

# Intensification of anxiety and depression, and personal resources among women during the peri-operative period

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## Abstract

**Aim.** Surgical treatment of women due to gynaecological disorders is the cause of stress and may lead to psychological changes. Studies concerning human response to stress emphasize the importance of the effect of the level of the sense of coherence, anxiety, depression, dispositional optimism and skills of expressing emotions on the quality of feelings and experiences in difficult situations.

**Materials and methods.** The study covered 232 women who had undergone gynaecological surgery due to various causes. Permission to conduct the research was obtained from the Bioethical Commission at the Medical University in Lublin. The study was carried out with the use of the State-Trait Anxiety Inventory (STAI), the Beck Depression Inventory, Courtauld Emotional Control Scale (CECS), and Life Orientation Test – Revised (LOT-R).

**Results and conclusions.** The study showed that investigations of the sense of coherence, level of anxiety and depression, and personal resources allow determination of the characteristics of patients who should be covered with special psychoprophylactic care during the peri-operative period. In addition, the results of own studies obtained may be used for the development of adequate principles of psycho-prophylactic management in the course of the diagnostic-treatment process with respect to women who had undergone surgical treatment due to gynaecological disorders.

## Key words

Anxiety, depression, personal resources, women, peri-operative stress

## INTRODUCTION

Surgical treatment of women due to gynaecological disorders is the cause of stress and may lead to psychological changes. Studies concerning human response to stress emphasize the importance of the effect of the level of the sense of coherence, anxiety, depression, self-esteem, dispositional optimism and skills of expressing emotions on the quality of feelings and experiences in difficult situations, irrespective of cultural affiliation. Global self-esteem appears to be a good marker of the direction of emotional responses. In turn, the assessment of personal resources is the factor which directs the behaviour of an individual while seeking solutions in difficult situations [1, 2, 3, 4].

In recent years, attempts have increasingly more frequently been observed to approach health and illness differently from that according to the pathogenetic orientation. An important effect of these efforts is salutogenic orientation. The concept of salutogenesis (the origin of health) assumes that health and illness are not dichotomic, but constitute a continuum. This means that each individual maintains health to a higher or lower degree, as long as he or she lives. No one is 'totally' healthy or 'totally' ill. Everyone, at some point, is on this continuum. Opposite to the pathogenetic approach – which focuses on factors inducing specified

disorders (somatic and psychological), methods of treatment, and on the prevention of the evolution of the disease into a chronic state – the salutogenetic concept deals with factors which promote health and avoidance of the occurrence of diseases. This concept also attempt to establish why some individuals maintain or quickly restore health, despite their functioning in adverse conditions, and the effect of many stressors and pathogenic agents [3, 5]. According to the concept of salutogenesis, the level of health is determined by such factors as: generalised resistance resources (grr), stressors, sense of coherence (SOC), behaviours and life style [3, 6].

Generalized resistance resources denote both the psychological characteristics of an individual, as well as the characteristics of the natural, material, and the socio-cultural environment, which are helpful in the process of coping with stress, maintenance of health and the struggle with disease [3, 6, 7, 8, 9, 10, 11]. An assessment of human behaviour is based to a great extent on the resources and adaptation capabilities of an individual [12]. Nevertheless, it should be remembered that individuals differ not only with respect to the potential resources available, but also from the aspect of readiness and willingness to use the resources which they have at their disposal. Based on this, A. Antonovsky [5] states that a person who views life as comprehensible, manageable and meaningful has better chances to fully exploit the potential resistance resources than an individual deprived of such an orientation. The author considers that the sense of coherence, especially its intensity, is the main psychological factor responsible for the occurrence of health or illness.

