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CARDIOPULMONARY REHABILITATION AMONG PATIENTS WITH HEART AND CHRONIC OBSTRUCTIVE PULMONARY DISEASE IN A HOSPITAL IN TIRANA

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Ключові слова: *етіологія, фізична активність, серцева хвороба, обізнаність, персональні звички*

Abstract. *Cardiopulmonary rehabilitation among patients with heart and chronic obstructive pulmonary disease in a hospital in Tirana. Ledi Necaj. It is a well-known factor that the implementation of cardiopulmonary rehabilitation leads to a decrease in the number of deaths and morbidity, however, this method is not widely used in Albania. One of the possible factors of low demand is the ignorance of patients regarding the benefits and effectiveness of this method. The purpose of this study is to find out the level of awareness of patients with cardiopulmonary diseases. During the*

study, a cross-sectional survey method was used among patients with this disease. Interest in and use of this rehabilitation was assessed using questionnaires that were given to 690 patients who underwent a course of treatment in university clinics and research hospitals that provide cardiopulmonary resuscitation services. The results of the study show that a third of patients learned information about cardiopulmonary rehabilitation (CPR) from medical personnel, and the other part received it from doctors. Despite the fact that almost half of the patients knew that they should perform certain physical activities and exercises to maintain their positive dynamics in relation to cardiopulmonary disease, only one third of the patients understood that such everyday activities as climbing stairs and a brisk walk down the street do not constitute threats to their heart and lungs, respectively. It was also found that a significant part of the patients regularly played sports. Certain types of exercises were offered to one half of the patients, at that time, the rest of them performed various exercises. 69% of all patients who were given detailed information about CPR were ready to participate in this program. Despite the fact, that numerous people were ready to undergo this method of rehabilitation, not all of them were sufficiently knowledgeable and did not fully understand the essence of this technique. Also, an important factor in the positive dynamics of the patient's recovery is his relationship with the doctor and medical personnel involved in the treatment of patients with cardiopulmonary diseases.

Реферат. Серцево-легенева реабілітація пацієнтів із серцевою та хронічною обструктивною хворобою легень у лікарні в Тірані. Леді Нечай. *Загальновідомо, що впровадження серцево-легеневої реабілітації приводить до зниження кількості смертей і захворюваності, однак цей метод не має широкого застосування в Албанії. Одним з можливих факторів низького попиту є необізнаність пацієнтів щодо переваг та ефективності цього методу. Мета дослідження – з'ясувати рівень поінформованості хворих на серцево-легеневі захворювання. У ході дослідження використовувався метод перехресного опитування пацієнтів із цим захворюванням. Зацікавленість і застосування такої реабілітації оцінювали за допомогою опитувальників, які роздали 690 пацієнтам, що пройшли курс лікування в університетських клініках і науково-дослідних лікарнях, що надають послуги серцево-легеневої реанімації. Результати дослідження показали, що третина пацієнтів дізналася інформацію про серцево-легеневу реабілітацію (СЛР) від медперсоналу, а інша частина – від лікарів. Незважаючи на те, що майже половина пацієнтів знала, що для підтримки позитивної динаміки щодо серцево-легеневої патології їм необхідно виконувати певні фізичні навантаження та вправи, лише третина пацієнтів розуміла, що такі повсякденні дії, як підйом сходами і швидка ходьба вниз по вулиці не становлять загрози для їхнього серця та легенів відповідно. Також встановлено, що значна частина хворих регулярно займалася спортом. Половині пацієнтів пропонувалися певні види вправ, при цьому решта виконували різні вправи. 69% усіх пацієнтів, які отримали детальну інформацію про СЛР, були готові брати участь у цій програмі. Незважаючи на те, що багато людей були готові пройти цей метод реабілітації, не всі вони були достатньо обізнані й не до кінця розуміли суть цієї методики. Також важливим фактором позитивної динаміки одужання пацієнта є його взаємовідносини з лікарем та медичним персоналом, який займається лікуванням хворих на серцево-легеневі захворювання.*

