 (2.0)	7 (6.9)	88 (87.1)
4. Have you ever stopped taking the drugs for your illness, on your own initiative, because you felt worse?	0	0	0	0	8 (7.9)	93 (92.1)
5. Have you ever taken more than one pill for your illness, on your own initiative, because you felt worse?	0	1 (1.0)	0	2 (2.0)	14 (13.8)	84 (83.2)
6. Have you ever interrupted therapy for your illness because your medicine(s) ran out?	0	2 (2.0)	0	2 (2.0)	23 (22.78	74 (73.2)
7. Have you ever stopped taking the drugs for your illness for some other reason that was not recommended by your physician?	0	0	0	2 (2.0)	4 (4.0)	95 (94.0)

Data expressed in n (%).

Table 4 – Correlation between the measurements of the components of SF-36 and pharmacological adherence, evaluated by the Measurement of Adherence to Treatments (MAT). Ribeirão Preto, SP, 2011-2012.

Components of the SF-36	Spearman Correlation	*p** value
General Health	0.35	< 0.001
Social Functioning	0.34	< 0.001
Physical Functioning	0.34	< 0.001
Mental Health	0.27	0.005
Role-Emotional	0.27	0.006
Vitality	0.26	0.008
Bodily Pain	0.23	0.02
Role-Physical	0.22	0.03

**p* value for test of the hypothesis that the correlation is zero.

of patients who underwent PCI, and to verify the possible correlations between these two measures, in the period from two to seven months following hospital discharge. In the evaluation of the perceived health status through the SF-36, the components with the best evaluations were Social Functioning, and Physical Functioning. In regard to pharmacological adherence evaluated by the MAT, the majority of the participants were classified as adherents (97%). The correlations between the measurements of the perceived health status and pharmacological adherence were statistically significant and of moderate magnitude for the components Physical Functioning, General Health and Social Functioning.

The description of the study participants in regard to the predominance of inactive men who are married or in consensual union is similar to other studies with patients with CAD or who have undergone cardiac catheterization.[15-16]

The presence of various comorbidities considered to be risk factors for cardiovascular diseases, such as hypertension, diabetes, dyslipidemia, and obesity, demand pharmacological adherence for the control of the diseases.[15]

In this study, we found the daily mean of 6.8 ±2.1 drugs, and 98 (97%) patients adhered to the drug therapy. In other studies, the daily mean of drugs used was higher than 5.0. The majority of patients stated that they adhere to the pharmacological treatment.[15, 17]

The seven questions of the MAT instruments refer to the different situations that may lead the patient to non-adherence. All of the questions were predominately responded to with the option "never." Similar results were found in another study,[18] which implies that it is possible that the participants responded with what they thought was the correct answer in order to satisfy the researcher, or were afraid that members of his/her health team would have access to the responses, and be informed about his/her inadequate use of the drugs. Further, it is possible that the study participants really used the drugs correctly.

The patient's perception of the CAD as a grave illness with high mortality may be one of the factors related to the high pharmacological adherence of this population. In one meta-analysis, the authors found that patients who perceive their illness as grave have greater adherence to treatment when they believe in the possibility of improvement, than patients who consider their illness to be less serious. However, those with worse perception of their health status have an 11% greater risk of not adhering to treatment.[19]

In regard to perceived health status, as found in this study, the best evaluations on the components Social Functioning and Physical Functioning were observed in a study that evaluated the patients three months after the PCI. However, the component Bodily Pain, one of those perceived as most compromised for the participants in our study, was what obtained the best evaluation.[4]

The component Role-Physical was perceived as the most compromised in our study, corroborating what was found in one national study[10] and another international study.[4] This component is related to the consequences of physical health, such as reduced quantity of time dedicated to work or other activities, carrying out less tasks than the person would like, and limitations and difficulties performing activities. The perception of this component as the most compromised is possibly related to the fear of a new cardiovascular event,[17] with consequent reduction and limitation of activities, including work.

In our study, the correlations between health status and pharmacological adherence were positive, and of weak and moderate magnitude. In another study, patients submitted to PCI related pharmacological adherence to the perceived benefits and to the fear of complications resulting from non-adherence, such as angina and myocardial infarction,[17] which explains the positive correlation between these two variables. However, one study that evaluated the association between the perceived health status and adherence to the treatment of African-Americans with serious and uncontrolled hypertension found a significant association between better perceived physical health (values in the Physical Component Summary of the SF-36) and non-adherence to treatment.[20] In regard to the components of the SF-36, participants with high values in Physical Functioning were also more disposed to non-adherence, while those that presented high values for Mental Health tended toward a behavior of adherence. These associations may be due to the socioeconomic aspects and beliefs about the disease and treatment.[20] For example, the belief that the drug is inadequate and unnecessary due to the absence of symptoms of CAD, with consequent better physical health perceived.[17,20]

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CONCLUSION

The participants in this study showed a better perceived health status in the components Social Functioning and Physical Functioning, and worse perceived health status in the components Role-Physical, Role-Emotional, and Bodily Pain. The majority of the participants were considered adherents to pharmacological therapy, despite the large number of drugs used. There were positive correlations of moderate magnitude between the measurement of adherence and the components Physical Functioning, General Health, and Social Functioning.

Thus, it is important to orient patients about the relationship between pharmacological adherence and improvement of the perceived health status. That is, to emphasize that the correct use of the drugs will lead to reduced symptoms of CAD, and to emphasize that the continuous use of the drugs is important for secondary prevention, including when the patient is feeling well, without any clinical manifestation of the CAD.

The fact that this study is cross-sectional is a limitation, as it does not evaluate perceptions about the health status and adherence to treatment in different moments of the trajectory of the chronic condition and life of the individual. The quantitative evaluation of adherence by a single instrument does not supply responses to the questions put forth in this study, and other investigations with mixed approaches (quantitative and qualitative) are necessary. Mixed approaches can make possible a better understanding of the perceived health status and pharmacological adherence.

Other studies can be done to evaluate pharmacological adherence with different techniques, for example, counting of drugs, monitoring of prescription renewal and evaluation of biological markers. These evaluations can be compared to the patients' self-reports on pharmacological adherence. Further, we highlight the need for studies that detail the correlation between perceived health status and adherence to treatment.

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