CHAPTER
109

The impact of actions coordinated by a multidisciplinary team on adherence to outpatient cardiac treatment

https://doi.org/10.56238/alookdevelopv1-109

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ABSTRACT
Introduction: The therapeutic decision must be an active process between the health team and the patient. The benefits of treatment adherence are widely known, however, adherence is a challenge that has been described since 1970. Such a scenario reflects the increase in morbidity and mortality from cardiac conditions. The present study is based on actions coordinated by a multidisciplinary team, consisting of members of the pharmacy, social assistance, and cardiology services, aiming to identify and resolve the factors that may influence adherence to outpatient cardiac medical treatment and to evaluate the impact of these actions in this process. Methods: Longitudinal study that included 15 patients treated at the cardiology outpatient clinic of the Hospital Regional dos Campos Gerais, carried out from May to December 2022. At first, the patients were seen in the conventional cardiology consultation and, later, they were directed to the multidisciplinary consultation. The study evaluated sociodemographic and clinical variables and analyzed lifestyle, quality of life, and adherence to therapy using validated questionnaires. After a period, which varied from 5 to 7 months, the patients were reassessed and submitted again to the questionnaires. Results: After the multidisciplinary intervention, there was an improvement, mainly, in the parameters of adherence to pharmacological therapy, a reduction in the number of sedentary individuals, an increase in quality of life, and less nicotine dependence among smokers. There was no change in the profiles related to smoking and alcoholism and little change associated with changing the therapeutic regimen (number of medications used daily). Conclusion: The multidisciplinary approach in the cardiological context promotes improvement in patients' therapeutic adherence and lifestyle parameters, thus positively impacting the quality of life of patients with heart disease.

Keywords: Therapeutic adherence, Multidisciplinary approach, Cardiology.

1 INTRODUCTION

The appropriate therapeutic decision needs to be an active process of both parts of the binomial health team and patient, to reconcile the possible options to the availability of social and economic resources, as well as to the cultural aspects. Adherence to long-term treatment is defined by the chaining of the actions of the health team, guiding the individual on pharmacological measures and changes in lifestyle, given the acceptance and follow-up of such directions by the patient (WORLD HEALTH ORGANIZATION, 2003).

The benefits of treatment adherence are widely known and cited, however, adherence is a challenge described since the 1970s (BARROSO et al., 2021). In a meta-analysis that selected 20 studies of adherence to pharmacological treatment, aiming at primary and secondary prevention of atherosclerotic cardiovascular disease (CVD), totaling 376,162 patients, it was estimated that non-adherence to the respective preventive treatment may be the cause of 41% of deaths from atherosclerotic CVD in the United States of America (USA) (NADERI; BESTWICK; WALD, 2012). The decompensation of heart failure (HF) caused, above all, by poor adherence to treatment, is responsible for approximately 1 million annual hospitalizations in the USA (HEIDENREICH et al., 2013).

Regarding the treatment of systemic arterial hypertension (SAH), a low adherence percentage (51%) was reported in the USA and extremely low (27%) in the Republic of The Gambia, highlighting a greater challenge in poor countries (WORLD HEALTH ORGANIZATION, 2003). In Brazil, the percentage of adherence to pharmacological treatment, reported in a cross-sectional study conducted in 2012, was 40% (DE OLIVEIRA et al., 2013). In our country, SAH is the chronic disease that most consume public resources, with total estimated spending in 2018 of 523.7 million dollars (NILSON et al., 2020).

The non-adherence of the patient is complex adversity and, due to its multifactorial character, needs to be understood through the detailed analysis of the sociodemographic context, diseases, and morbidities, culture, aspects inherent to the treatment, in addition to access to the health environment and the relationship with professionals (SANTOS et al., 2005). To face this scenario, efforts in this direction include the development of appropriate tools for the assessment of treatment adherence, since, to date, there are no standardized instruments for this purpose. Currently, investigative methods of adherence are divided into direct (objective) and indirect (subjective). Serum or urinary biological analysis, marker addition, and supervised taking are direct or objective methods. Questionnaires, physician printing, manual tablet counting, prescription replenishment, clinical response, and electronic devices are indirect or subjective methods (BARROSO et al., 2021).

