

# Evaluation of a level of preoperative anxiety in patients undergoing gynaecological surgeries

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## SUMMARY

**Introduction.** Fear of the surgery is a frequent and common problem in hospitalized patients, which brings various clinical implications. The high levels of anxiety before surgery lead to problems with patient anaesthesia. The post-operative pain, nausea and vomiting are also more common. The consequence of high intensity of preoperative anxiety is an increased risk of postoperative infections, as well as impaired healing of wounds after surgery.

**Aim.** The aim of the study was to evaluate the risk factors of high preoperative anxiety in women preparing to undergo planned gynaecological surgery.

**Material and methods.** The group of 173 women scheduled for the surgery in the First Department of Oncological Gynaecology and Gynaecology, Medical University in Lublin were enrolled into the study. In order to assess their anxiety and information requirement they were asked to complete the Visual Analogue Scale (VAS), the Amsterdam Preoperative Anxiety and Information Scale (APAIS) and State Trait Anxiety Inventory (STAI). To identify the risk factors of high preoperative anxiety patients' age, menopausal and relationship status, the phase of menstrual cycle, the education level, preoperative diagnosis, the type of planned surgery and the experience of previous surgeries were analysed.

**Results.** Based on VAS and APAIS scores, it was found that women after age 50 have statistically higher preoperative anxiety compared to those aged 30-50. Patients after menopause have higher levels of preoperative fear than premenopausal women according to VAS scores. The phase of the menstrual cycle did not affect the level of anxiety before the surgery. The severity of preoperative anxiety measured with APAIS, STAI X1 and X2 was higher in patients with higher education than in females with the basic one. The level of preoperative anxiety, assessed with VAS, APAIS and STAI-X2, was higher in women living in a town compared to those living in the countryside. Lonely women have statistically higher preoperative anxiety according to VAS scores than females in a relationship. Based on VAS, APAIS as well as STAI-X1 and STAI-X2 scores it was found that patients with preoperative diagnosed or suspected malignancy have higher level of anxiety before the surgery than those with the diagnosis of the benign disease. The level of the preoperative anxiety, measured with VAS, APAIS, STAI-X1 and STAI-X2, was statistically higher in females scheduled for the extensive surgery compared to those qualified for the less invasive one. According to VAS scores, women with previous experience of the surgery have a lower preoperative anxiety in comparison to females who had been never operated on before.

**Conclusions.** Higher levels of preoperative anxiety were demonstrated in women after age 50, patients after menopause, with the diagnosis of a malignant process, scheduled for the extensive surgery, lonely, living in the countryside and those with no previous experience of surgery.

**Key words:** preoperative anxiety; gynaecologic surgery

**AUTHORS' CONTRIBUTION:** (A) Study Design · (B) Data Collection · (C) Statistical Analysis · (D) Data Interpretation · (E) Manuscript Preparation · (F) Literature Search · (G) Funds Collection

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## INTRODUCTION

Although fear is the most common negative emotional condition experienced by humans throughout their life, to this date this phenomenon has not been clearly, precisely and exhaustively defined. Fear is a warning signal playing an adaptive function. In attempts to precisely describe the term „fear”, it is described as „a negative emotion associated with anticipation of a danger originating outside or inside the body” or as a „body's response to an unknown hazard” [1].

Fear of surgical operations is a common problem, often underestimated and not considered by doctors qualifying patients for surgeries. However, there is no precise data available estimating frequency of this phenomenon. Yet it is estimated that preoperative anxiety affects from 20% up to 80% of patients, depending on an extent of a planned surgery [2]. Preoperative anxiety is mainly caused by anxiety concerning anaesthesia and surgery itself, and by fear of pain and possible complications, including death [3]. Preoperative anxiety affects correct and rational perception of a surgical procedure through three mechanisms. First, it

increases patient's susceptibility to negative sensations and emotions. Second, severe fear of surgery results in a negative interpretation of ambiguous stimuli. Due to preoperative anxiety and resultant depressed mood negative emotions can be transferred onto the postoperative period and result in a negative evaluation of a correctly performed surgery without any complications [4,5].