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According to Antonovsky [5], those with a strong SOC are better able to avoid threats and dangers, and more rarely experience apathy and hopelessness. They have better chances to become engaged in activities of health promoting character, and better interpersonal relations. In addition, in stressful situations, they are predisposed to respond with positive emotions, which constitute a motivational basis for effective acting. Individuals with a low sense of coherence are characterized by decreased motivation for effective coping in difficult situations. They do not show a tendency towards seeking positive aspects, and do not perceive the emotional meaningfulness of engagement in disadvantageous situations. Antonovsky [3] expresses an opinion that the sense of coherence determines the capability for the restoration of health, and assumes that there are individuals who are characterized by a high level of some components of the sense of coherence, and a low level of the remaining components. The researcher observes that the low level of comprehensibility is very rarely accompanied by a high level of manageability, because in the world which appears chaotic and unpredictable it is difficult to have a sense that one is able to face the adversities alone.

Scientific studies showed that the psychological condition of individuals characterized by weak sense of coherence was worse, whereas those with strong sense of coherence (SOC) had a low level of depression and anxiety, high resources of resistance to stress, were emotionally stable, self-confident, had skills for the creative use of their abilities, and were determined to attain success and independence [5, 9, 13, 14, 15].

The correlation between the sense of coherence, and anxiety and depression is a separate issue. Flannery et al. [16], based on the results of their studies, confirmed that a higher level of the SOC was related with low intensity of symptoms of anxiety and depression. In addition, a positive correlation was noted between the sense of coherence, and internal locus of control and social support. Studies by McSherry and Holma [17] showed that individuals with low SOC experienced anxiety significantly more often than those with mediocre or high SOC. Geyer [18], in a review article, paid attention to high negative correlations between SOC and depression and anxiety. Also, Carstens and Spangenberg [19] obtained significant correlations between the sense of coherence and depression. In their study, a low level of the sense of meaningfulness was the best predictor of depression.

The Polish researchers, Skokowski and Szymczak [20], observed the a of relationships between the sense of coherence and its three components, and trait anxiety and situational anxiety in patients prior to surgery. The researchers consider that in those who are ill, i.e. those who in a health-illness continuum, are located far from the end of health, the sense of coherence has lost its protective function consisting in alleviating anxiety tension. Szymczak [21] showed the lack of a relationship between the general sense of coherence and its two components: sense of meaningfulness and comprehensibility, and intensification of the symptoms of depression in patients during the perio-operative period. The only positive, statistically significant relationship was observed between the sense of manageability and depression. According to the author, this resulted from personal hopelessness of patients and their belief that the occurrence of undesirable losses in association with disease and treatment is highly probable.

Elements of the sense of coherence may be found in the concept of anxiety, according to Spilberger, especially with respect to the cognitive assessment of situations perceived as threatening. According to this concept, anxiety occurs when individuals are not able to grasp and process information from the surrounding world, especially those who lack coherence, obviousness and logic. The differentiation between the states of anxiety and depression is an important problem, despite the fact that these states frequently co-occur, or even overlap. Until recently, it has been considered that anxiety states are partially symptomatic depression, and that depression is a continuation of the states of anxiety. In recent years, this view has become less popular [22, 23].

In the psychological theories of depression, reference may be found to the sense of coherence and its three components, despite the fact that they do not use the language of salutogenesis [3, 24].

According to Beck's cognitive theory, depressed mood is the consequence of disorders in interpreting and arranging the information received. This concerns, among other things, an exaggeration of failures and minimization of successes, and belief about one's pown small influence on various types of events. In Beck's opinion, depressive individuals show a tendency towards pessimism concerning the future and one's own self, which is manifested in the conditions of stress, especially when the stressful situation is perceived in the categories of loss, failure or lack of hope.

It is noteworthy that modern psychology of health devotes much attention to the scope of problems concerning personal and social resources, approaching them as factors conducive for health and the quality of life of an individual. According to Moos and Schaefer [25], personal resources are 'relatively constant personal and social factors which exert their influence on individual attempts to cope with turning points in life and stress transactions'. Important internal resources mentioned in literature are: optimism, possibility of expression or free manifestation of emotions, locus of control, sense of self-efficacy and self-esteem [1, 26]. These resources exert an effect on the quality of managing difficult situations by an individual, and may cause an increase in the individual's resistance to the negative physical and psychological consequences of stressful events [27].

