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The Realization of Yoga Therapy In The Complex Rehabilitation Of Patients After Myocardial Infarction.

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ABSTRACT

The evaluation of persons' life quality after myocardial infarction, temperament correction and intensity of their personal reactions to the disease are an integral part of the rehabilitation process. The goal of the research lies in the description of the effects of the author's rehabilitation program with elements of yogic breathing on the life quality of the patients after myocardial infarction in follow-up period. The patients of the main group were engaged in the author's rehabilitation program; the comparison group took a cure of conventional rehabilitation scheme in Ukraine. The effectiveness of the rehabilitation programs was determined by the quality of live indicators through standardized method "Quality of Life in *C*ardiovascular Disease." As part of study found, the positive dynamics on the total life quality was observed in both groups of patients. It should be noted that 76.7% of patients in the main group hadn't considered their lives invalid by the end of the study. But only 60% of patients had this figure in the comparison group. The sources of patients' anxiety caused by this pathology were analyzed, and the tetrad of reasons that caused the maximum reduction in quality of life, was found out, namely: the need for treatment, restriction of physical efforts, and emotional stress, reduce vitality in daily life.

Keywords: myocardial infarction, rehabilitation program, life quality.

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INTRODUCTION

Today, cardiovascular diseases due to their wide extension and drastic consequences, cause one third of reasons for disability, significantly affect life expectancy, and its quality, impact the loss of human life potential [1, 2].

Myocardial infarction (MI) constitutes about one third of all acute coronary diseases and at the same time is the most common cause of death of the patients. Nowadays the questions of prevention and rehabilitation after MI, the level of which is improper, remain open [3].

Evidently, MI can significantly affect the physical condition, psychology, human behavior, emotional reactions, and can change persons' place and role in public life. Normally, the patient's state of health is assessed, physical, laboratory, and instrumental data are analyzed, but the information on psychological or emotional problems that arise due to illness is usually ignored. However, it is not always that objective reduction of pathological changes is followed by patient's gain in life [4, 5, 6].

The study on quality of life (QL) of people after MI is becoming increasingly important, both at individual and group levels, as it allows to assess the impact of the disease on the physical, psychological and social functions of the patient, to determine the effectiveness of rehabilitation programs, to predict the course of the disease [7, 8, 9].

One of the predominant factors for improving the patients' quality of life is the adequate physical activity that serves as a generating and stimulating point in solving the problem of prevention or minimization of complications resulting in acute myocardial infarction.

However, if a person wants to direct his efforts to restore health, he has consciously to respond to stress caused by the disease with relaxation. Proven by practice of several millennia, such a system of treatment as yoga therapy is based on the methods of conscious awakening body power. The special section of yoga – pranayama is devoted to breathing practice. Pranayama is a technique of conscious breathing control, which includes a system of breathing exercises.

Proper breathing is one of five basic principles of yoga. The positive effect of pranayama has been proven on major physiological systems of human body: nervous, respiratory, cardiovascular, genitourinary, endocrine, digestive and the musculoskeletal. Yoga classes can reduce emotional stress and anxiety, relieve pain and promote peaceful sleep that have the overall impact on improving the life quality.

For the reasons set out above, the necessity to solve the problem of preventing or minimizing complications as a result of acute MI, to improve the quality of life of the patients by searching for new scientifically based, safe and affordable rehabilitation programs has been stated [9, 10, 11]. One of the promising directions is to develop means of rehabilitation with the elements of yogic breathing – pranayama.

METHODS

Close upon 60 people who were in the phase of recovery after acute IM and had completed the full course of hospital treatment in heart disease department at Lutsk City Clinical Hospital took part in the research. The main group and the comparison group consisted of 30 male patients each formed by random sampling technique. The patients of the main and comparison groups took rehabilitation in specialized rehabilitation department at Lutsk City Clinical Hospital. People's age varied from 47 to 60, the average age in the main group was 52,69 ± 3,9, it was 53,40 ± 3,22 in the comparison group. People above 60, medically ill and with mental disorders were not involved in the study for the difficulty of carrying out the research.