Women are particularly predisposed to severe fear of surgeries, including genital surgeries. Fear of gynaecological surgeries develops already before admittance to hospital and remains at the same level after hospitalisation. It was demonstrated that a high level of anxiety in women after genital surgeries is positively correlated with a level of severity of notified pain [6]. This relationship may be more complex. Possibly, severe pain may increase postoperative anxiety [7]. Pinto et al. [8] demonstrated that the highest level of fear of hysterectomy, correlated with a level of pain felt after the surgery, is observed in younger women. However, in this age group anxiety associated with hysterectomy may be associated with the loss of reproductive function.

## STUDY OBJECTIVE

The aim of this study was to evaluate occurrence and level of preoperative anxiety in patients hospitalised and qualified for genital surgery, and to determine factors influencing the anxiety severity level.

## MATERIAL AND METHODS

The study covered a group of 204 patients hospitalised at the 1<sup>st</sup> Clinic of Oncological Gynaecology and Gynaecology, Medical University of Lublin. On a day of hospitalisation, being a day preceding the surgery, a qualification interview was conducted, before which a patient signed the informed consent form concerning participation in the study. Patients with a university degree in medicine or psychology, as well as patients treated for mental disorders, and chronically taking hypnotic or sedative drugs were excluded from the study. 173 women were qualified for the study. After the interview the patients received a questionnaire to be filled in the afternoon on a day of hospitalisation, when all procedures and tests associated with admittance to hospital and preparing for surgery were completed. Completed questionnaires were collected in the morning on

a day of the surgery. Participation in the study was completely voluntary. Patients were informed that if they decide not to participate in the study, this will not affect their diagnostic and therapeutic procedures in any way. The study was approved by the Ethics Committee at the Medical University of Lublin.

Occurrence and severity of preoperative anxiety were evaluated with quantitative methods, including the Visual Analogue Scale (VAS), the Amsterdam Preoperative Anxiety and Information Scale (APAIS) and State Trait Anxiety Inventory (STAI). To distinguish factors that may possibly affect the level of preoperative anxiety, the analysis covered: patient age, menopausal status, phase of the menstrual cycle in menstruating patients, place of living, education, marital status, preoperative diagnosis, extent of the planned surgery (according to criteria of Uniform Groups of Patients, as specified by the National Health Fund) and history of surgeries. The clinical characteristics of the studied group of women are shown in Table 1.

## RESULTS

Statistically significantly higher severity of preoperative anxiety was found in a group of women over 50 years of age versus patients in the age group of 30–50 years, as assessed with VAS ( $p=0.04$ ) and APAIS ( $p=0.02$ ). However, analysis of results obtained in those age group with STAI-X1 and STAI-X2 did not confirm those differences ( $p=0.2$ ;  $p=0.3$ , respectively). No statistically significant differences in the level of preoperative anxiety was found between women under 30 years of age and women from the 30–50 years old, as group well as between women under 30 years of age and patients over 50 years old. Patients after menopause felt statistically significant higher level of preoperative anxiety as assessed with VAS, versus women before menopause ( $p=0.03$ ). However, analyses of APAIS, STAI-X1 and STAI-X2 did not show any statistically significant differences in that respect.

Increase in preoperative anxiety assessed with VAS did not differ statistically significantly between patients with university and secondary education ( $p=0.9$ ), university and primary/vocational education ( $p=0.2$ ) or between women with secondary and primary/vocational education ( $p=0.2$ ).

Evaluation of the severity of preoperative anxiety with APAIS demonstrated that patients with university education were characterised by

lower level of anxiety versus women with primary/vocational education ( $p=0.048$ ), while it did not differ from anxiety felt by women with secondary education ( $p=0.6$ ). Women with secondary education felt the same level of preoperative anxiety evaluated with APAIS as women with primary/vocational education ( $p=0.15$ ).

