Research Article

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Level of knowledge in outpatient cardiac rehabilitation in adults with chronic coronary artery disease in a family medicine unit in Mexico

Abstract

Introduction: Ischaemic heart disease is the leading cause of mortality in the world and in Mexico. Outpatient cardiac rehabilitation is a non-pharmacological secondary prevention measure, whose application and study are limited in the Mexican population. Therefore, the aim of this study was to identify the level of knowledge of outpatient cardiac rehabilitation in Mexican adults.

Material and methods: An observational, cross-sectional, descriptive study was carried out in a family medicine unit in Mexico. Men and women aged 40 to 80 years old with chronic coronary heart disease were included. A sample calculation was made for a prevalence of n=240 adults. The Coronary Artery Disease Education Questionnaire Short Version (CADE-Q SV) and a sociodemographic data questionnaire were used. The univariate analysis of qualitative variables was performed by frequencies and percentages. For quantitative variables, the type of distribution was determined by statistical test criteria (Kolmogorov-Smirnov, considering a $p > 0.05$) using median and interquartile ranges (IQR 25, 75).

Results: Of a total of 240 participants, 72.2% were male, the median age was 69 years old and 93% had systemic arterial hypertension. 57.3% and 30.4% had a good and great level of knowledge of outpatient cardiac rehabilitation, respectively.

Conclusions: The level of knowledge of outpatient cardiac rehabilitation is good in the study population, however, longitudinal studies with multivariate models are needed to determine the factors influencing the level of knowledge of cardiac rehabilitation.

Keywords: cardiovascular disease, cardiac rehabilitation, ischaemic heart disease

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Introduction

Ischaemic heart disease is one of the leading causes of death worldwide, closely related to the increase in cardiovascular risk factors and non-communicable diseases, which contributes significantly to morbidity and healthcare costs, making it a public health problem.[1,2] A secondary prevention measure is cardiac rehabilitation in patients with chronic ischaemic heart disease.[3] Cardiac rehabilitation includes several non-pharmacological interventions, which aim to limit the harmful physiological and psychological effects of cardiac diseases. The aforementioned allows the patient to return to daily life as fully and quickly as possible.[4] Cardiac rehabilitation includes physical training, health education, quality of life, cardiovascular risk management and psychological support. All these actions are individualised according to the needs of patients with heart disease.[5,6]

There are three phases of cardiac rehabilitation. The first phase takes place in the hospital setting within the first 3 to 4 days after the cardiac event, implementing actions such as personal hygiene, subtle movements such as sitting up, movements within the hospital bed and breathing movements.[6,7] The second phase consists of physical preparation, which should be performed three times a week, depending on the cardiovascular risk stratification obtained. This includes aerobic exercise and dietary guidance, with monitoring of pulse and systemic blood pressure. It also considers the degree of exertion and mainly support for reintegration into working life.[8] The third phase is developed autonomously by the patient and involves increasing and maintaining functional capacity. It requires a perfect understanding of their disease, with emphasis on nutritional control and the biopsychosocial aspect. The duration of this last phase is lifelong, so monitoring and supervision must be carried out in conjunction with the multidisciplinary health team.[8] Despite the known benefits of outpatient cardiac rehabilitation in the Mexican population, its study, dissemination, implementation and participation are limited.[9,10] Regardless of the documented benefits, cardiac rehabilitation remains an untapped resource due to many factors, including patient attitudes.[11,12] Probably the main problem in phase three of cardiac rehabilitation is the lack of knowledge about it. This leads to poor adherence to pharmacological treatment in subjects with systemic arterial hypertension (SAH) in primary care units in Mexico,[13] low

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adherence to diet and physical exercise, and non-participation in inpatient and outpatient cardiac rehabilitation programmes.[14]

The first starting point towards improving cardiac rehabilitation is to identify the level of knowledge about it. There are several instruments for its assessment such as the CADE-Q SV Coronary Artery Disease Education Questionnaire Short Version.[15,16] This instrument measures knowledge of cardiac rehabilitation, health status, risk factors, exercise, nutrition and psychosocial well-being.[17] Studies on the level of knowledge of outpatient cardiac rehabilitation are limited in the scientific literature worldwide and in the context of the Mexican population, so the aim of the present study is to identify the level of knowledge of cardiac rehabilitation.

Material and methods

An observational, cross-sectional, descriptive study was conducted. Subjects of both sexes, aged 40 to 80 years old, diagnosed with chronic ischemic heart disease for more than one year, starting from the last cardiac event, according to the clinical practice guidelines, with comorbidities associated with cardiovascular risk, such as systemic arterial hypertension, type II diabetes, dyslipidemia, chronic obstructive pulmonary disease, obesity, smoking, and physical inactivity. Subjects with a history of medical training in cardiology were excluded. The study was carried out in the Family Medicine Unit No. 64 of the "Instituto Mexicano del Seguro Social" (Mexican Institute of Social Security (IMSS, for its acronym in Spanish)), during February 2023 to November 2023. The present study was granted the registration number R-2023-1408-012 by the Local Health Research Committee 1408 of the "Instituto Mexicano del Seguro Social."