The largest number of deaths were caused by complications of diseases of cardiovascular aetiology. I. Grigoletto et al. note that one of the first places on this list is occupied by chronic lung diseases – they occupy the fourth place [1]. Therefore, it is not surprising that such health measures as cardiopulmonary rehabilitation are carried out in different forms. Using peer-reviewed scientific evidence, controlled studies, and rigorous systematic reviews, A. Timmis et al. established that mortality due to complications of cardiovascular and chronic lung diseases decreased by 25% [2]. Due to the involvement in cardiopulmonary rehabilitation (CPR) of physical exercises, positive dynamics of the course of these diseases were shown. Therefore, it can be concluded that CPR eases the course of the disease, helps in improving the quality of life, good supervision and reduces risk factors for complications [3-5]. Given this, CPR was introduced into clinical practice in many developed countries such as the USA, Canada, and Austria [6].

Despite such good results, only a few patients used CPR services – 15-30% of patients with cardio-

vascular diseases and 2% with pulmonary diseases, these statistics are provided by M.J. Page et al. [7]. Such low results in the application of CPR are possible due to insufficient information of patients, encouragement of patients by doctors and medical personnel, small amount of information provided. Therefore, each patient who is assigned to CPR should have a sufficient amount of information received from the medical staff regarding his case.

In Albania, CPR has not been widely used, so it is believed that that patients' awareness of the benefits of this method is low. The provided information should contribute to greater encouragement and active involvement of the patient in accepting participation in this program. Therefore, the main task of this study was to find out the number of people who are willing and not indifferent to participate in CPR [8, 9]. The obtained information on risk factors for the development of cardiopulmonary rehabilitation is an important step in the prevention and prophylaxis of cardiopulmonary diseases. Providing this information to patients in medical facilities by doctors enables them to maintain optimal health

through lifestyle changes. Only half of patients are aware of the need to perform appropriate physical exercises, which are the main part of rehabilitation, as well as to change their lifestyle (smoking, drinking alcohol, poor diet) [10, 11].

As stated in the scientific article by J.J. Cuthbert et al. many patients, due to their ignorance of CPR, believed that daily physical exercises could harm their well-being and worsen their condition, which is completely inappropriate in this case [12]. This once again emphasizes the insufficient amount of information provided regarding CPR to cardiopulmonary patients.

Also, one of the main conditions of CPR is involvement at an early stage. Under such circumstances, the mortality rate from cardiopulmonary diseases, the number of hospitalizations and secondary diseases decreases. I. Grigoletto et al. is convinced that CPR is an effective solution in patients with chronic respiratory diseases and chronic obstructive pulmonary disease (COPD) [1].

As stated in the work of the above-mentioned in the article by M.T. Arnold et al., another factor in the low rates of participation of patients in CPR is the insufficient number of clinics providing these services, the discrepancy between rehabilitation methods in different clinics [8]. Medical centres not having a CPR program noted that there is a lack of qualified specialists, lack of financing, equipment and profitability [13].

Therefore, it can be concluded that, in most cases, patients with cardiovascular or respiratory diseases should undergo CPR and possess a sufficient amount of information to be sufficiently encouraged and active in undergoing this program. The purpose of this study is to find out the level of awareness of patients about cardiopulmonary diseases and factors determining the effectiveness of cardiopulmonary rehabilitation.

MATERIALS AND METHODS OF RESEARCH

In the course of this study, an empirical research method, in particular, a survey, was used. This survey was offered to 690 patients of three university hospitals and three clinics in the capital of Tirana, where CPR services are provided in the rehabilitation and physical therapy departments. Patients were 62±13 years old, New York Heart Association functional class II (35%) or III (65%), had a mean ventricular septal dimension of 17±5 mm, and a left ventricular ejection fraction of 53±15%. Left ventricular outflow gradient was observed at rest in nine patients (mean 51±24 mmHg), and six patients had an implanted defibrillator.