Evaluation of STAI-X1 shown that patients with university education experience lower severity of preoperative anxiety versus women with primary/vocational education ( $p<0.001$ ) and with secondary education ( $p=0.01$ ). The level of anxiety evaluated with this scale did not show statistically significant difference ( $p=0.9$ ) between women with secondary and with primary/vocational education.

The severity of anxiety as evaluated with STAI-X2 was statistically significantly higher in women with primary/vocational education versus patients with university education ( $p=0.002$ ), while it did not differ between women with primary/vocational and with secondary education ( $p=0.18$ ), and between women with university and with secondary education ( $p=0.06$ ).

An analysis of results obtained with VAS, APAIS and STAI-X2 showed that patients living in the city were characterised by statistically significantly lower level of preoperative anxiety than women living in the countryside ( $p<0.001$ ,  $p<0.001$  and  $p=0.02$ , respectively).

However, an analysis of results obtained with STAI-X1 did not confirm those observations. An analysis of results obtained with VAS showed that single patients were characterised by statistically significantly higher level of preoperative anxiety than women in a relationship ( $p=0.04$ ). However, this significance was not confirmed by results obtained with other scales.

Patients with a preoperative diagnosis or suspicion of a malignant process were characterised by statistically significantly higher level of preoperative anxiety versus women operated for benign genital lesions. This significance was confirmed with VAS ( $p<0.001$ ) and APAIS ( $p<0.001$ ), as well as with STAI-X1 ( $p<0.001$ ) and STAI-X2 ( $p<0.001$ ).

Patients qualified for „major” surgeries felt statistically significantly higher level of anxiety versus women waiting for a „moderate” or for a „minor” procedure. This significance was confirmed with VAS ( $p<0.001$ ,  $p<0.001$ , respectively), APAIS ( $p<0.001$ ,  $p<0.001$ ), STAI-X1 ( $p<0.001$ ,  $p<0.001$ ) and with STAI-X2 ( $p<0.001$ ,  $p<0.001$ ). No statistically significant differences were observed in severity of preoperative anxiety between patients qualified for „moderate” and for „minor” surgeries (VAS  $p=0.1$ ; APAIS  $p=0.08$ ; STAI-X1  $p=0.6$ ; STAI-X2  $p=0.7$ ).

Patients with no history of surgeries were characterised by a statistically significantly hi-

**Tab. 1.** Clinical characteristics of patients participating in the study

		N
<b>Age</b>	≤ 30 years	32
	> 30 years and ≤ 50 years	62
	>50 years	79
<b>Menopausal status</b>	premenopausal	102
	postmenopausal	71
<b>Menstrual cycle phase</b>	follicular	57
	luteal	45
<b>Education</b>	university	71
	secondary	62
	primary/vocational	40
<b>Marital status</b>	in a relationship	113
	single	60
<b>Place of living</b>	town/city	95
	village	78
<b>Diagnosed with cancer</b>	yes	35
	no	138
<b>Procedure type</b>	„major” M01, M11, M12	43
	„moderate” M02, M05, M13, M14	83
	„minor” M04, M15	47
<b>History of surgeries</b>	yes	82
	no	91

gher ( $p=0.04$ ) level of anxiety as evaluated with VAS and higher ( $p=0.04$ ) need for information concerning their planned surgery, versus women who underwent a surgery in the past. The level of preoperative anxiety did not differ in a statistically significant way between women operated in a follicular and in a luteal phase of the menstrual cycle (VAS  $p=0.4$ ; APAIS  $p=0.6$ ; STAI-X1  $p=0.3$ ; STAI-X2  $p=0.5$ ), as well as between women operated for the first time and those who underwent a surgery in the past ( $p=0.1$ ;  $p=0.3$ ;  $p=0.1$ , respectively).

