Measures of preoperative anxiety: Part two

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Abstract

The current literature indicates that routine evaluation of preoperative anxiety, its determinants, and patient-specific concerns is universally advocated. This aligns with the increasingly acknowledged importance of prehabilitation – a comprehensive process preparing patients for surgery. A crucial component of prehabilitation is assessing patients’ mental health. Recommendations for psychological evaluations in prehabilitation encompass, inter alia, determining the severity of anxiety. This work builds on a 2019 article, which presented scales for preoperative anxiety assessment: the State Trait Anxiety Inventory (STAI), the Hospital Anxiety and Depression Scale (HADS), the Amsterdam Preoperative Anxiety and Information Scale (APAS), and the Visual Analogue Scale (VAS). This article extends the possibilities of preoperative anxiety assessment by introducing four additional methods: the Surgical Fear Questionnaire (SFQ), the Anxiety Specific to Surgery Questionnaire (ASSQ), the Surgical Anxiety Questionnaire (SAQ), and Anesthesia- and Surgery-dependent Preoperative Anxiety (ASPA). The authors provide comprehensive details on these instruments, including scoring, interpretation, availability, and usefulness both in scientific research and clinical practice. The authors also provide the data on the availability of Polish versions of the presented methods and preliminary data on the reliability of SFQ in patients awaiting cardiac surgery. This review seems relevant for professionals in multiple disciplines, including anesthesiology, surgery, clinical psychology, nursing, primary care and notably prehabilitation. It emphasizes the necessity of individualizing anxiety assessment and acknowledging patient subjectivity, which the presented methods facilitate through a thorough evaluation of specific patient concerns. The literature review also identifies concerns and future research avenues in this area. The importance of qualitative studies and those evaluating prehabilitation intervention is emphasized.

Key words: preoperative anxiety, assessment methods, prehabilitation, patient reported outcomes.

Recent literature consistently advocates for the routine assessment of preoperative anxiety, its contributing factors, and specific fears and expectations of patients undergoing surgical procedures. This approach aligns particularly with the contemporary understanding of the importance of prehabilitation, as an element that offers measurable benefits. These benefits include improvements in the psychological state of patients qualified for surgical treatment, their quality of life, reduction in the number of postoperative complications, shortened hospitalization and convalescence, and enhanced treatment outcomes. This encompasses issues such as rehospitalization, reoperation, treatment costs, as well as morbidity and mortality [1–5]. Recommendations regarding prehabilitation mandate the assessment of mental state, particularly the intensity of anxiety and depression, and the strengthening of motivation and self-efficacy [1, 3, 6–10]. Arora et al. [10] highlighted three dimensions of prehabilitation, expressed in the acronym NEW: nutrition, exercise, and worry. The methods presented, both in the previous [11] and in this publication, seem particularly useful in the aspect of the rapidly developing multidisciplinary field of prehabilitation, due to their comprehensive range of potential concerns assessed.

Another aspect emerging from the review of the literature is the issue of how and what information is conveyed to patients, which still seems to pose a challenge [12]. Recommendations also remain current regarding the search for effective...
interventions to reduce the intensity of anxiety, stress, or worry, adversely affecting many factors related to surgical treatment [13–15]. There is a call for individualization in the process of informing and preparing for surgery, considering specific needs and fears, individual information requirements, and characteristics specific to certain groups of surgical patients. This is due to the vast diversity of procedures, differences in their extent and risk level, and the specifics of the convalescence process. The necessity of considering the individual perspective of the patient and empowering patients is also emphasized [3, 5, 16]. Thus, in the multidimensional understanding of the patient’s perspective in perioperative medicine, anesthesiology, surgery and prehabilitation, standardized methods for assessing preoperative anxiety, concerns about the procedure and convalescence, as well as defining informational needs, are essential.