Patients performed an average of 41±8 hours of basic exercise test. There were no adverse events or persistent ventricular arrhythmias during the training program. The intensity of the exercises was gradually

increased from 50% to 85% during the training period from the heart rate reserve. Functional capacity, assessed using a graded exercise test [14], increased from 4.7±2.2 to 7.2±2.8 metabolic equivalents. The functional class according to the classification of chronic heart failure (division of patients by functional classes (FC) according to the tolerance of physical exertion) improved compared to the initial level by ≥1 degree in all patients, and none of them showed worsening of the condition during follow-up. Thanks to the chronotropic index, the value of the heart rate in patients was calculated.

The level of awareness of CPR was assessed during the questionnaire. The questionnaire itself was developed by the heads of the research group who participated in the study. The members of the research team formulated the questions. Then the received questions were checked to see if they fit the requirements of this questionnaire. Next, the questions were evaluated for their technical feasibility and content relevance. As a result, the questionnaire also had items assessing the patient's awareness of cardiopulmonary rehabilitation. All patients consented to participate in the study on condition of their anonymity.

The form consisted of three blocks of questions consisting of patient demographics, patient disease information, and CPR-related questions. Demographic data included the patient's age, gender, education level, occupation, and health insurance status. In the information about the patient's illness, the diagnosis, duration, course and prescribed treatment were clarified. In the third block, questions were formulated to clarify the patient's level of knowledge regarding cardiopulmonary rehabilitation and cardiopulmonary diseases in general. Also, in this block, the patient's awareness of the symptoms of these diseases (for example, angina pectoris), the provided opportunities that the patient can use during hospitalization and whether CPR was offered to the patient at that time, physical habits (regular sports, the type, duration, and frequency of these exercises) were clarified in this block, risk factors that affect the heart and lung systems (smoking, alcohol consumption, poor nutrition), a source that provides information to the patient about his disease and the patient's desire to participate in the CPR program. All these data were collected using a semi-structured personal interview and then processed. Patients were chosen according to the nature of the course of their disease – subacute and acute patients of the cardiopulmonary department.

The empirical data is statistically processed with the statistical package SPSS Statistics 17.0 and the standard package of the MS Excel programme. After analyzing the respondents' answers, the results were calculated and the percentage ratios were derived.

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

RESULTS AND DISCUSSION

Data obtained during the survey were collected among 690 people suffering from heart or lung diseases. The average age of the interviewees was 62 ± 13 years old, and the average duration of the disease was 8 weeks, which indicates the presence of a subacute or chronic type of disease. All types of patients' diseases can be divided into two groups: lung and heart diseases. The following lung diseases were found among the participants of the survey: chronic obstructive pulmonary disease (10.9%), asthma (2.2%), lung damage caused by systemic diseases (1.4%), others (1.9%). Heart diseases include coronary-arterial (35.3%), coronary bypass (5.8%), hypertension (5.8%), heart valve defects (4.1%), chronic heart failure (10.4%), heart transplantation (3%), others (2.3%). Diabetes, rheumatoid arthritis, and osteoarthritis can be distinguished among accompanying diseases, which in general make up 9% of the total number. 20 patients with hypertrophic cardiomyopathy were included; patient characteristics are:

- mean age 62 ± 13 years;
- atrial fibrillation 25%;
- coronary artery disease 5%;
- diabetes 10%;
- heart attack 10%;
- hypertension 40%;
- chronic obstructive pulmonary disease 5%.

Seven patients had a significant left ventricular outflow gradient (>30 mmHg) at rest, and 11 patients had non-obstructive physiology. Also, with the help of stress echocardiography, two patients with a gradient caused by physical activity were detected (gradient of physical load 54 mmHg and 38 mmHg, respectively). In patients with obstruction at rest, the outflow gradient at rest increases from 51 to 73 mmHg at the time of stress echocardiography. Also, a patient after myectomy took part in the survey, and another patient had a concomitant heart disease. Six patients out of all had an implanted cardioverter-defibrillator. Seventeen patients received beta-blockers (daily dose of bisoprolol 4.7 mg), three received disopyramide, six received furosemide (average dose 50 mg per day) and two patients received calcium blockers verapamil. Before the start of the study, echocardiography showed that 75% of patients had normal indicators of the ejection fraction of the left ventricle ($\geq 50\%$), while 25% of patients

had dysfunction of this ventricle, with an average fractional ejection of 31%. 13 patients had left atrial enlargement (hypertrophy), and 5 patients had diastolic dysfunction.