## DISCUSSION

An increased preoperative anxiety is an important factor negatively affecting both a procedure itself, and an early and late postoperative period. Despite numerous clinical implications that may be associated with a high level of preoperative anxiety, this problem is poorly known and underestimated by anaesthesiologists and by surgeons qualifying patients for a surgery. This is confirmed by scarcity of Polish publications on the issue of preoperative anxiety and a scant number of studies concerning the effect of preoperative anxiety on anaesthesia in patients and on occurrence of postoperative complications. At the same time, it should be emphasised that lack of Polish publications in that area concerns, to a large extent, gynaecological procedures and surgeries. Considering a well-documented fact of a higher preoperative anxiety observed in women than in men, this additionally confirms that this problem is underestimated.

It was demonstrated that young people are characterised by a higher level of preoperative anxiety versus older patients. This fact may possibly result from larger „life experience”, calmer and more rational attitude towards stressful factors, as well as, in some cases, a surgery underwent in the past. Additionally, in a case of surgeries on genital organs in young women, preoperative anxiety may be increased by fear of a possible loss of reproductive functions. However, in authors' study a relationship between young age and increased level of preoperative anxiety was not confirmed. Furthermore, an assessment of severity of anxiety with VAS and APAIS demonstrated that the highest severity of anxiety before a planned surgery occurred in a group of women over fifty years of age. The obtained results, contradictory to other reports, may be explained by the fact that in this age group the surgery was often associa-

ted with a diagnosed malignant process. Therefore, patients waited for an extensive surgery. Another factor that may possibly influence a high level of preoperative anxiety in this group of women may be menopause. It was demonstrated that postmenopausal patients experience more severe preoperative anxiety as assessed with VAS than premenopausal women. Irritability, fatigue, sleep disorders, nervousness, tearfulness and symptoms of depression associated with menopause may actually increase a level of preoperative anxiety. Thus, the increased preoperative anxiety in women over fifty years of age appears to be caused by numerous factors.

When a level of preoperative anxiety was evaluated in menstruating women, no statistically significant differences were demonstrated for patients at a follicular and at a luteal stage of a menstrual cycle. Also demand for information concerning a planned surgery did not statistically significantly differ between those two groups of women. Currently, there are no papers available evaluating the effect of the cycle phase for which the surgery is planned on a level of anxiety felt before the surgery, therefore, the obtained results could not have been compared with results obtained by other authors.

A low level of patient's education is considered as one of environmental factors for a risk of increased preoperative anxiety. The conducted study confirms this relationship. It was demonstrated that the severity of preoperative anxiety, evaluated both with APAIS and with STAI, is the lowest in a group of women with university education. It may be assumed that university education reduces preoperative anxiety through several mechanisms. Well-educated patients may be more aware of their disease, and of the extent of their surgery, together with the procedure and possible complications. In theory, they expect to receive that information from doctors referring them to a hospital and during an interview qualifying them for a surgery during hospitalisation to a larger extent than patients with lower education. Higher knowledge about planned treatment may represent a mechanism reducing preoperative anxiety. Nowadays, patients consider the Internet as an important source of information about their diagnosis and planned treatment. Women with university education are able to analyse information found on the Internet more critically. Ability to distinguish between true and false information may be of crucial importance

here. False internet knowledge may distort perception of patient's health status leading to incorrect conclusions and false feeling of more severe-than-actual progress of the disease, as well as of numerous complications and surgery-associated complications.

Another factor that may influence obtained results concerning the effect of education on a level of preoperative anxiety is a place of living. When results obtained with VAS, APAIS and STAI-X2 were analysed, it was found that women living in a town or a city are characterised by a statistically lower preoperative anxiety than those living in the countryside. It may be assumed that due to higher level of education observed in people living in a town/city, those two factors may reduce preoperative anxiety. For people living in a countryside, a need to change their environment to a town one, associated with hospitalisation, is an additional stress-inducing stimulus. A new, alien environment may potentially increase the level of preoperative anxiety.

An analysis of results obtained with VAS showed that single women were characterised by statistically significantly higher level of preoperative anxiety than women in a stable relationship. These results confirm the importance of support of a relative in a highly stressful situation. A sense of stability, presence of a person closest to a patient, words of comfort, or sense of assistance during rehabilitation ensure a strong emotional support reducing the level of preoperative anxiety. On the other hand, a sense of being alone with one's disease, lack of emotional support, and a vision of loneliness in a postoperative period increase the level of preoperative anxiety.