This article is the second part of a work presenting scales for assessing preoperative anxiety published in 2019 [11], which introduced selected scales such as the State-Trait Anxiety Inventory (STAI), the Hospital Anxiety and Depression Scale (HADS), the Amsterdam Preoperative Anxiety and Information Scale (APAIS), and the Visual Analogue Scale (VAS). The current publication enriches the previously presented tools with the characteristics of four additional scales, expanding the possibilities for clinicians to select an instrument tailored to the needs of the specific population or the purpose of scientific research. These scales not only assess the intensity of anxiety, but also specific fears related to surgical treatment.

Given that most patients experiencing high anxiety on the day prior to surgery also exhibit high anxiety at the decision-making stage and during the week preceding the procedure [17], these scales can and should be used at every stage of preparing a patient for surgery. This includes primary healthcare (PHC), anesthesiology and prehabilitation outpatient clinics, and up to the stage just before the procedure, on the day of hospitalization or the day before surgery. It is also worth noting that these methods can be utilized by all specialists involved in treatment (general practitioner, anesthesiologist, surgeon, psychologist, nurse, physiotherapist, dietitian). Below, four questionnaires are presented in detail: the Anxiety Specific to Surgery Questionnaire (ASSQ), the Surgical Fear Questionnaire (SFQ), the Surgical Anxiety Questionnaire (SAQ), and the Anesthesia- and Surgery-dependent Preoperative Anxiety (ASPA) questionnaire. Detailed information about these tools is provided in Table 1.

**THE ANXIETY SPECIFIC TO SURGERY QUESTIONNAIRE**

The Anxiety Specific to Surgery Questionnaire (ASSQ) (Polish: *Kwestionariusz Lęku Specyficznego dla Zabiegu Chirurgicznego*) consists of 10 items and was developed based on interviews with patients and staff (surgeons, nursing staff) at a trauma surgery clinic [18]. The statements in the ASSQ scale primarily concern fears of pain, death, complications, and limitations that may occur in the distant postoperative period. Patients are asked to respond to each item on a five-point Likert scale, where “1” means “strongly disagree” and “5” means “strongly agree”. For item 8 of the test, reverse scoring is applied, and then the total score is calculated. The maximum score on the scale is 50 points, and the minimum is 0 points. A higher score indicates a higher intensity of anxiety. To date, no cutoff point has been established in the ASSQ test to indicate clinically significant anxiety. The test has satisfactory psychometric properties (Cronbach’s α coefficient in the original study was 0.79) [18]. The scale has been used in several recently published studies involving patients undergoing various surgical procedures, mainly in Turkey [15, 19–27]. After obtaining permission from the authors of the original version of the questionnaire, we translated it into Polish according to the principles of adaptation of psychometric methods: translation from English to Polish independently by three clinicians (including a clinical psychologist and two physicians), agreement on a common Polish version, translation from Polish to English by a native English speaker who is also fluent in Polish and who was not familiar with the original version, further consultations with the team of clinicians, comparison of the back-translation version with the original version, and conducting a pilot study among 10 patients (see Supplement 1 file for the English (Table 1) and Polish (Table 2) versions of ASSQ). The reliability study of the Polish version of the scale in the population of cardiac surgery patients is ongoing. The scale can be used in research and clinical practice free of charge after obtaining permission from its authors [18].

**THE SURGICAL FEAR QUESTIONNAIRE**

The Surgical Fear Questionnaire (SFQ) (Polish: *Lęk przed Operacją*), developed by Theunissen et al. [28, 29], consists of 8 statements related to short- and long-term fears associated with surgical procedures. The respondents are asked to rate the intensity of their anxiety regarding each aspect on a numerical scale from 0, indicating “no fear at all,” to 10, “very afraid.” Items 1–4 form the subscale “Fear of Short-term Aspects of Surgery,” and items 5–8 constitute the subscale “Fear of Long-term Aspects...
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The range of possible scores for each subscale is from 0 to 40 points, and for the entire scale (items 1–8), from 0 to 80 points. The higher the score on the scale, the greater is the intensity of preoperative anxiety. The scale is straightforward, but careful data entry and cleaning are necessary – detailed instructions from the authors of the scale are included in Table 2. It seems that issues with missing data can be avoided by carefully analyzing the test with the patient and asking for corrections of any mistakes or filling in any gaps. The detailed requirements for calculating the SFQ scores undoubtedly constitute its advantage, as they ensure high reliability of the data obtained. The discussed questionnaire has satisfactory psychometric properties, allowing for its use both in clinical practice and scientific research [28–33].