Optimism is of great importance for the general wellbeing of an individual and normal functioning of somatically ill patients, especially with the necessity for surgical intervention [1]. The studies conducted by Cegiełkowska-Bednarczyk et al. [28] showed that there is a relationship between the level of optimism/pessimism in somatically ill patients and experiencing anxiety. In the above-mentioned study, the patients revealed a high level of anxiety; however, pessimists requiring hospitalization and surgical treatment responded with a significantly higher level of fear and anxiety than those characterised by a mediocre level of optimism/pessimism.

According to the theory by Seligman [1], in pessimists, depression may be the consequence of a high level of anxiety, helplessness and hopelessness. However, in the researchers' opinion, this does not mean that pessimism causes depression, but only that people who are in the state of depression are, at the same time, pessimists. Each individual occupies a place in the scale from pessimism (expectation of the worst) to optimism (expectation of the best). However, it should be noted that optimists more often accept reality as it is and attempt to perceive positive aspects of bad situations,

opposite to pessimists, who deny the presence of the problem or flee from it, and more frequently surrender when facing difficulties [29].

Emotions of changing intensity and content accompany the disease for its entire duration and are associated with the deterioration of a patient's state of health, the necessity for performing a surgical procedure, or information concerning permanent consequences of the disease. Emotional responses evoked in association with disease are mainly of a negative colouring [30].

Evaluation of the sense of coherence, anxiety and depression, and dispositional optimism and emotional control may allow the indication of patients operated on due to gynaecological causes who require a special psychoprophylactic care during the peri-operative period.

The objective of the presented study was analysis of the intensification of anxiety and depression according to personal resources in women during the peri-operative period.

## MATERIAL AND METHODS

The study covered 232 women who received surgical treatment due to gynaecological disorders at Chair II and III and the Gynaecology Clinic of the Independent Public Clinical Hospital No. 4 in Lublin, and the Gynaecology and Obstetric Ward with the Admission Room at the Cardinal Stefan Wyszyński Specialist Hospital in Lublin. Permission to conduct the study was obtained from the Bioethical Commission at the Medical University in Lublin. Women without a previous diagnosis of mental disorders were qualified into the study. The study was carried out in two stages: on the day preceding the surgery and on the third day after the surgery. On those days, the respondents completed identical questionnaire forms. All the women expressed their informed consent to complete the questionnaires after the provision of information pertaining to the use of the results for scientific purposes only, and the provision of anonymity.

The questionnaires were distributed among 255 patients, and 232 correctly completed questionnaire forms were obtained from the women covered by the study. The rate of return was 90.98%. The remaining incorrectly completed or incomplete questionnaires were excluded from the study.

The study was conducted with the use of the State-Trait Anxiety Inventory STAI – C. D. Spilberger – for the assessment of trait anxiety and state anxiety (Polish adaptation), the Beck Depression Inventory (BDI) for the measurement of depression (Polish adaptation), the Courtauld Emotional Control Scale (CECS), M. Watson, S. Greer for the measurement of self-reported control of anger, anxiety and depression in stressful situations (Polish adaptation), and the Life Orientation Test (LOT-R), M. F. Scheier, C. S. Carver, M. W. Bridges, which allows the handling of dispositional life orientation expressing generalized belief concerning positive or negative expectations (Polish adaptation).

**Characteristics of the examined group.** The respondents' ages ranged from 21–76 years: 71 (31.90%) patients aged 41–50, 57 (24.57%) aged 51–60, and 53 (22.84%) aged 31–40; 25 patients (10.78%) were aged up to 30, whereas 23 (9.91%) were over 60.

Considering the education level of the women examined, 55 (23.7%) had elementary and vocational elementary

education, 115 (49.6%) secondary school education, and 62 (26.7%) university education level.

The structure of the study group with respect to the category of surgical procedure was as follows: in the group of 167 (71.98%) patients, the surgical procedure involved considerable tissue injury, whereas in 65 (28.02%) the surgery performed was associated with mediocre tissue injury.

**Statistical analysis.** The data was collected and statistical analyses performed with the use of SPSS/PC statistical software package. The data was encoded according to the prepared classification, and subsequently checked and verified. Data collected was presented in Tables.