The patients of comparison group took a course of rehabilitation in accordance with conventional pattern common in Ukraine for patients after MI in clinic, convalescent home or rehabilitation institution [11]. This course includes: morning hygienic gymnastics; daily routine exercise program of gradual expansion of muscular work, dosed walking; stair climbing, individual and few-group lessons, together with an exercise physiologist, doing physical exercises, with the elements of cold water treatment and domestic load.

The patients of the main group were engaged in the author's rehabilitation program, which is different from the conventional set of actions: use of yoga therapy for curative and recreational purposes; availability of educative part, which positively motivated the patients to daily activities and control of their behaviour through systematic training of Committee manner for respiratory cycles, insight into general rules of pranayama and keeping a diary of self-control.

Breathing gymnastics was used after each medical physical culture complex had done. As far as the sick people performed asanas, it is important to strictly meet the requirements in yoga and canons, because the safety practice depended on them. Breathing exercises were done in a sitting position. The study started and ended with relaxation which teaches the ability to relax and abreact. Unique effect of asanas is also related to the fact that they were performed in a meditative state of concentration, in slack pace, to a calm relaxing music, under the special breathing control and with certain fixation of attention, which is specific for each asana. There are 5 levels of pranayama by uptake and complexity. Each level has its own recommendations for the realization of various breathing techniques. We used two methods recommended for the propedeutic level: Uddzhaii Pranayama (there are 13 "internal" level of this technique) and Vilom Pranayama (there are 9 stages of uptake). These techniques are recommended for fragile patients or with chronic stress people, for persons with cardiovascular disease and patients who are unable to perform yoga asana for health reasons.

Methodology of the author's program was based on the principles of complexity and individualization and included: strict dosage and gradually increase in physical and respiratory loads by volume and intensity, quantity and complexity of exercises, taking into account the features of clinical disease and co-morbidity, age of patients, laboratory results and instrumentation data. Furthermore, the conventional division of the patients into functional groups due to the degree of their physical activity was carried out, that gave the opportunity differently, in accordance with the individual characteristics of the patients, to choose the safe rehabilitation program with classes, enriched by respiratory exercises.

To define efficacy of patients' rehabilitation programs in both groups and to make correction, prompt, flow and stage controls were used. The prompt control was carried out daily to determine the immediate reaction of the patient to physical exercise (immediate training effects) during the first two weeks; the prompt control was carried out the next period during the visits to polyclinic to the primary care physician or exercise physiologist at least three times a week. The flow control was carried out every 2 weeks from the date the patients of the main group and the patients of the comparison group were discharged from heart disease department. The patients had to visit the rehabilitation department with their diaries for self-control, where the covered distance, the number of steps (stairwells) were marked, and their state of health during and after studies, the level of psychic tension were indicated. The stage control was performed at release of the patients of the main group and the comparison group from heart disease department at Lutsk City Clinical Hospital, and at intervals of two, six and twelve weeks after the release of the patients from hospital.

The effectiveness of rehabilitation programs was measured by the complex of parameters, which have various degrees of information, patient' LQ is among them. Determining the LQ of patients after MI was done by using standardized method "Quality of Life in *C*ardiovascular Disease" suggested by A. Gladkov and co-authors (1982), which makes possible a quantitative assessment of patients' LQ both by a total score and individual scales. Based on the research findings, the decrease of the patients' LQ testified the decline in the quality of life but the increase stated its improvement.

RESULTS

The trend data of the patients after MI by method "Quality of Life in *C*ardiovascular Disease" are shown in **Table 1.**

DISCUSSION

The analysis of the dynamics of patients' states after MI by means of the method of "Life Quality" revealed low rates in both groups at the baseline, namely, in the main group, the figure was (-9,27 ± 1,38) points, in the

comparison group – (-9,33 ± 1,25) points. None of the patients had the total figure of LQ, that exceeded zero limit prior to the rehabilitation. During the study a positive trend in increasing the total figure of LQ was observed.

