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## Anxiety and depression intensity and the quality of life of patients with an implanted pacemaker

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### Summary:

**Introduction.** The consequences of anxiety and depression in various forms affect the course of cardiovascular diseases - including patients with an implanted pacemaker. To improve the quality of care for such patients, it is important to understand the scale of the problem, as well as to determine the impact of the above-mentioned symptoms on the patients' quality of life.

**Aim of research.** The aim of the study was to assess the relationship between the quality of life and the anxiety and depression intensity on patients with implanted pacemakers.

**Material and methods.** The study involved 100 patients hospitalized at the SPSK 4 cardiology clinic in Lublin with an implanted pacemaker. The method of diagnostic survey and research tools were used - the WHOQOL - Bref questionnaire to assess the quality of life and the Hospital Anxiety and Depression Scale (HADS-M). The results of the research are summarized in the statistical analysis.

**Results.** The average score obtained by the respondents on the depression scale was 6.05 points with a standard deviation of 4.47. On the anxiety scale, this result was 7.99 points with a standard deviation of 4.54. The results indicating disorders in both scales concern values higher than or equal to 11 points. On the depression scale they were obtained by 16% of the respondents, while on the anxiety scale 26%.

The conducted analyses showed a statistically significant relationship between the level of anxiety and depression and the quality of life of the respondents in all domains. The overall declared quality of life of the respondents and the self-esteem of the health condition were the lower, the higher the anxiety and depression severity coefficient in the study group.

**Conclusions.** 1. Most of the studied patients with pacemakers do not have high levels of anxiety and depression. 2. The occurrence of anxiety and depression affects the quality of life of respondents after pacemaker implantation in all domains. 3. Patients with high levels of anxiety and depression have a lower assessment of their quality of life and health.

**Key words:** quality of life; pacemaker; anxiety; depression

## **Introduction**

The occurrence of symptoms of anxiety and depression in healthy people or people suffering from various diseases has been observed for many years. However, to this day, researchers from various fields are arguing whether the occurrence of anxiety and depression symptoms can be classified as the presence of one disease entity. Despite the discrepancies, the consequences of the above-mentioned affective symptoms seem to be known. Increased stress, sense of guilt, decreased self-esteem, sleep disorders or decreased appetite are just a few of the consequences of the coexistence of anxiety and depression [8]. All of them are factors that determine the quality of life of patients in each age category. Monitoring and observation of the severity of anxiety and depression is important in this case because their long occurrence may, in particular, aggravate the course of cardiovascular diseases - including patients with an implanted pacemaker [2, 4].

The pacemaker is designed to reduce the risk of a life-threatening arrhythmia. Dependence of the patient on the device supporting the work of the heart may increase anxiety, limiting the functioning of the patient in various areas of life, thus reducing the patient's quality of life [7]. To improve the quality of care for such patients, it is necessary to thoroughly understand the psychological factors that determine quality of life - in this case, the presence of anxiety and depression [9].

## **Objective of the work**

The aim of the study was to assess the relationship between the quality of life and the anxiety and depression intensity on patients with implanted pacemakers.