During the basic exercise test, 60% of patients had a normal blood pressure response to exercise. There was no case of a decrease in blood pressure or a significant decrease in arrhythmia during *GXT* (graded exercise stress test) with a limited symptom [14]. In 75% of cases, the stress test was stopped due to dyspnea in patients.

All selected patients had to fill out a questionnaire. Some questions among certain blocks remained unanswered. The number of unfilled questions ranged from 3 to 20 from all collected answers. The calculated chronotropic index was below 0.8 in all patients (mean value 0.4 ± 0.2), while only two patients had an index greater than 0.7.

Also, the patients performed an average of 41 ± 8 hours of the physical test. The general impression of the patients was positive, and no one experienced a deterioration in their health. Most of them reported that they noticed a positive trend in the course of their rehabilitation.

Despite the fact that physical abilities improved in almost all patients, a slight decrease in metabolic equivalent was observed in 61 one-year-old patients. He had significant left ventricular dysfunction and nonobstructive hypertrophic cardiomyopathy in the hypokinetic stage, with moderate left ventricular dilatation. Two patients did not notice any improvement, which may be due to obstructive physiology and preservation of fractional ejection fraction.

Cardiopulmonary rehabilitation in chronic obstructive pulmonary diseases improves limb muscle function. During exercise, muscle fibres can be classified into two types: slow (S or type I) and fast (F or type II) types. Fast fibres have a low (FF, high glycolytic potential) or high (FR, high oxidative potential) potential to fatigue. CPR affects fibres of type IIb (with low oxidative potential) and, with the help of structural and biochemical changes, transforms them into fibres of type IIa (greater capacity for oxidative metabolism). These changes collectively lead to a decrease in the synthesis of lactic acid, which is produced during physical exercises. All this leads to a decrease in lung hyperventilation and dynamic hyperinflation. Shortness of breath during physical exertion is a characteristic feature of chronic obstructive pulmonary disease.

Patients can suffer from many physical, emotional and social characteristics that require a comprehensive, individualized intervention, which is offered as a personalized PR program. The factors that lead to the development of COPD include many reasons,

but the main ones are hyperinflation of the lungs as a result of mechanical limitations of the diaphragm and other respiratory muscles [15]. In other patients, functional weakness of these muscles develops when they are forced to work with a higher frequency of breathing (during physical exertion) and when the fibres of myofibrils have a shorter length as a result of hyperinflation.

Thus, exercises for training respiratory muscles are included in the CPR program, which significantly alleviates the symptoms of shortness of breath in patients with COPD. There are many devices for training the inspiratory muscles. The load achieved during training with these devices does not have a certain standardization, because it can change the voltage depending on the fluctuations of the internal air filling of each patient.

Other new IMT techniques were recently reported in M.C. Nolan and C.L. Rochester article, including an oscillating airway muscle training device and an electronic device for resistive load (TFLR) [15]. The TFLR maintains a relatively constant resistance force during the entire inhalation, adjusting to changes in the force and volume of inhalation during each act of breathing. It also has the ability to store pressure and flow data from each training session, allowing trackin-gone's training commitment and intensity over time.