The following tests were applied for statistical analyses:

- $\chi^2$  test for independence (nominal scales);
- t-Student (assessment of the differences between two independent groups);
- r-Pearson's correlation coefficient.

P values  $p < 0.05$  (for two-sided test) were considered as statistically significant.

## RESULTS

### Analysis of the correlation between level of the sense of coherence (SOC-29) and levels of anxiety (STAI X-1), depression (BDI) and optimism (LOT-R).

The results of statistical analysis showed significant negative correlations prior to and after surgery between the level of the sense of coherence (SOC-29) and the levels of depression (BDI) and state anxiety (STAI X-1). A negative correlation coefficient (BDI  $r = -0.26$ ; STAI X-1  $r = -0.22$ ) indicated that the level of depression (BDI) and state of anxiety (STAI X-1) decreased with an increase in the level of the sense of coherence (SOC-29). In addition, statistical analysis confirmed a positive correlation between the level of the sense of coherence (SOC-29) and the level of optimism (LOT-R) in the group of the women in the study before the surgery ( $r = 0.39$ ) and after surgery ( $r = 0.37$ ), which meant that the level of optimism (LOT-R) increased together with an increase in the level of the sense of coherence (SOC-29) (Tab. 1).

**Table 1.** Correlation between sense of coherence (SOC-29) and remaining scales during pre-operative and post-operative periods.

| Scale    | Before surgery |        | After surgery |        |
|----------|----------------|--------|---------------|--------|
|          | r              | p      | r             | P      |
| BDI      | -0.26          | 0.001* | -0.24         | 0.001* |
| STAI X-1 | -0.22          | 0.001* | -0.22         | 0.001* |
| LOT-R    | 0.39           | 0.01*  | 0.37          | 0.001* |

\*  $p < 0.05$ .

The presented study shows that in the group of patients examined, the level of depression and anxiety decreased with an increase in the level of the sense of coherence, while an increase was observed in the level of optimism during pre-operative and post-operative periods.

### Analysis of the correlation between level of anxiety (STAI X-1) and levels of depression (BDI), optimism (LOT-R) and sense of coherence (SOC-29).



Based on the results of the correlation analysis, significant positive correlations were noted between the level of state-anxiety (STAI X-1) and the level of depression (BDI) prior to and after surgery, which means that during the perioperative period the level of depression among the women in the study increased with an increase in the level of state-anxiety. In addition, statistical analysis showed negative correlations between the level of state-anxiety (STAI X-1) and the level of optimism (LOT-R) and the sub-scales Manageability (SOC Ma) and Meaningfulness (SOC Me) prior to and after surgery, which indicates that the levels of optimism, sense of manageability and meaningfulness decreased with an increase in the level of anxiety. A significant negative correlation was also observed between the level of state-anxiety (STAI X-1) and the subscale Comprehensibility (SOC C) prior to surgery, which denotes that before the surgery the level of the sense of comprehensibility among the women examined decreased with an increase in the level of anxiety (Tab. 2).

**Table 2.** Correlation between level of state-anxiety (STAI X-1) and remaining scales during pre-operative and post-operative periods.

| Scale  | Before surgery |        | After surgery |        |
|--------|----------------|--------|---------------|--------|
|        | r              | p      | r             | P      |
| BDI    | 0.34           | 0.001* | 0.32          | 0.001* |
| LOT-R  | -0.18          | 0.006* | -0.20         | 0.002* |
| SOC C  | -0.19          | 0.004* | -0.13         | 0.05   |
| SOC Ma | -0.22          | 0.001* | -0.26         | 0.001* |
| SOC Me | -0.15          | 0.02*  | -0.21         | 0.001* |

SOC general – global sense of coherence; SOC C – sense of comprehensibility; SOC Ma – sense of manageability; SOC Me – sense of meaningfulness; \* p<0.05.