From the understanding of the conjuncture, the health team must ascertain the estimate of patients' therapeutic adherence, aiming at the identification of harmful factors and, thus, better managing the clinical conditions (SOBRAL et al., 2017). The strategies suggested for better adherence require adaptations according to the patient's needs. With this, interventions can be understood in 3 directions: addressing the patient, drug treatment, and/or the teams and health system, which, in summary, should simplify the relationship between the patient and their disease (BARROSO et al., 2021).

The identification of socioeconomic and cultural factors, related to education, cognition, related to age, and/or the underlying disease, in addition to the complexity, inherent to the frequent association of serious diseases that culminates in polypharmacy, and actions aimed at minimizing the negative effects on medical therapy are paramount for better adherence. The multidisciplinary approach of the patient contemplates the treatment integrally because broader solutions are provided, directed to the patient, their needs, and all the limitations involved in this multifaceted process. In this sense, the present study is based on actions coordinated by a multidisciplinary team, consisting of members of the pharmacy, social assistance, and cardiology services, aiming to identify and solve the factors that may influence adherence to outpatient cardiology medical treatment and evaluate the impact of these actions on this process.

2 OBJECTIVE

Implement and evaluate the impact of actions coordinated by a multidisciplinary team, aimed at solving factors that may influence adherence to outpatient cardiac treatment.

3 METHODS

A longitudinal study, in its first stage developed from May to December 2022, involving a subgroup of patients allocated in another ongoing study, SURF CHD (Survey of Risk Factors in Coronary Heart Disease), approved by the UEPG Ethics Committee (opinion number: 5,209,153). All patients are treated at the academic cardiology outpatient clinic of the regional university hospital of the general fields, State University of Ponta Grossa (UEPG). The multidisciplinary team consists of medical students, the professor and cardiologist responsible for outpatient care, resident pharmacists, and the social worker responsible for outpatient clinics. The flow of care begins with the cardiology consultation, followed by multidisciplinary care.

The multidisciplinary approach is initiated by the social worker, who assesses the patient's socioeconomic condition, schooling, income range (calculated by the total income of the house divided by the number of residents), individual limitations (cognitive or literacy), possible difficulties in

accessing the hospital's cardiac care, as well as possible difficulties in accessing the prescribed medications. Next, the medical students address the conditions of life habits and guide under the changes indicated in the cardiological care and apply the indicated questionnaires.

About the conditions of life habits, through patient information, a detailing of eating habits is made and the substitutions, exclusions, and quantities appropriate to the indicated standards are oriented, with the necessary individualization, within the clinical and socioeconomic context, emphasizing the importance of the proposed changes. Physical activity is evaluated according to the total time of weekly activity, and the patient is classified as sedentary (no activity), practicing less than moderate (activity time < 90 minutes/week), moderate (activity time between 90 and 150 minutes/week) or more than moderate (activity time > 150 minutes/week). The benefits of physical activity are clearly stated and physical activity is oriented according to the clinical condition of the individual. Physical activity, at least moderate, is oriented and encouraged for those whose clinical condition allows and is oriented in an individualized way, with an intensity that does not cause any symptoms for the limited.

Medical students also apply questionnaires for complimentary assessments. The Morisky-Green Pharmacological Treatment Adherence Questionnaire (BLOCH; MELO; NOGUEIRA, 2008) is interpreted as follows: low adherence (all positive responses), moderate adherence (one or two positive ones), and high adherence (none positive). The questionnaire on the quality of life of hypertensive patients in its somatic and mental aspects MINICHAL (SCHULZ et al., 2008) is analyzed by comparing the score of the first with that of the second multidisciplinary approach. Through the Fagerström nicotine dependence degree questionnaire (CARMO; PUEYO, 2002), the degree of dependence is classified as very low (0 to 2 points), low (3 to 4), medium (5), high (6 to 7) and very high (8 to 10). Also, the questionnaire to assess alcohol abuse or dependence CAGE (MASUR et al., 1985) is used, considering as a cutoff point two positive answers.