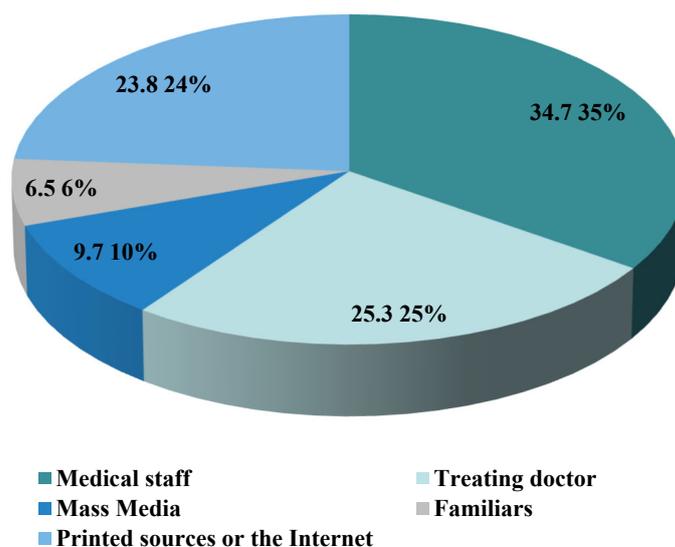
As for safety during CPR, none of the patients had any deterioration in well-being or side effects that would require the cessation of physical exercises. No patient with ventricular failure was identified

tachyarrhythmia. During the clinical trial and during the following 12 months, no worsening of the patients' condition was observed.

As for the implementation of the CPR program itself, it is divided into several stages. First, inpatient exercises are performed for three weeks, followed by outpatient classes lasting twelve weeks. Regarding rehabilitation monitoring, a non-invasive method is used. It is also recommended to perform CPR in outpatient conditions for at least twenty weeks under the supervision of medical personnel, and in case of positive dynamics and improved indicators, it is possible to continue to perform CPR remotely.

CPR is also indicated for patients awaiting transplantation or with other therapeutic indications. These patients undergo rehabilitation in functional classes for three months. But each rehabilitation program must be created individually, carried out under strict supervision and in specialized centers. Monitoring before, during and after training is a crucial element given the lability of these patients and is therefore suggested to be supervised by specialized personnel.

It was also established that almost half (327 patients, 48.2%) of the patients know where they could get CPR services, while only 136 patients (34.9%) knew that they could undergo this rehabilitation in the clinic of physiology and rehabilitation in Turkey. The data are schematically depicted in Figure.



A source of knowledge about CPR

Among patients with heart or lung diseases, 342 (49.9%) were aware that physical exercises are necessary for the normal functioning of the

cardiovascular or respiratory system. Among 280 patients (41.7%) who were informed by their doctors about the need for CPR, only 62.7% of them received

information about the exercises that should be performed in their cases. Also, only 222 patients (33.1%) received instructions for performing physical and breathing exercises within the inpatient type of cardiopulmonary rehabilitation.

In one of the question blocks of the questionnaire, the interviewees were asked what actions they consider harmful to their health. It was also possible to choose more than one item. Through the survey, it was found that half of the patients (342 and 308 patients, 49.8% and 45.1%) thought that brisk walking and climbing stairs could be harmful to their cardiopulmonary system. Also, the majority of patients believed that these physical exercises, which

are the basis of CPR (quick climbing stairs, running, fast walking, lifting weights) were dangerous for their condition, while the rest had no idea about such a method as CPR.

Another type of question was questions about physical activity and exercise habits in the patient's life. During the study, it was found that 31.1% (211 patients) actively and regularly engaged in exercise, and walking was the most regular activity (27.8%). There were also patients engaged in team sports (3 patients, 0.4%), gymnastic exercises (9 patients, 1.3%), others (9 patients, 1.3%). Among these patients, only 54% (96 patients) did enough sports for CPR (Table).

Physical activity of patients

Physical exertion	Quantity of patients, %
Walking and climbing stairs	49.8
Actively and regularly were engaged in exercises	31.1
Team sports	0.4
Gymnastic exercises	1.3
Others	1.3

When interviewing patients about other factors that can affect their health related to cardiopulmonary disease, it was found that 106 patients (15.5%) knew about the negative impact and risk of certain factors that negatively affect a positive course and successful treatment of their disease. Other negative factors include the pharmacological effect of certain drugs and their side effects, diet, obesity, alcohol consumption and smoking.

Among all the patients who were interviewed and participated in this study, who were given detailed information about the positive dynamics of the course of cardiopulmonary diseases, after completing the survey, 436 patients (69%) decided that they agree to participate in the CPR program.