The Polish version of the scale was prepared by our team after obtaining the authors' permission (interested parties are requested to contact the corres...
sponding author). In line with the recommendations of its authors, the questionnaire was translated from Dutch to Polish, followed by a back-translation from Polish to Dutch, according to the principles of test adaptation. The available English version of the test allowed for additional verification of the final version of SFQ by a team of clinicians (physicians and clinical psychologist). Studies are ongoing to assess the reliability of the SFQ test in a group of Polish patients referred for orthopedic and cardiac surgery. A preliminary study conducted among 65 patients awaiting cardiac surgery provided promising results regarding the reliability of the scale (Cronbach’s α coefficient for the full scale was 0.93, for short-term aspects of surgery was 0.91, and for long-term surgery aspects was 0.90). The SFQ questionnaire has been used in studies conducted in the Netherlands [28, 29], Greece [34], Portugal [35, 36], Turkey [21, 23, 33, 37–43], Croatia [44], Norway [45], Germany [31], Italy [46], Czech Republic [30], China [32], United States [47, 48], Ireland [49], and Hungary [50–52]. Most of these publications appeared in the years 2022–2023. We hope that the creation of the Polish version by the authors of this work will contribute to its wider use in our country. The scale is available for free but requires the authors’ consent for its use in research or – in the case of a lack of a language version for a given country – for translation and adaptation [28, 29].

THE SURGICAL ANXIETY QUESTIONNAIRE

The Surgical Anxiety Questionnaire (SAQ) (Polish: Kwestionariusz Lęku Chirurgicznego) consists of 17 statements and was developed based on the analysis of an initial questionnaire containing 27 items [14]. Factor analysis allowed for the identification of 3 subscales: (I) health-related concerns – 6 items, (II) concerns about convalescence – 4 items, (III) concerns about the surgical procedure – 4 items. The scale also includes three additional items important from the perspective of anxiety intensity, concerning fear about waking up during surgery (1 item), concern about the time to return to daily activities (1 item), and concern about pain and discomfort (1 item). Patients are asked to indicate the degree to which they experience a given concern on a 5-point Likert scale (“not at all”, “a little”, “moderately”, “very”, “extremely”; item scoring from 0 to 4 points). The maximum score on the scale is 68 points, and a higher score indicates a higher intensity of anxiety. So far, this scale has been used in a few studies [14, 53], but the results regarding its reliability are promising, and an undeniable advantage is the inclusion of many possible patient concerns. However, this may also be a limitation due to the longer time required for older individu-

als, those with cognitive impairment, or in poorer somatic condition to complete the questionnaire. The scale seems particularly useful for creating detailed educational and psycho-educational interventions as part of prehabilitation. The authors also recommend determining cutoff point for the SAQ score indicating a clinically significant level of anxiety for each studied patient group [14]. To obtain the questionnaire, one should contact the authors of the paper describing the process of its development and validation [14].

ANESTHESIA- AND SURGERY-DEPENDENT PREOPERATIVE ANXIETY

The Anesthesia- and Surgery-dependent Preoperative Anxiety (ASPA) questionnaire contains eight items. It was created specifically for a study involving day-care surgery [54]. It evaluates the extent to which patients perceive anesthesia and surgery as life-threatening, in addition to concerns related to postoperative pain, complications during surgery and postoperative problems with cognitive functioning. Patients are asked to select the answer which best describes intensity of their fear on the Likert scale (1 – “never”, 2 – “low”, 3 – “moderate”, 4 – “strong”, 5 – “extreme”). The total score ranges from 1 to 40 points with higher scores reflecting higher intensity of anxiety [54].