The study showed that during the pre-operative and post-operative period an increase in the level of state-anxiety among the group of patients examined was accompanied by an increase in the level of depression, and a decrease in the levels of optimism, sense of manageability and meaningfulness. In addition, the study confirmed that during the pre-operative period the level of the sense of comprehensibility decreased with an increase in the level of state-anxiety.

#### Analysis of correlations between level of depression (BDI) and levels of the sense of coherence (SOC-29) and optimism (LOT-R).

Statistical analysis showed significant negative correlations between the level of depression (BDI), and the level of optimism (LOT-R), levels of sub-scales Comprehensibility (SOC C), Manageability (SOC Ma) and Meaningfulness (SOC Me) before and after surgery, which showed that an increase in the level of depression was accompanied by a decrease in the levels of optimism, sense of comprehensibility, manageability, and meaningfulness in the group of patients examined (Tab. 3).

The presented study confirms that during the peri-operative period the levels of optimism, sense of comprehensibility, manageability, and meaningfulness among the women examined decreased with an increase in the level of depression.

#### Analysis of the correlation between level of emotional control (CECS) and levels of the sense of coherence (SOC-29), depression (BDI), anxiety (STAI X-1) and optimism (LOT-R).

**Table 3.** Correlation between level of depression (BDI) and remaining scales during pre-operative and post-operative periods

| Scale  | Before surgery |        | After surgery |        |
|--------|----------------|--------|---------------|--------|
|        | r              | p      | r             | p      |
| LOT-R  | -0.27          | 0.001* | -0.23         | 0.001* |
| SOC C  | -0.26          | 0.001* | -0.20         | 0.002* |
| SOC Ma | -0.22          | 0.001* | -0.24         | 0.001* |
| SOC Me | -0.19          | 0.005* | -0.20         | 0.003* |

SOC general – global sense of coherence; SOC C – sense of comprehensibility; SOC Ma – sense of resourcefulness; SOC Me – sense of meaningfulness; \* p<0.05.

Based on the results of statistical analysis, before surgery, significant negative correlations were noted between the level of emotional control (CECS) and the level of the subscale Meaningfulness (SOC Me) and the level of optimism (LOT-R). After the surgery, significant negative correlations were observed between the level of emotional control (CECS), and the level of the subscale Comprehensibility (SOC C) and the level of optimism (LOT-R). Negative correlation coefficient indicates that in the peri-operative period an increase in the level of emotional control (CECS) was accompanied by a decrease in the level of the sense of meaningfulness (SOC Me), comprehensibility (SOC C) and optimism in the group of patients in the study. No significant relationship was observed between CECS and the remaining subscales, both prior to and after the surgery (p>0.05) (Tab. 4).

**Table 4.** Correlation between level of emotional control (CECS) and remaining scales during pre-operative and post-operative periods

| Scale    | Before surgery |        | After surgery |        |
|----------|----------------|--------|---------------|--------|
|          | r              | p      | r             | p      |
| SOC-29   | -0.07          | 0.28   | -0.11         | 0.09   |
| SOC C    | -0.03          | 0.70   | -0.13         | 0.05*  |
| SOC Ma   | -0.02          | 0.72   | -0.06         | 0.33   |
| SOC Me   | -0.015         | 0.02*  | -0.09         | 0.17   |
| BDI      | -0.03          | 0.67   | 0.04          | 0.56   |
| STAI X-1 | 0.10           | 0.12   | 0.01          | 0.93   |
| LOT-R    | -0.22          | 0.001* | -0.18         | 0.005* |

SOC general – global sense of coherence; SOC C – sense of comprehensibility; SOC Ma – sense of manageability; SOC Me – sense of meaningfulness; \* p<0.05.

The presented study shows that the levels of the sense of meaningfulness and optimism decreased with an increase in the level of emotional control before surgery, whereas an increase in the level of emotional control after surgery was accompanied by a decrease in the level of the sense of comprehensibility and optimism among the patients examined.

## DISCUSSION

During the peri-operative period, the state of health of women who receive treatment due to gynaecological disorders depended on the sense of coherence, anxiety, depression, dispositional optimism and skills of expressing emotions.