Finally, the pharmacists guide the storage and correct use of the medications and also prepare a schematic table (using colored ribbons) with the patient's drug prescription, to facilitate the identification of the medications and the times of administration.

The other data collected are obtained through the electronic medical record: comorbidities (coronary artery disease, acute myocardial infarction, systemic arterial hypertension, diabetes mellitus, dyslipidemia, chronic kidney disease, heart failure, atrial fibrillation, stroke, and dementia); risk factors for cardiovascular disease; drugs used outside the cardiac sphere.

In a subsequent consultation, with an average interval of 6 months, depending on the possibility of the patient's return, changes in the patient's socioeconomic and clinical context are evaluated, including the reapplication of the questionnaires and collection of updated clinical and laboratory data,

as well as reorientations about lifestyle. In this phase of the study, the reassessment interval was 5 to 7 months. Patients who did not go through the 2 consultations in the proposed interval were excluded.

4 RESULTS

Regarding the general characterization of the sample, 15 patients were included, of which 60% were male. Regarding the age groups, 6.7% of the individuals were in the range of 45 to 59 years, 13.3% were 60 to 64 years old, 13.3% were in the range of 65 to 69 years, 53.3% were 70 to 74 years old and 13.3% were 75 years or older, with a mean age of 69.26 years. The most prevalent income range was up to 1 minimum wage per resident of the household (73.3%), followed by up to 2 minimum wages (26.7%). Regarding education, most had incomplete elementary education (73.3%) and 20% of the patients were illiterate (Table 1).

Table 1 – General characterization of the patients seen

VARIABLES		NUMBER OF INDIVIDUALS	PERCENTAGE
Sex	Male	9	60%
	Female	6	40%
Age	45 to 59 years	1	6,7%
	60 to 64 years	2	13,3%
	65 to 69 years	2	13,3%
	70 to 74 years	8	53,3%
	75 years or older	2	13,3%
Income range (minimum wages per resident)	Up to 1	11	73,3%
	Up to 2	4	26,7%
Schooling	Illiterate	3	20%
	Ens. Fund. incomplete	11	73,3%
	Ens. Fund. complete	1	6,7%

Source: Composition of the author

Regarding comorbidities: 100% of the patients had SAH, dyslipidemia, and coronary artery disease; 60% of the patients were diabetic; 33.3% were obese; 26.7% of the patients had heart failure; 13.3% of chronic kidney disease; 13.3% had atrial fibrillation and 13.3% of the patients had dementia. Regarding cardiovascular events and cardiovascular procedures, 53.3% of the patients had previously had an acute myocardial infarction (AMI), 73.3% of the patients underwent angioplasty, 26.7% had myocardial revascularization and 13.3% of the patients had a history of stroke (Table 2).

Table 2 – Comorbidities, interventions, and cardiovascular events

VARIABLES		NUMBER OF INDIVIDUALS	PERCENTAGE
Comorbidities	HAS	15	100%
	Dyslipidemia	15	100%
	Coronary artery disease	15	100%
	Diabetes	9	60%
	Obesity	5	33,3%
	IC	4	26,7%
	Atrial fibrillation	2	13,3%
	Chronic kidney disease	2	13,3%
	Dementia	2	13,3%
Past morbid history	IAM	8	53,3%
	Undergoing angioplasty	11	73,3%
	Submitted to myocardial revascularization	4	26,7%
	STROKE	2	13,3%

Systemic Arterial Hypertension (SAH); Heart Failure (HF); Acute Myocardial Infarction (AMI); Cerebrovascular Accident (CVA).

Source: Composition of the author.

Regarding the means of locomotion used to access the Cardiology Outpatient Clinic, 60% used public transportation, the rest moved with private vehicles, such as via running apps, vehicles of the patient, or family members. Asked if there was difficulty in accessing the outpatient clinic, 40% of the patients stated that they had difficulties, such as living in another municipality, prolonged time in commuting and care (users of inter municipal public transport), as well as physical limitations due to the sequelae of the underlying diseases and/or advanced age.