SUMMARY AND DIRECTIONS FOR FUTURE RESEARCH

The aim of this study was to enrich the previously presented set of tools for assessing preoperative anxiety with methods that not only evaluate the intensity of anxiety but also involve the specific concerns of patients awaiting surgical procedures. It is important to remember that some fears may stem from insufficient information provided to patients, from unfavorable experiences of the patients themselves and their relatives with previous procedures, and from myths prevalent in society, which need to be verified and demystified to provide patients with reliable information that can reduce their anxiety.

The questionnaires presented in this work are important tools among the methods assessing preoperative anxiety, especially in the case of prehabilitation interventions, as understanding the fears and needs of patients can be a determinant for education and psychoeducation, especially for anesthesiologists, but also surgeons, nursing staff, primary care physicians, and clinical psychologists. The most appropriate seems to be the assessment of the intensity of anxiety, for example, using the Amsterdam Preoperative Anxiety and Information Scale (APAIS) or the anxiety subscale of the Hospital Anxiety and Depression Scale (HADS) [11], and additionally understanding individual fears and perspectives
of the person examined using one of the questionnaires presented above. They concern many aspects related to the procedure itself and anesthesia, fear of pain and death, and long-term concerns such as returning to full activity and physical fitness, the convalescence process, or rehabilitation. An important element of preparation for surgery is understanding individual needs and assessing satisfaction with the information received [34], especially since a high demand for information is associated with high intensity of preoperative anxiety [17, 55].

The fact that the presented tools are self-assessment scales is indeed their advantage, not a disadvantage. The patient could indicate, and the clinician understand, individual fears and feelings, about which the patients themselves are ‘specialists’ [11]. The use of self-assessment scales in this context ensures the acquisition of reliable data about the idiosyncratic needs and fears of patients, thereby increasing the likelihood of planning an effective intervention while maintaining the subjectivity of patients. It should be remembered that in the case of older people, assistance in completing the questionnaire should be available. The difficulty of completing it should not be a reason to refrain from assessing the anxiety and fears of our patients.

A review of the literature indicates several potential avenues for future research which are worth noting. Establishing cutoff points for anxiety-assessment scales is recommended to identify a threshold score indicative of clinically significant anxiety. This can be accomplished through statistical methods and by correlating with other standardized scales that measure anxiety intensity. Stratifying patients into high and low anxiety groups based on the median score of the population under study is also a viable approach. Further research employing the ASPA questionnaire is necessary, particularly to validate its reliability. Given that it was created for fast-track surgery [54], this interesting method also requires the evaluation of its usefulness in additional surgical disciplines. It is worth emphasizing the ASPA questionnaire’s unique, valuable feature which is inclusion of items related to concerns about postoperative cognitive functioning. Given the high prevalence of postoperative delirium and prolonged cognitive decline, particularly among elderly patients [56], these concerns warrant attention and should be addressed during the preoperative period. According to our and other authors’ experience, in particular postoperative delirium can be extremely stressful for both patients and their families. Therefore, providing information about the potential for its occurrence, characteristics, symptoms, and management strategies is crucial [56–59].

From a clinician’s perspective and based on the experiences of the authors of this work, the individual intensity of a patient’s anxiety and their specific fears seem more significant than the general score on a given scale, i.e. mean values for a given population. However, determining a cutoff point using statistical methods is important for identifying risk groups, thus indicating patients requiring special attention. Both types of analysis results seem useful and justified.

Another important direction for future research is the acquisition of additional language versions of the presented tools, especially of the SAQ and ASPA scales, which will increase the scope of research, enable cross-cultural and international comparisons, and take into account social and cultural conditions, including the aspect of spirituality. These seem to have particular significance for studying modifiable factors conditioning the sense of anxiety and stress before surgery [22, 60].