The results of this study showed that the level of knowledge about cardiopulmonary rehabilitation was insufficient among patients with cardiopulmonary problems, mostly due to the insufficient amount of information provided by the medical staff during the treatment of the patient.

In this regard, it can be concluded that the information provided in the framework of cardiopulmonary rehabilitation should improve the quality of life of patients and help avoid risk factors for cardiopulmonary diseases. As noted by C.M. Nolan et al., that providing further education of patients and

solving possible and existing problems regarding cardiac rehabilitation during hospitalization are important measures being able to increase the further positive dynamics of the course of the disease [16]. In work by M.J. Page et al. showed that the level of awareness of patients about health problems is a fundamental requirement that affects the motivation of patients to change their lifestyle from the point of view of non-specific prevention [7]. Thus, the last question of the questionnaire in the study by D. Mendes Xavier et al. [17] was aimed at finding out whether they were ready to participate in CPR, and most patients, after a detailed introduction to the program, answered that they were ready to participate in the cardiopulmonary rehabilitation program.

In most cases, almost the majority of these patients were referred for cardiac rehabilitation, and only thirty percent of them were actually registered and attending the program. As for pulmonary rehabilitation, the indicators are much lower.

Studies have shown that the most important factor in the success of referral and participation in cardiopulmonary resuscitation was the instructions of the patient's doctor. In this study, authors noted that for a small percentage of patients who were informed about CPR, their primary source of information was from physicians, although some respondents obtained

information from other sources. Given this finding, physicians being responsible for treating patients with heart and lung disease should prioritize CPR education to increase awareness and participation in CPR. Print and audiovisual media are also important means of informing patients about health education.

Research by H. Aboumatar et al. showed that the percentage of taken measures was significantly better when the level of education increased [18]. In addition to training physicians who treat cardiopulmonary patients, working with the media to emphasize the importance of CPR would be beneficial. Many clinical trial results have shown that modification of risk factors can prevent the development of clinical cardiopulmonary disease and delay its progression. Patient's recognition of a cardiopulmonary risk factor is an important first step in preventing cardiopulmonary disease. Many prevention efforts have focused on raising awareness; therefore, it is necessary to conduct effective preventive studies to assess the knowledge of the target population group. In this study, very few patients knew all cardiopulmonary risk factors, indicating a lack of awareness of the CPR program in patients with COPD and other cardiopulmonary diseases. Therefore, risk factor prevention education allows patients to maintain optimal cardiopulmonary health through lifestyle changes.

Only about half of the patients in study by A. Burge et al., were aware of the importance of physical exercise, which is an integral part of both prevention and avoidance of cardiopulmonary risk factors [19]. However, most patients believed that activities of daily living that are relatively strenuous and most components of exercise pose a cardiovascular risk. Therefore, there is an insufficient level of knowledge about the importance of physical exercises during the CPR program. In addition to proper knowledge, increasing patients' confidence in their daily activities with CPR should help them be more compliant and take better care of their physical and psychological health.

All hospitalized patients with cardiopulmonary disease should be referred for cardiopulmonary rehabilitation before discharge from the hospital. In this study, only a few patients performed cardiopulmonary exercise. This indicator may be related to the fact that doctors who serve patients are not sufficiently knowledgeable about CPR. This is stated in the evaluations of the effectiveness of pulmonary rehabilitation by Mark Williams, a member of the American College of Cardiology and Cardiopulmonary Rehabilitation of the American Heart Association.

Participation in cardiac rehabilitation has been shown to reduce cardiovascular mortality, secondary

coronary events, rehospitalizations, and disability related to cardiovascular disease, as well as disease-related depression and anxiety. Therefore, participation in cardiovascular exercise should be encouraged at an early stage. Similarly, pulmonary rehabilitation is an important part of the recovery of patients with chronic respiratory diseases, and there is strong current evidence that pulmonary rehabilitation is beneficial for patients with COPD and other cardiopulmonary chronic diseases. Therefore, in light of several findings and reports, all eligible patients with cardiopulmonary disease should be recommended and referred for CPR. However, the results of this study show that patient awareness and knowledge of cardiopulmonary resuscitation services is insufficient, mainly due to inadequate guidance and a small amount of information provided.