Regarding medications, 86.7% of the patients obtained the medications both through SUS and private, only 6.7% of the patients had the SUS as the only source of access to medication and the other 6.7% of patients obtained the medication privately. Asked about limitations to obtaining the drugs, 66.7% of the patients denied it. Regarding the understanding of both pharmacological and non-pharmacological guidelines, 53.3% of the patients denied any cognitive limitations, 33.3% claimed literacy limitations and 13.3% had cognitive limitations.

Regarding the pharmacological treatment, in the 1st multidisciplinary approach, most patients used 5 to 9 medications (53.3%), and observed, in the 2nd approach, a reduction to 47% of the sample.

The group of 1 to 4 ranged from 6.7% in the 1st approach to 13% in the 2nd and, finally, the group of > 10 medications maintained the same number of patients (Table 3).

Table 3 – Number of medicines used daily

Number of medications used daily	APPROACH 1		APPROACH 2	
	PATIENTS	PERCENTAGE	PATIENTS	PERCENTAGE
1 a 4	1	6,7%	2	13%
5 a 9	8	53,3%	7	47%
10 or but	6	40%	6	40%

Source: Composition of the author.

More than half of the patients used medications 4 times a day, and all frequencies of daily use were maintained in both approaches (Table 4).

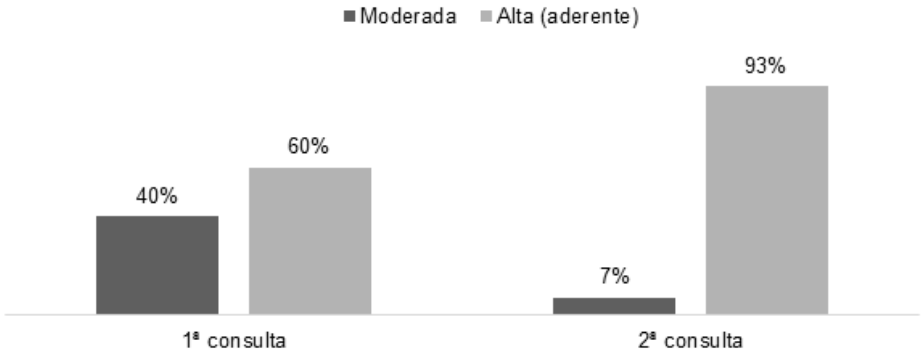
Table 4 – Daily frequency of medication use

	APPROACH 1		APPROACH 2	
Number of outlets per day	PATIENTS	PERCENTAGE	PATIENTS	PERCENTAGE
2	1	6,7%	1	6,7%
3	4	26,7%	4	26,7%
4	10	66,7%	10	66,7%

Source: Composition of the author.

Adherence to drug treatment, assessed by the Morisky-Green questionnaire (QMG) in the 1st approach, was moderate in 40% and high (adherent) in 60% of the patients. In the 2nd approach, high adherence increased significantly (93%) and low adherence was not characterized in any patient, and only 26.6% of patients self-reported that there was no change in the degree of adherence to drug treatment (figure 1).

Figure 1 – Evaluation of adherence to drug treatment through the MGQ

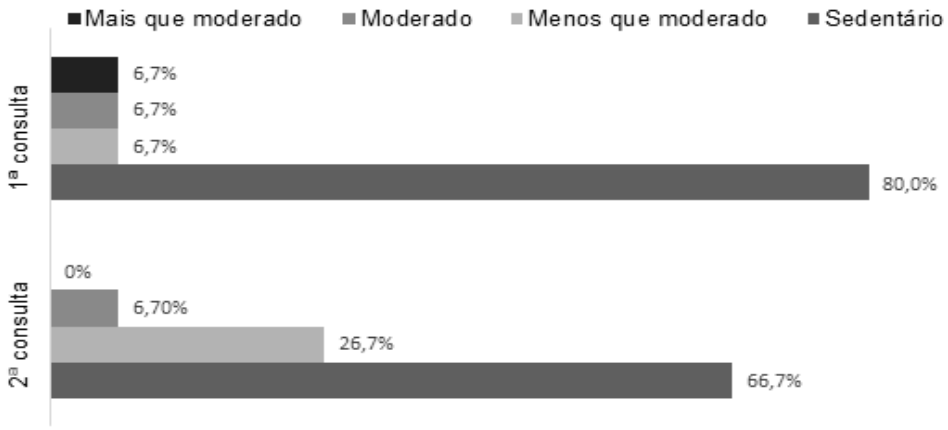


Source: Composition of the author.