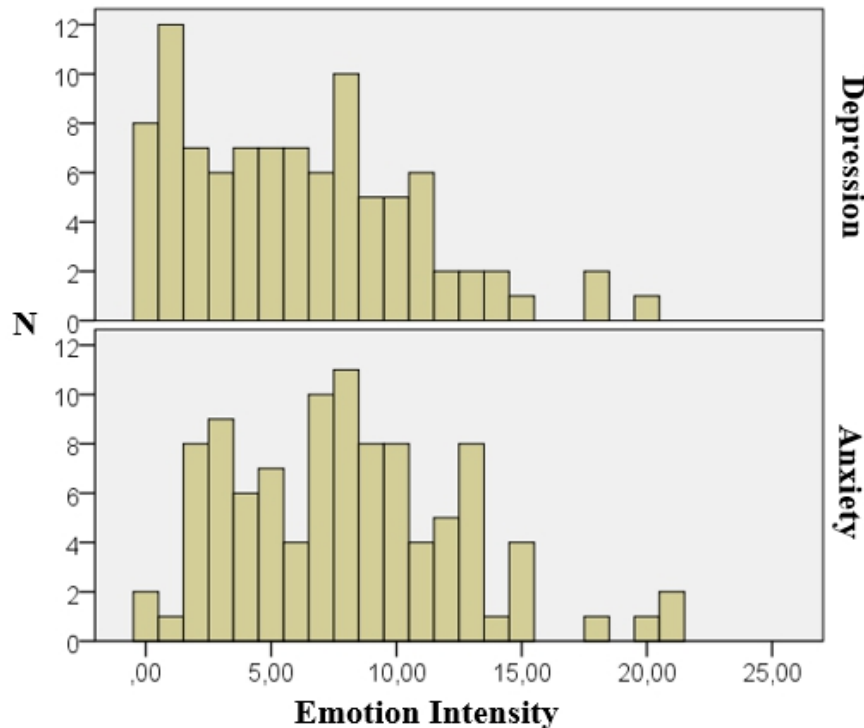
## **Material and methods**

The study was performed on a group of 100 patients with implanted pacemakers hospitalized at the SPSK 4 cardiology clinic in Lublin, after obtaining the consent of the head of the organizational unit and the bioethics committee. The research was carried out by the method of diagnostic survey with the use of the standardized questionnaire to assess the quality of life WHOQOL - Bref and the Hospital Anxiety and Depression Scale (HADS-M).

The obtained results were summarized in the statistical analysis, where the level of significance was  $p < 0.05$ .

## Results

The results of the analysis of the relationship between the quality of life of the respondents and their level of anxiety and depression are presented below. The intensity of negative emotions was tested using the HADS-M questionnaire. The distributions of the results are presented in Figure 1.



**Fig. 1. The intensity of anxiety and depression in the study group.**

The average score obtained by the respondents on the depression scale was 6.05 points with a standard deviation of 4.47. The performed Shapiro-Wilk test showed statistically significant deviations of the obtained distribution of results from the normal distribution,  $SW = 0.944$ ;  $p < 0.001$ . This is also indicated by the Skewness coefficients ( $SKEW = 0.712$ ) and kurtosis ( $KURT = 0.309$ ), although this deviation is not significant and concerns especially the asymmetry of the distribution - it was right-skewed with a predominance of relatively low scores over high scores.

The average score obtained by the respondents on the anxiety scale was 7.99 points with a standard deviation of 4.54. The performed Shapiro-Wilk test showed statistically significant deviations of the obtained distribution of results from the normal distribution,  $SW = 0.962$ ;  $p = 0.005$ . This is also indicated by the Skewness coefficients ( $SKEW = 0.597$ ) and kurtosis ( $KURT = 0.289$ ), although the deviation is not significant. Also in the case of the distribution of anxiety, there was a skewness of the distribution, although it was smaller than in the case of the distribution of depression.

The results indicating disturbances in both scales concern values higher than or equal to 11 points. On the depression scale they were obtained by 16% of the respondents, while on the anxiety scale 26%.

Table 1 presents the results of the analysis of the correlation between negative feelings of anxiety and depression and the quality of life of the respondents.