Sample size calculation and sampling type

Non-probability convenience sampling was used, and a sample size calculation was performed using the OpenEpi[31] statistical calculator with a confidence level of 95%, with a total population of 4206 and an anticipated frequency of 17%, resulting in n = 240.

Qualitative variables (knowledge of outpatient cardiac rehabilitation, participation in cardiac rehabilitation programmes, age, sex, education, occupation, cardiovascular risk factor and number of infarctions) were shown as frequencies and percentages. For the quantitative variable age, normal distribution was determined using the Kolmogorov-Smirnov test (p > 0.05), skewness coefficient (-0.5 to 0.5) and kurtosis coefficient (-0.2 to 0.2). Data with non-Gaussian distribution were represented with median and interquartile ranges (IQR, 25, 75).

The level of knowledge was assessed with the short version of the Coronary Artery Disease Education Questionnaire (CADE-Q SV) which is validated with a Cronbach's alpha (a > 0.7), in its Spanish version[16] and consists of 20 items and five domains: medical condition, risk factors, physical activity, nutrition, and psychosocial risk.

Results

Of 240 subjects, 72.2% were male, with a median age of 69 years old. 56.8% had primary school education and 56.8% were retired or pensioned (Table 1).

82.9% of the patients did not participate in any cardiac rehabilitation programme and 88% of the patients had suffered a myocardial infarction. 94.2% and 63.9% of the subjects had systemic hypertension and type 2 diabetes, respectively (Table 2). Regarding the level of cardiac rehabilitation, 57.5% of the subjects were classified as good, 1.6% as poor and 0.4% as insufficient (Table 3).

Table 1 Socio-demographic characteristics of subjects in outpatient cardiac rehabilitation

General variable	n= 250 (%)
Sex [a]	
Male	174 (72.2)
Female	66(27.5)
Age, median IQR (25, 75), years [b]	69 (63, 76)
Profession [a]	
Retired-Pensioner	137 (56.8)
Merchant	14 (5.8)
Manual worker	23(9.5)
Non-medical professional	18(7.5)
Medical professional	3 (8)
Household	45(18.7)
Education [a]	
Illiterate	6(2.5)
Can read and write	22(9.1)
Primary school	92(38.2)
Secondary school	71(29.5)
Technical school	28(11.6)
Professional	21(8.7)

[a] Values are presented in frequencies and percentages

[b] Values are presented in median; IQR = Interquartile ranges.

Table 2 Clinical characteristics and comorbidities of subjects in outpatient cardiac rehabilitation

General variable	n=240(%)
Participation in cardiac rehabilitation [a]	
Yes	41(17.1)
No	199(82.9)
Number of acute myocardial infarctions [a]	
One	212(88)
Two or more	25(10.4)
High blood pressure [a]	
Yes	227(94.2)
No	13(5.4)
Type 2 Diabetes [a]	
Yes	154(63.9)
No	86(35.7)
Dyslipidaemia [a]	
Yes	64(26.6)
No	176(73)
Obesity [a]	
Yes	58(24.1)
No	181(75.1)
COPD [a]	
Yes	24(10)
No	216(89.6)
Smoker [a]	
Yes	87(36.1)
No	153(63.5)
Sedentary lifestyle [a]	
Yes	94(39)
No	146(60.6)

[a] Values are presented in frequencies and percentages

[b] Values are presented as median; IQR= Interquartile Ranges; COPD= Chronic Obstructive Pulmonary Disease

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Table 3 Level of knowledge of outpatient cardiac rehabilitation

General variable	n= 240(%)
Level of knowledge of outpatient cardiac rehabilitation	
Excellent	73(30.4)
Good	138 (57.5)
Acceptable	24 (10)
Poor	4(1.6)
Insufficient	1(.4)

aValues are presented in frequencies and percentages

Discussion

Regarding the socio-demographic profile, the male sex predominated. This may be explained by the fact that clinical research has identified male sex as a risk factor for higher rates of coronary heart disease and mortality related to acute myocardial infarction compared to female sex as it is related to oestrogen concentration.[18,21] These data present similarities with Gabriela Ghisi, where the male sex represented the majority of the population studied, but differ in terms of the main objective, which was a multinational validation of the Coronary Heart Disease Education Questionnaire Short Version (CADE-Q SV).[19] The median age found in the subjects of the present study was 69 years old. This is explained by the correlation of age with blood vessels, which leads to changes secondary to arteriosclerosis and the prevalence of any vascular disease increases significantly with each decade of life.[20] These data are similar to a multi-country comparative study of knowledge levels in Brazil and Canada with an average age of 64 years old.[22]