The study by S.S. Moazeni et al. [20] was conducted in parallel with this study which studied the level of awareness and knowledge of cardiopulmonary resuscitation among medical professionals who treated cardiopulmonary patients. The results of this study are still being analyzed, but preliminary results showed that the level of knowledge was low (unpublished data). Thus, improving CPR referral rates requires a better level of awareness, primarily among medical professionals.

Cardiopulmonary rehabilitation services appear to be limited worldwide. Cardiac rehabilitation programs were available in only 56% of centres in Latin America, and there is little variation from state to state in the number of programs per population and across regions of the United States. Likewise, A. Chacin-Suarez et al. [21] showed that the characteristics of cardiac rehabilitation differ in hospitals and regions in Denmark. The Spanish National Health Service concluded that 40% of surveyed hospitals do not offer cardiac rehabilitation programs. A study conducted in England reported significant discrepancies between cardiac rehabilitation programs and the recommendations of national health and rehabilitation centres.

Facilities for ongoing exercise and support groups for lung patients are less developed in Northern Ireland. Centres without cardiopulmonary rehabilitation programs noted a lack of trained staff, financial constraints, and lack of perceived benefit or profitability. None of the above studies mentions the level of knowledge and awareness of patients regarding CPR, or whether this factor is a major limitation to the use of CPR. The results of the study by Z. Louvaris and I. Vogiatzis [22] showed us that as a first step, medical institutions should increase the level of knowledge among the population who have the right to CPR.

The main limitation of this study is that the results cannot be generalized to a larger population. First, the questionnaire used in this study was developed by members of the CPR research team and lacks exploratory reliability [23-25]. Second, this study was conducted in centres where cardiopulmonary resuscitation services were available to some extent, so a higher level of awareness could be expected. Knowledge and awareness of CPR would likely be expected to be much lower among patients treated in hospitals without CPR services [26-29]. However, this is still the first study in these regions of the population to demonstrate this type of cardiopulmonary profile, and these findings are important to highlight the importance of cardiopulmonary resuscitation and the lack of sufficient concern by health professionals in this field. Further research should be conducted to investigate the level of awareness of CPR among healthcare professionals who play an important role in the treatment of heart and lung diseases.

CONCLUSIONS

1. The education of patients in the field of cardiopulmonary rehabilitation, including multidisciplinary interventions for secondary prevention, is recognized as an element that contributes to the restoration of quality of life, as well as the reduction and control of disease risk factors. The level of awareness of patients about health issues is a fundamental requirement that affects the motivation of patients to change their lifestyle from the point of view of prevention. Cardiopulmonary programs give patients hope, add to their knowledge of their disease, and provide the initial impetus for initiation and

effectiveness for patients in their goal to extend their lives, and most importantly, to live better.

2. Cardiorespiratory rehabilitation in patients has proven to be an important part of the treatment and control of cardiopulmonary disease, as can be seen from the articles included in this review. Studies show a significant improvement in various physiological parameters in these patients, regardless of their functional class, during structured physical training programs. The fact that most studies demonstrate improvements in exercise performance, quality of life, and daily activities is of particular importance.

3. The results of this survey, which was conducted in large centres with physical therapy and rehabilitation clinics that provide cardiopulmonary rehabilitation, albeit at a limited level, showed that the proportion of patients who had knowledge of cardiopulmonary resuscitation was low among patients who desperately needed and wanted to know about these services. This study identified the need for community-level educational programs and the need to increase awareness of cardiopulmonary rehabilitation through mass media. More attention should be paid to referral to cardiopulmonary rehabilitation to overcome the current lack of knowledge about this program for the prevention of chronic cardiovascular diseases.

4. Research in this field of medicine will increase patient interest in CPR. Also, most countries should implement this rehabilitation program in clinics where patients with heart and lung diseases stay.

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