At the same time, it was shown with all scales used in the study that the level of preoperative anxiety is statistically significantly higher in patients operated for diagnosed or suspected cancer than in women qualified for a surgery for a diagnosed benign lesion of genital organs. Those results are consistent with other reports in which a diagnosis of cancer was considered a factor contributing to increased anxiety in humans, as well as a cause of a high level of preoperative anxiety. A cancer diagnosis is associated with a strong fear, mainly of death, but also of disability, suffering and pain, and of complications resulting from a surgery, and from chemo- and radiotherapy. Those relationships were also demonstrated for cancers of genitals. An increased level of anxiety is found in patients with diagnosed or suspected

cancer of vulvar, cervical, uterine, or ovarian cancer [2,9-11]. The obtained results fully confirm results of studies on an increased level of anxiety in female patients with cancer. An increased anxiety accompanying malignant processes is an underestimated and neglected problem. It was demonstrated that a risk of death in patients with endometrial cancer with severe symptoms of depression is twice as high as in women with less pronounced symptoms. This effect was observed despite the similar progress in lesions in both groups of women [11].

A cancer diagnosis is associated with a need for more extensive planned surgery. Thus, a statistically significantly higher level of anxiety observed in a group of women qualified for „major surgeries” is not surprising. This relationship was confirmed with all scales for anxiety evaluation used in the study. Apart from a cancer diagnosis, another factor increasing a preoperative anxiety in this group of women is their awareness of an increased risk for intra- and postoperative complications accompanying more extensive surgeries. „Major” surgeries for cancer are accompanied by a high risk of haemorrhage, damage to large blood vessels, intestines and ureters, possible formation of a stoma, and increased perioperative mortality. An increased risk of severe complications associated with radical surgeries is a factor resulting in significant stress in patients qualified for this procedure.

The study confirmed that patients with no history of surgeries were characterised by a statistically significantly higher level of anxiety as evaluated with VAS and higher need for information concerning their planned surgery, versus women who underwent a surgery in the past. Those results are consistent with results of studies demonstrating that a surgery in a past is a factor reducing the level of anxiety before another surgery [12,13]. Patients undergoing another surgery are calmer before a planned surgery, due to their previous experience. They have already undergone a sequence of events including preparing for a surgery, a process of anaesthesia and waking up after the procedure. Experience appears to be a significant factor reducing a sense of fear.

On a basis of obtained results it can be said that preoperative anxiety is a common phenomenon affecting female patients waiting for a surgery. Risk factors for a high level of anxiety in women qualified for surgeries on genitals were identified. They include: age over 50 years, postmenopausal status, cancer diagnosis,

and planned „major” surgery. Higher level of anxiety also affect single patients, living in a village, and operated for the first time. Identification of those factors should result in implementation of an individualised preoperative procedure involving psychotherapy and pharmacotherapy. Usually, use of standard anxiolytic medicines is insufficient to reduce preoperative anxiety in group of patients in which it is very severe [3,14]. It is recommended to use additional methods to reduce that anxiety in groups of patients at a high risk of preoperative anxiety. Cognitive behavioural therapy or music therapy, being recognised methods for treatment of preoperative anxiety, do not require significant financial expenditures. Additionally, they are not labour-consuming and do not require employment of additional medical personnel. Their implementation does not require

any rearrangements in work of gynaecological units, and may result in numerous clinical benefits. Lower level of pain and less common postoperative nausea and vomiting, and thus, lower demand for analgesics and antiemetics, faster rehabilitation, shorter hospitalisation and less complications accompanying healing of a surgical wound are measurable benefits which may result from reduction in preoperative anxiety in patients waiting for a surgery.

## CONCLUSION

Women over 50 years of age, after menopause, diagnosed with cancer, with a planned „major” surgery, single, living in a village, and operated for the first time form a group at a high risk of preoperative anxiety concerning surgeries on genitals.

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