The studies confirmed that individuals with a weak sense of coherence were in a worse psychical condition, while

those with high SOC were characterized by low level of depression and anxiety, high resources of resistance to stress, emotionally stable, self-confident and possessed the skill to creatively use their abilities, were determined to achieve success, and be independent [5, 9, 13, 14, 15].

According to Bidzan et al. [31] and Jawor et al. [32], a strong sense of coherence in a group of women receiving surgical treatment due to various gynaecological causes may be an important factor in the selection of the most beneficial method of coping with the difficult situation.

In own studies, a significant negative correlation ( $p < 0.05$ ) was observed during the pre-operative and post-operative period between the level of the sense of coherence (SOC-29) and depression (BDI), and between the level of the sense of coherence (SOC-29) and state-anxiety (STAI X-1), whereas a positive correlation ( $p < 0.05$ ) was noted between the level of the sense of coherence (SOC-29) and optimism (LOT-R). This means that an increase in the level of the sense of coherence (SOC-29) is accompanied by a decrease in depression (BDI) and anxiety (STAI X-1), and an increase in the level of optimism (LOT-R). The results of the presented study obtained may indicate that patients with a strong sense of coherence will perceive stressful stimuli as a challenge rather than threat, and will try to seek positive aspects in the existing situation.

It should be emphasized that Antonovsky [3] definitely stated that the sense of coherence is a whole, and its components are mutually conditioned and strengthened. Nevertheless, the researcher considers that the motivational component of the sense of meaningfulness is most important, because the lack of this component may cause the sense of comprehensibility and manageability to be short-lasting. Analysis of the results of own studies indicate that in the perioperative period the women examined were able to perceive external and internal stimuli as cognitively meaningful. Therefore, it may be presumed that they possessed motivation and willingness to regain balance and complete efficiency, and were capable of using the countermeasure resources available.

The mean values of the sense of meaningfulness (SOC Me) obtained in own studies before and after surgery support the suggestion by Strang and Strang [33], who reported that the motivation in the struggle for the quality of life depends on the sense of meaningfulness. Similar observations were made by Nesbitt and Heidrich [34]. The sense of meaningfulness among the respondents in own studies shows their readiness for engagement in activities on behalf of the improvement of health and quality of life during the perioperative period. In addition, the mean values of the sense of coherence during the peri-operative period obtained in own studies indicate the capability of the patients for effective management of resources, irrespective of their size. According to Antonovsky [3], the adequate skill to use the resources available is more important than their diversity.

Jawor et al. [35] reported that the early post-operative period is especially important for women and requires special attention from specialists. Not preventing the development of depression-anxiety disorders in due time may contribute to their later intensification and fixation.

Own studies showed a statistically significant ( $p < 0.05$ ) positive correlation between the level of state-anxiety and the level of depression, both during the pre-operative and post-operative periods. This confirms that an increase in the level of anxiety is accompanied by an increase in the

level of depression. In addition, in own studies, a statistically significant ( $p < 0.05$ ) negative correlation was observed between the sense of state-anxiety, and optimism, sense of comprehensibility, manageability and meaningfulness, which shows that an increase in anxiety is accompanied by a decrease in optimism, sense of manageability and meaningfulness. Thus, the higher level of state-anxiety observed in the group of patients with a lower education level and treated at an older age may indicate the lack of optimism and an adequate sense of manageability and meaningfulness in this group of patients. Therefore, it may be presumed that in the group of patients with a lower education level and receiving treatment at an older age, there may occur the lack of patients' motivation for undertaking countermeasures, and preference for passive waiting over an active attitude, a tendency towards isolation and escape from problems. These considerations are in accordance with the opinions of Leventhal and Patric-Miller [36] and Pervin [29]. Leventhal and Patric-Miller [36] consider that a somatic disease leads to the deterioration in functioning, breakdown in everyday activity and deepening of negative mood. According to Pervin [29], the methods of coping in difficult situations result from individual differences, and play a major role in the adaptation processes and regulation of emotions. Positive emotions occur as a result of actual progress, whereas negative emotions may result from the lack of self-confidence and from pessimism.