Regarding smoking, there was no change between the 1st and 2nd approaches: 20% non-smokers, 60% former smokers, and 20% smokers, and the patient who had not smoked for at least 6 months was considered a former smoker. However, there was a change in the analysis of nicotine dependence, assessed by the Fargeström questionnaire between the two approaches: very low dependence in 1 and low in 2 patients in the 1st approach and very low in these 3 patients in the 2nd. Also, through self-report, the patients affirmed a decrease in dependence on the 2nd approach. Regarding alcoholism, there was also no change between the two approaches, with 60% of the sample consisting of non-drinkers and 40% of former alcoholics, so the CAGE questionnaire for the evaluation of alcohol abuse did not need to be used.

Regarding physical activity, in the 1st approach, 80% of the patients were sedentary, 6.7% practiced with intensity and frequency classified as less than moderate, 6.7% moderate, and 6.7% more than moderate. In the 2nd approach, there was a reduction in the percentage of sedentary individuals (66.7%), there were no practitioners of more than moderate physical activity, and there was an increase in the percentage of practitioners of physical activity of less than moderate intensity (26.7%) and the number of patients in the group of moderate intensity remained the same (6.7%). When asked about adherence to physical exercise in the 2nd approach, 33.3% of the patient's self-reported improvement (figure 2).

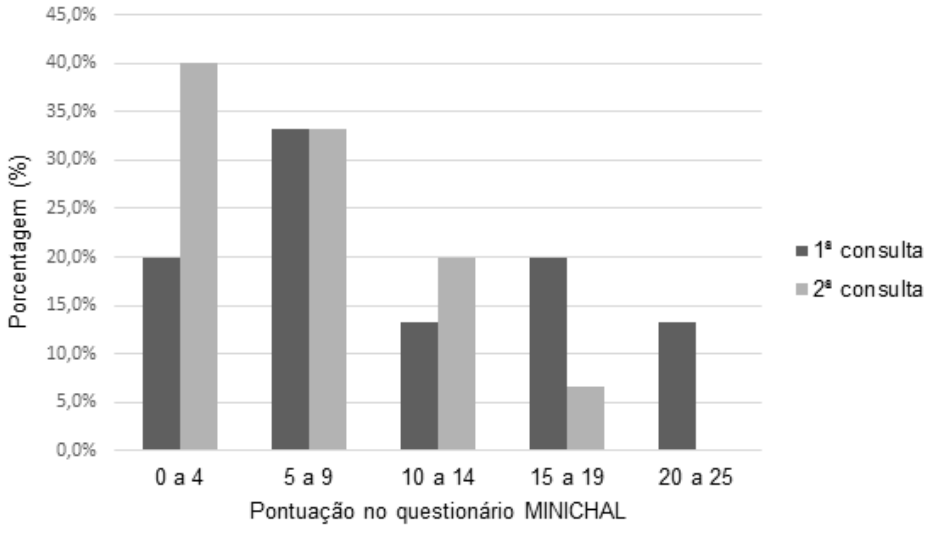
Figure 2 – Physical activity, in two multidisciplinary approaches



Source: Composition of the author.

The assessment of the quality of life (figure 3) was performed using the MINICHAL questionnaire, whose score ranges from 0 to 51 and has an inverse relationship with the quality of life of hypertensive patients. The score of the patients in the study ranged from 1 (minimum score) to 25 (maximum score) considering both approaches. The patients were divided into 5 groups according to the scores. In the 1st approach, 20% of the patients were in the group of 0 to 4, 33.3% in the group of 5 to 9 points and 13.3% of the patients were in the group of 20 to 25 points. In the 2nd approach, there was an increase in the percentage of patients in the group from 0 to 4 (40%) reduction, apparently expressive, of the percentage of patients in the group of 15 to 19 (7%) and no patient was inserted in the group with the highest score 20 to 25 points.