The positive dynamics of LQ index increase was observed in the main group of patients in 6 weeks of study in comparison with the baseline data; this index increased by 3.37 points and was (-5,90 ± 0,88) points (p <0.05); it increased by 5.74 points in 12 weeks and was (-3,53 ± 0,53) points (p <0.01). In the comparison group of patients the increase in the total index of LQ by 1.85 points was observed from week 6, and constituted (-7,48 ± 0,54) points; it increased by 2.63 points in 12weeks, and was (-6,70 ± 0,56) points (p <0.05) (**Table 1**).

Table 1: The trend data of LQ in the patients of the main group and the comparison group during the research (M ± m).

Indicators LQ, points	At the baseline	In 2 weeks	In 6 weeks	In 12 weeks
Main group	-9,27±1,28	-8,27±1,03	-5,90±0,88*	-3,53±0,53**^
Comparison group	-9,33±1,25	-8,67±0,88	-7,48±0,54	-6,70±0,56*

* – p<0,05, ** – p<0,01, ^ – p<0,05.

A significant difference was also traced in 12 weeks of observation between the total figures of LQ in the main group of patients and in the comparison group of patients, respectively – (-3,53 ± 0,53) points and (-6,70 ± 0,56) points (p <0, 05) (**Table 1**).

It should be noted that during the investigation there was redistribution in groups of patients with very low (-10) – (- 12) and low (-7) – (- 9) initial indicators of LQ. If prior to rehabilitation the patients of the main group and the comparison group with very low LQ index constituted more than 50.0% of the patients' total number, then starting from the 6th week of observation and to the end of the study not a single patient was registered in special group of risk.

As for the group of patients with low initial indicators of LQ, the following results were achieved: the significant positive dynamics was revealed in the patients of the main group in 6 weeks of observation, that is characterized by increasing the number of patients in this group, it had almost doubled since the baseline, namely 13 persons against 6 at the baseline (p <0.05). The patients with low initial LQ index were never registered in the main group in 12 weeks.

In the comparison group of patients, ranging from the 2nd to the 6th week of observations recorded twice as many patients were stated from the baseline with index within LQ (-7) – (- 9) points, namely 16 (p <0.05), 18 (p <0.01) people; in 12 weeks 15 people were added, compared to 8 at the baseline. However, it should be noted that there were 15 people with low initial LQ index in the comparison group in 12 weeks of observation, but no patients with these results (p <0.001) were registered in the main group.

It is worth noting that the number of patients in the main group with LQ index in the range of (-3) – (- 6) points had been increased since the 6th week of observation, namely 16 persons against 6 at the baseline (p <0 01) and 18 persons in 12 weeks of observation (p <0.01). As for the comparison group, the increase in the patients with the same LQ index was stated in 12 weeks of the research – 12 people against 5 at the baseline (p <0.05). Special emphasis should be placed on the fact that no patients with LQ index in the range of 0 – (- 2) points were registered in the comparison group, excluding the patients of the main group where 11 patients with indicators (p <0.001) were registered at the end of the study.

The sources of patients' anxiety caused by old MI were analyzed with the help of the "Life Quality" method and it was found out that the order of ranking the causes of LQ decrease in the main group of patients and the comparison group was approximately the same. As far as the patients of the main and comparison groups are concerned the tetrad of reasons for decreasing LQ index had the major important for them at the baseline, namely the need to be treated, limiting physical exertion and emotional stress, reduced activity in daily life and a number of other reasons.

In the course of the study, we observed a positive dynamics of reducing the value of the most common causes of LQ decreasing in both groups, but that tendency was more prominent in the main group of patients.

Thus, according to the observation, a significant decrease in the number of people who had marked the reason "the need to be treated" for LQ reduction was stated in 12 weeks of research compared with the initial results, namely, the patients in the main group by 62.6% ($p < 0.01$), the patients in the group of comparison by 16.6%, but the difference did not reach the level of reliability in the comparison group. At the end of the research the significant changes in the main group of patients in the reason in question were noted compared with the results in the comparison group, respectively - 7 (23.3%) and 18 (60%) patients ($p < 0.05$).