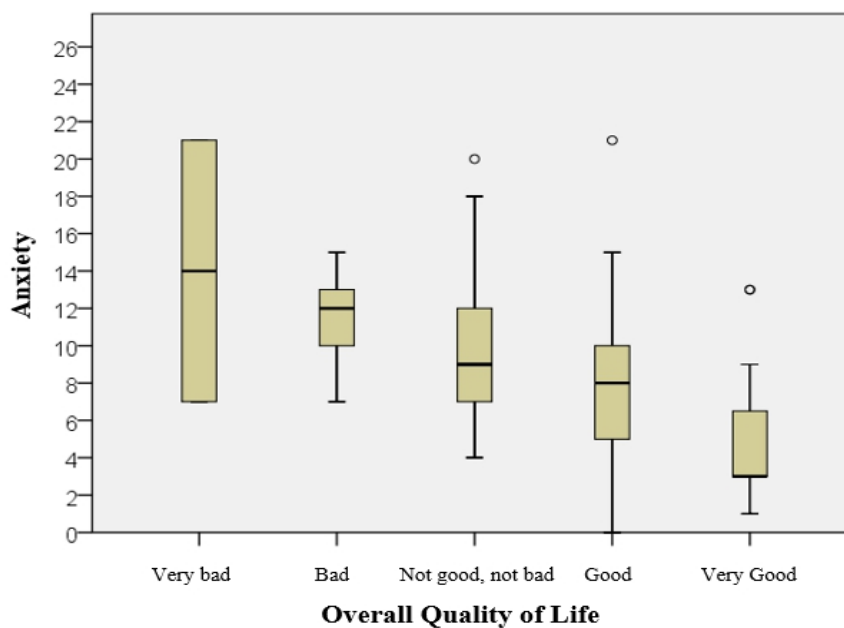
**Table 1. Correlation between the sense of anxiety and depression and the quality of life of the respondents.**

Variable	Value	Physical domain	Psychological domain	Social relations	Environment	Overall quality of life	Self-assessment of health condition
Anxiety	Rho	-0,461	-0,432	-0,245	-0,438	-0,486	-0,280
	P	0,000	0,000	0,014	0,000	0,000	0,005
Depression	Rho	-0,659	-0,656	-0,445	-0,577	-0,576	-0,519
	P	0,000	0,000	0,000	0,000	0,000	0,000

rho - Spearman's rho coefficient; p - test probability

The conducted analyses showed statistically significant, moderate relationships between anxiety and quality of life in domains of physical and psychological aspects, functioning environment, general quality of life, and weak relationships between anxiety and the field of social relations and self-assessment of health.

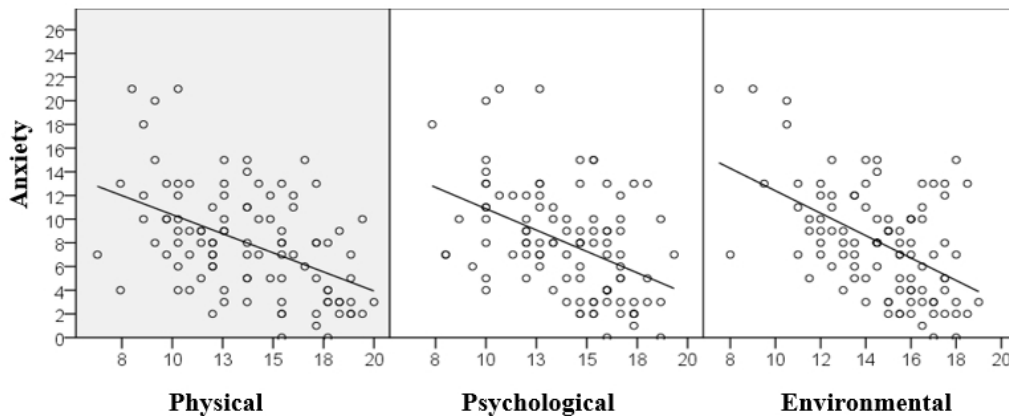
The above-mentioned relationships are presented in the charts below.



**Fig. 2. General quality of life and the level of anxiety of the respondents.**

If higher was the level of anxiety of the respondents, the lower was their overall quality of life. The relationship between the variables was moderate.