Figure 3 – Comparison of patients' quality of life among multidisciplinary consultations



Source: Composition of the author.

5 DISCUSSION

The complexity of the therapy, a reflection of the complexity of the patient's clinical picture, either by the association of diseases or by the severity of the underlying disease, leads to polypharmacy and consequently to a greater possibility of poor adherence to the recommended medical treatment. In addition, socioeconomic, cultural, and cognitive factors related to age and/or clinical picture form a vicious circle that leads to worsening quality of life and a greater number of complications, including fatal complications.

The sample of the present study consisted mainly of males (60%), ≥ 70 years (66.6%), with a mean age of 69.26 years, low income and low education, 73.3% with incomplete elementary education, and 20% illiterate (Table 1). Also, 100% of the patients had SAH, dyslipidemia, and coronary artery disease, 60% were diabetic, 33.3% were obese, 26.7% of the patients had heart failure and 13.3% had chronic kidney disease, in addition to other comorbidities, which characterizes these individuals as at higher risk of poor adherence to medical treatment. In the context of primary and secondary prevention, approximately 1/3 of patients with a history of AMI and half of the patients in primary prevention are non-adherent to medical therapy (NADERI; BESTWICK; WALD, 2012).

In our study, the percentage of high adherence to drug treatment, assessed by the MGQ, increased after the multidisciplinary approach, from 60% to 93%, characterizing a significant improvement (figure 1). *A similar result, an increase in adherence of 41.4%, was observed in a study that assessed adherence to antihypertensive treatment by the same questionnaire, after the intervention of pharmaceutical professionals. However, the study period was 12 months and the focus of the adherence assessment was specifically antihypertensive therapy (AQUINO, 2013).*

Regarding physical activity, between the 1st and 2nd approaches, there was a reduction in the number of sedentary individuals, from 80 to 66.7% of patients (figure 2). *In a longitudinal study that involved hypertensive patients, both the orientations made for groups of patients, as well as those also performed individually, improved the percentage of active individuals, respectively, from 22% to 49% and from 21% to 52% (NOTTI, 2014).* Thus, it is evident the importance of the orientation of the health teams regarding the cessation of a sedentary lifestyle, since the education of the patient, the clarification of the benefits, and the adequacy of the exercise according to the clinical profile can improve the lifestyle of the individuals.

Regarding the number of smokers, there was no change between the 1st and 2nd approaches (20% of the sample). However, nicotine dependence, assessed by the Fargeström questionnaire, was classified as very low in all smokers in the 2nd approach. Regarding alcoholism, the same characteristic was observed in both approaches (60% non-drinkers and 40% former drinkers).

The quality of life (figure 3) assessed by the MINICHAL questionnaire, whose score has an inverse relationship with the quality of life of the hypertensive patient, improved after the 1st approach, going from 20 to 40% the percentage of individuals with a score compatible with a better quality of life (0 to 4 points) and no patient was included in the group with the highest score (20 to 25 points) that characterizes the worse quality of life (figure 3). This result is similar to that found in another longitudinal study conducted with hypertensive patients, which evaluated the intervention of the pharmaceutical professional in the quality of life, in the reassessment after 6 months, the average among the 7 patients in the MINICHAL went from 9 to 4,714 (AYALA; CONDEZO; JUÁREZ, 2010).

This study, which constitutes the first phase or stage of analysis of the study that will continue in our institution, has as its main limitation the small number of the sample. However, the significant improvement observed in adherence to pharmacological treatment and in the quality of life of these patients, as well as the positive results related to life habits, reinforce the importance of this type of initiative.

6 CONCLUSION

The actions coordinated by a multidisciplinary team consisting of physicians, medical students, professionals of the pharmacy, and social assistance services, improve adherence to both pharmacological and non-pharmacological medical treatment and, consequently, improve the quality of life of patients with heart disease in outpatient treatment.

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