Restrict physical exertion and emotional stress are the most common causes of reduction in LQ in the main group (25 (83.3%) patients) and comparison group (26 (86.7%) patients) at the baseline. Within 6 – 12 weeks of the research positive dynamics to decreasing the number of patients in the main and comparison groups, who stated this reason, was observed, namely, 15 (50%) ($p < 0.05$) and 8 (27.6%) patients ($p < 0.01$) in the comparison group – 18 (60%) ($p < 0.05$). The relevant changes were observed in the main group of patients in the reason in question compared with the results of the comparison group, respectively – 8 (26.7%) and 18 (60%) patients ($p < 0.05$) at the end of the research.

Restrict activity in daily life as one of the reasons for the decline in LQ was given by more than half the patients in both groups at the baseline, but the percentage of patients' answers after MI changed during the research. With 6-week research a significant decrease in the number of persons indicating the reason was observed in the main group, namely 5 (16.7%) ($p < 0.05$) people, in 12 weeks – 3 (10%) people ($p < 0.01$). As for the comparison group, the significant changes were observed in 12 weeks of observation, namely 9 (30%) ($p < 0.05$). The significant changes were seen in the patients of the main group in the reason, comparing the results of the comparison group, respectively – 3 (10%) and 9 (30%) patients ($p < 0.05$).

Attention is drawn to the fact that such reasons for the decrease in LQ as limitation in work and restriction in leisure were indicated by more than a third of respondents in both groups of patients at the baseline. However, positive dynamics to eliminate these causes of reduction in LQ was observed only in the main group of patients in 12 weeks of observation ($p < 0.05$), that testified the increase in social activity of the patients in the main group, the desire to return to the active working career. The same is true of the reason "pay reduction". As for the comparison group, the study also showed the positive dynamics, but no significant changes were found.

Restrict physical training and sports, as one of the reasons for the decline of LQ, and rationing were marked by 11 (36.7%) patients at the baseline. The positive dynamics to reduce the number of these causes in the patients' records of both groups was registered during the research, but the significant differences were traced in the main group of patients starting with the 12^{th} week of observation, pertaining to restrict physical training and sports, namely the reason was stated by 3 (10%) by people. The significant changes were found out in the main group of patients on the reason in question compared with the results of the comparison group, respectively – 3 (10%) and 9 (30%) patients ($p < 0.05$) at the end of the research.

Ban on smoking and changes in sexual life were also the causes of decrease in LQ marked by one in five patients in both groups. During the research the significant changes to reduce the causes that had a negative influence on LQ were outlined, but relevant difference was not found out.

As a positive marker of the effectiveness of the chosen author's rehabilitation program for the main group patients can be regarded the fact that at the end of the study 23 (76.7%) of patients did not consider their lives invalid ($p < 0.01$). The same index was registered in the comparison group, but 18 (60%) patients ($p < 0.05$) had it.

CONCLUSIONS

The effectiveness of the author's rehabilitation program of the patients after MI with the elements of yoga therapy, namely pranayama, was confirmed by the positive dynamics, that marked increase in the total index of LQ in the main group of patients, in which 36.7% of patients exceeded zero limit at the end of the study ($p < 0.05$). It should be noted that 76.7% of patients in the main group hadn't considered their lives invalid ($p < 0.01$) by the end of the study. The sources of patient's anxiety were revealed, and the tetrad of

reasons for decreasing LQ in both groups of patients was defined, such as: the necessity to be treated, limiting physical efforts, removing psychic tension, and decreased activity in daily life.

The complex therapy of patients after myocardial infarction should include yoga classes with breathing exercises that have proved their effectiveness as a method of recreation for fragile patients or broken by chronic stress people. In this regard these classes should be chosen individually, in accordance with the specific symptoms of the disease, and they should be long-termed.

The application of the method "Life Quality" revealed its relatively high sensitivity to testing patients after MI, that affords grounds for the recommendation it as a separate criterion for assessing personal characteristics of the patients in this category, and the determination of the effectiveness of rehabilitation programs.

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