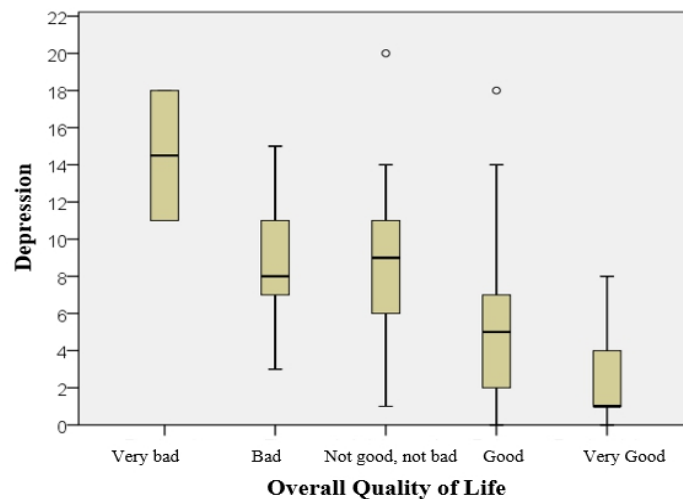
Figure 3 presents the relationship between the anxiety of the respondents and the domains of quality of life - psychological, physical and functioning environment.



**Fig. 3. The level of anxiety of the respondents and the quality of life in the field of physical, psychological and functional environment.**

If higher was the level of anxiety of the respondents, the lower was the satisfaction with one's own functioning in the physical, psychological and environmental fields. The analysis performed with the use of the Spearman's rho index showed statistically significant, moderate relationships between depression and quality of life in terms of physical and psychological aspects, the field of social relations, the assessment of satisfaction with the functioning environment, general assessment of the quality of life and self-assessment of health.

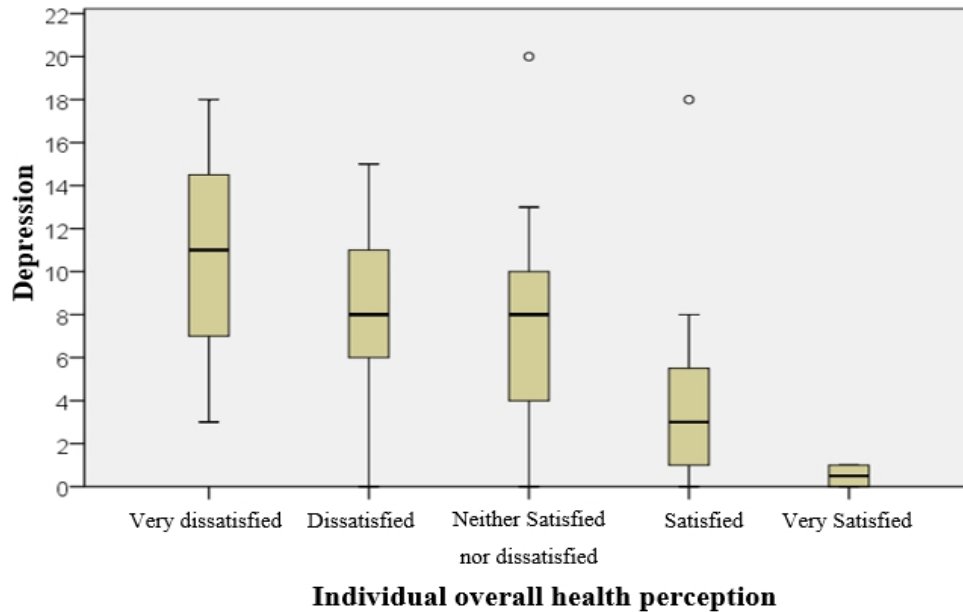
Figure 4 shows the relationship between the general quality of life of the respondents and the level of depression.



**Fig. 4. The overall quality of life of the respondents and the level of depression.**

If higher was the level of depression experienced by the respondents, the lower was the overall quality of life declared by them.