Control of the expression of emotions in the situation of illness (their open expression or directing them inwards) serves the maintenance of a patient's psychological balance, and evidences the capability for the undertaking by a patient of positive or negative behaviours in facing a difficult situation [26, 37, 38].

The results of own studies conducted with the use of the Courtauld Emotional Control Scale (CECS) indicate the tendency among the women examined towards the suppression of negative emotions. According to Rybakiewicz [39], strong feelings of a negative character should not be entirely suppressed and eliminated from the consciousness. The author presents an opinion that feelings of a negative character should be reduced and eliminated from life by understanding oneself and acceptance of own weaknesses. Lazarus reported that the analysis of emotions experienced by people in difficult situations provides more information concerning their psyche than the analysis of stress [29]. There occur situations when, as a result of strong emotional response evoked by the message about the diagnosis, patients lose the capability of perceiving further information provided by a physician. Strong, negative emotions which are not manifested by a patient outside, may make impossible the undertaking of organized activities biased towards treatment [30]. Therefore, it seems justifiable to determine the relationship between emotional control and personality traits which exert a positive or negative effect on the suppression of expressing emotions in the group of patients during the peri-operative period.

The results of own studies obtained showed that during the pre-operative period there were statistically significant correlations ( $p < 0.05$ ) between the level of emotional control (CECS) and the level of subscale Meaningfulness (SOC Me) and the level of optimism (LOT-R). During the post-operative period, a statistically significant negative correlation was noted ( $p < 0.05$ ) between the level of emotional control (CECS)

and level of the subscale Comprehensibility (SOC C) and the level of optimism (LOT-R). The results obtained in the presented study indicate that an increase in the intensity of emotional control among women during the peri-operative period inhibits the readiness of patients to undertake effective activities in coping with a difficult situation, favours the negation of the existence of the problem, and their distancing from these problems. According to Motyka [40], patients' capability for their constructive externalization of own attitudes and feelings leads to the releasing of emotional tensions. The skill of emotional expression is considered as one of the personal resources in coping with stress.

The considerations concerning the evaluation of emotional control (CECS) in the presented study show that the preparation of patients for surgical treatment in a gynaecological ward should cover psycho-prophylactic activities in order to convince patients about the need for externalization of emotional tensions during hospitalization.

According to the opinion by Seligman, optimism is a trait shaped by the effect of the environment in early childhood, and pessimism may be easily eliminated by auto-therapeutic procedures by the subject. The studies conducted by this researcher confirmed that optimism is beneficial for humans [41], while pessimism may lead to the decrease in activity, not undertaking challenges and avoiding contacts with others [42]. Each surgical intervention violates human physical integrity, which may change body self-image and result in the deterioration of self-evaluation. An assessment of dispositional optimism allows the prognostication of the quality of life in illness, including the occurrence of the symptoms of post-injury stress after mutilating surgical procedures [43].

Studies carried out by Cegiełkowska-Bednarczyk et al. [28] indicated that in the situation of illness, necessity for hospitalization and surgical treatment, pessimists possessed a significantly higher level of anxiety than patients characterized by a mediocre level of optimism.

The results of own studies showed a statistically significant negative correlation ( $p < 0.05$ ) between the sense of state-anxiety and optimism, both during the preoperative and postoperative period. These results indicate that an increase in the level of state-anxiety is accompanied by a decrease in the level of optimism. This allows the presumption that a higher intensification of state-anxiety is typical of patients who have a pessimistic attitude. Similar results were obtained by Wider et al. [43] in studies carried out in a group of oncologic patients who had undergone mutilating surgical procedures. The studies by these researchers showed a negative correlation between dispositional optimism and anxiety.

## CONCLUSIONS

Own studies indicate that the analysis of the sense of coherence, level of anxiety and depression, and personal resources allows the determination of the characteristics of patients who should be covered by special psycho-prophylactic care during the peri-operational period. In addition, the results of own studies obtained may be used for the development of proper psycho-prophylactic procedures in the course of the diagnostic-treatment process with respect to women who receive surgical treatment due to gynaecological causes.

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