There is a range of publications on prehabilitation that provide evidence of its importance and vast multi-aspect usefulness, including interventions aimed at improving the mental state of patients. However, the results of current studies are not entirely consistent, due in part to diverse methodological approaches, the use of different measurement tools for the variables studied, and definitions of treatment outcomes. Therefore, further research is needed to assess the effectiveness of prehabilitation programs, with particular emphasis on longitudinal studies and aiming for some standardization of educational interventions while maintaining an individual approach to patients’ fears and anxieties, as well as patient satisfaction assessment [1, 8, 9, 36].

Attention should be paid to the broad possibilities of using preoperative anxiety assessment scales in prehabilitation, anesthesiology, surgery, clinical psychology in surgery, nursing, and primary care. These methods are widely available (few have limitations) and, after brief training, can be used by all healthcare providers [11].

While recognizing the usefulness of psychometric methods, it is essential not to forget that effective communication and creating a good patient-doctor relationship, which increases trust and a sense of security, is the basis for effective work with patients experiencing fears before surgery.

This article, although covering a wide range of literature from recent years, does not exhaust the topic. The summary of patients’ fears and concerns presented in Table 3, based on the literature and our own experience, is valuable, although it also seems insufficient [13, 17, 19, 54, 61–64]. It does, however, highlight the broad range of concerns of patients awaiting surgery.
TABLE 3. The list of concerns and fears of patients awaiting surgery*

**General concerns**
- Fear of unknown
- Fear for life, fear of death
- Waiting for the procedure
- Fear of procedure postponement
- Fear of medical mistake
- Concerns related to diagnosis and disease specific, nature of the disease, illness perception
- Concerns about the surgery itself, i.e. procedure, its complexity, duration, related risks
- Concerns about anesthesia itself

**Concerns related to hospitalization**
- Being away from loved ones, loneliness
- Feelings of shame, embarrassment, lack of privacy
- Dependency on staff, i.e. relying entirely on healthcare providers for basic needs and care
- Loss of control: losing autonomy and control over decisions and own body
- Feeling unsafe
- Concerns related to operation theater, intensive care unit
- Anxiety related to procedures, e.g., injections, IV insertion, tracheal extubation
- General atmosphere in a ward, i.e.: difficulties related to communication with medical staff, lack of empathy and understanding, lack of support

**Intraoperative concerns**
- Fear of intraoperative complications
- Waking up during surgery
- Pain during surgery
- Possibility of blood transfusion

**Concerns related to postoperative period**
- Postoperative complications
- Not waking up after surgery
- Nausea, vomiting, other discomforts after waking up
- Need for intensive care
- Postoperative pain
- Postoperative delirium, prolonged problems with cognitive functioning
- Possibility of infection
- Wound healing process, prolonged wound healing, specific care of the wound
- Surgery outcomes, unmet expectations regarding the results
- Concerns about appearance, visible scar, presence, and extent of scarring
- Fear of permanent health deterioration, disability, inability to return to full fitness, sexual dysfunction
- Prolonged rehabilitation
- Inability to return to work, prolonged absence from work
- Financial strain, economic deterioration
- Concerns about family, inability to care for children or other family members

*Based on authors’ own experience and literature, especially refs.: 13, 17, 19, 54, 61–64.

Given the possibility that the summary may not fully capture the multitude of concerns experienced by individuals awaiting surgical procedures, and considering the diversity inherent in different surgical specialties, it is essential to undertake a systematic review of both quantitative and qualitative research pertaining to these concerns and the factors influencing the intensity of anxiety. Additionally, conducting further qualitative research is vital to enrich our understanding of the individual perspectives of patients, enabling better comprehension and the planning of the most effective interventions [65]. The value of the SAQ lies, among other merits, in the fact that it was created based on themes that emerged from qualitative research [14]. The necessity of using a qualitative approach to enhance understanding of the unique experience of patients, including those awaiting surgery, is emphasized [14, 66–68].

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