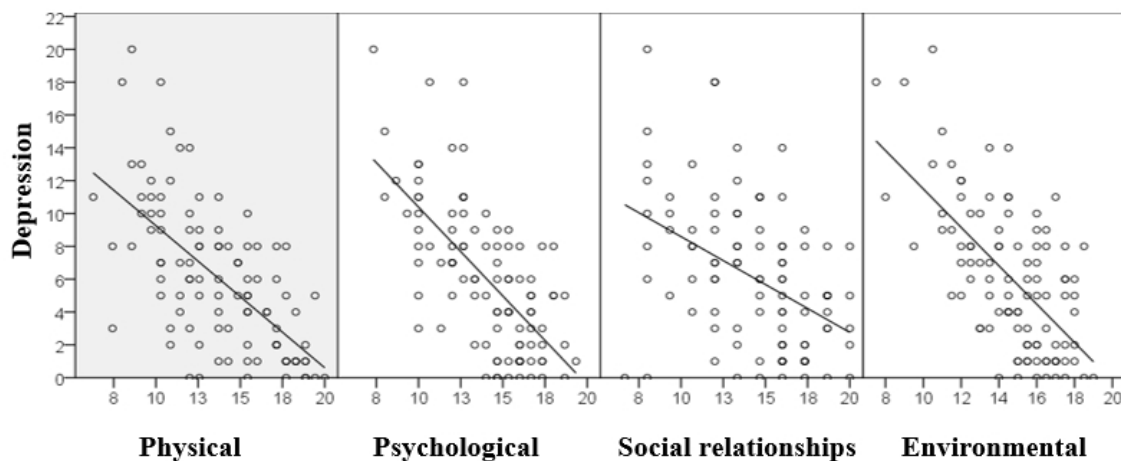
Figure 5 presents the relationship between the intensity of depression and the respondents self-assessment of health condition.



**Fig. 1. Self-assessment of the health condition of the respondents and the intensity of depression.**

The conducted analyses showed that the higher the severity of depression in the respondents, the lower was the self-assessment of their health condition.

Figure 6 contains a visualization of the relationship between the severity of depression in the respondents and the quality of life dimensions.



**Fig. 2. The intensity of the respondents depression and the domains of quality of life - physical, psychological, social relations and the environment of functioning.**

If higher was the severity of depression in the respondents, the lower was their self-assessment of functioning in the physical and psychological realms, social relations and the environment of functioning.

## Discussion

The occurrence of anxiety-depressive symptoms is currently one of the leading health problems in society. This is important because the occurrence of depression significantly affects the quality of life and the efficiency of functioning in its various aspects [1].

Research on the level of anxiety and depression assessed using the HADS M scale showed the impact of both the sense of anxiety and depression on the quality of life and health of the respondents. A linear relationship between the studied variables was obtained. The conducted study showed the impact of anxiety and depression on the quality of life in all its domains. Deterioration in functioning and the overall quality of life along with an increase in the intensity of anxiety and depression has also been noticed in the studies of other authors.

Research tools were used for the research carried out by P. Kozieł on a group of 112 patients with cancer of the breast gland, including the same ones as in the own research. In the study group, as in the author's own research, the impact of the occurrence of anxiety and depression assessed with the use of HADS M on all domains of the quality of life was demonstrated [6].

The overall assessment for which we can clearly indicate the presence of symptoms of anxiety and depression in the study group is 26% and 16%, respectively. Another study of 250 patients with implanted pacemakers obtained similar results. A high level of anxiety was observed in 27.2%, and depression in 14% of patients [7].

The anxiety-depressive symptoms occurring in patients with chronic cardiological diseases may take various forms, which causes problems in differentiating them with changes in the clinical state resulting from the underlying disease. A decrease in the quality of life among these patients may be manifested by a reduction in physical fitness, intensification of pain, deterioration in mental or social functioning. The occurrence of the above-mentioned dysfunctions is attributed to a high level of anxiety [5].

The results of the conducted study may have a positive reflection in the improvement of care for cardiac patients. Understanding the importance of psychological factors in relation to the quality of life of patients should result in improved cooperation in the therapeutic team, including the participation of psychologists and their cognitive behavioural therapy. The importance of psychological intervention is clearly attributed to the reduction of anxiety, depression and improvement of the quality of life of patients with an implanted pacemaker [3].

## Conclusions

1. Most of the studied patients with pacemakers did not experience high levels of anxiety and depression.
2. The occurrence of anxiety and depression affects the quality of life of respondents after pacemaker implantation in all its domains.
3. Patients with high levels of anxiety and depression have a lower assessment of their quality of life and health.

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