Regarding occupation and level of education, it was found that most of the subjects were pensioners or retirees and had primary schooling. Although these factors are not considered to have a major impact on cardiovascular risk stratification, it has been shown that they may contribute to the risk of developing coronary heart disease.[18] This is explained by the fact that in Mexico the majority of the population has only completed basic education, and that there is a large percentage of the population that is not economically active.[23] This is due to the fact that the impact of educational level on participation and knowledge of cardiac rehabilitation programs directly influences patients' understanding and adherence to these programs.[32] These data are consistent with the Grase study, which identified differences between men and women regarding socioeconomic status. Men reported that work was a more significant barrier to their participation in cardiac rehabilitation due to their role as providers in the family. On the other hand, women, who tend to have a lower socioeconomic status and are older at the time of a cardiac event, may have less access to a car, which creates greater transportation barriers.[33] These data are similar to studies of the Latin American population in which the predominant level of education was primary school, and the employment status was that of retiree.[19,22]

Among the cardiovascular risk factors found in the study, the presence of systemic arterial hypertension stands out. The association of acute myocardial infarction with hypertension has been demonstrated and is recognised for the adverse cardiovascular outcomes it represents, as in the INTERHEART results, high blood pressure was associated with an 18% risk of first myocardial infarction.[24] Based on data provided by Ghisi et al.,[22] systemic arterial hypertension is a predominant risk factor; therefore, it is an important risk factor.[22]

In relation to the number of infarctions, it was observed that most of the subjects studied had an acute myocardial infarction. This may be explained by the fact that after a cardiac event, patients choose to improve their lifestyles, decreasing the risk of acute myocardial infarction.[25] Something similar was reported by Ghisi et al.,[22] where only 8 of 115 patients, was not their first acute myocardial infarction.[19]

Regarding participation in cardiac rehabilitation programmes, it is noted that most of the patients surveyed did not participate in such programmes. This is due to the fact that, in Mexico, participation in available cardiac rehabilitation programmes is low and the coverage of these programmes is even lower; it is also mentioned that there are knowledge barriers about the benefits of these programmes.[26,27]

In regard of the main objective of the present study, we found a predominance of good knowledge of outpatient cardiac rehabilitation. This may be attributed to the fact that the protocol for comprehensive care of the infarction code in Mexico recommends implementation of cardiac rehabilitation for patients at the first level of medical care.[29] Furthermore, underlying diseases such as type 2 diabetes, hypertension and dyslipidaemia have non-pharmacological measures that can modify the level of cardiovascular rehabilitation knowledge. These data are similar to those found by Ghisi et al.,[22] in 2013 where they found that participants in Brazil had good general health status and they compared the understanding of the disease with health care delivery conditions, environmental and socioeconomic determinants.[23] In contrast, Svavarsdóttir et al.,[30] explored changes in knowledge related to the disease at hospital admission and 6-month follow-up, applying the CADE-Q SV, where the majority of subjects obtained a good level of knowledge, which is similar to that found in the present investigation.[30]

In the present study it was identified that the scores belonging to the excellent knowledge level mostly attended cardiac rehabilitation. Data that are similar to the study conducted by Gustavo Arrieta in 2022, which studied the effectiveness of educational intervention with a hybrid cardiac rehabilitation programme in relation to the level of knowledge, demonstrating the effectiveness of participation in rehabilitation after a cardiac event, it was established that those who received cardiac rehabilitation improved their level of knowledge related to the disease and health behaviours.[28]

As limitations of the present study, it is acknowledged that, being a cross-sectional study, it does not allow a real approach to the causal phenomenon of the factors that influence knowledge of outpatient cardiac rehabilitation. It is also acknowledged that, being a descriptive study, there are no inferential statistical measures or measures of clinical relevance. Additionally, being a single-centre study, the population and sample representativeness are low.

As a limitation of the following study, there is selection bias due to the inclusion of subjects with a predisposition to have a low level of knowledge, as they did not participate in cardiac rehabilitation programs. The strengths of this research are that it is a first approach to identifying the level of knowledge about cardiac rehabilitation in the Mexican population and in "Instituto Mexicano del Seguro Social" (IMSS, for its acronym in Spanish). This is a starting point for analytical and longitudinal studies with multivariate models to establish the factors that may influence the level of knowledge of outpatient cardiac rehabilitation. The results obtained can be extrapolated to subjects with similar characteristics to those included in the research in the context of the IMSS in Mexico.

Conclusion

The level of knowledge of outpatient cardiac rehabilitation is good in Mexican subjects in a first level medical unit in the IMSS, however, further longitudinal, multicentre studies and multivariate models are needed to confirm the findings shown here.

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Acknowledgments

Conflict of interest

The authors declare no conflict of interest.

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