Identifying and assessing anxiety in pre-operative patients


Summary

Increasing demands for hospitals to be more efficient mean that patients attending for an operation are generally admitted on the day of surgery. As a result, healthcare professionals have little time to talk to the patient to ascertain his or her wellbeing, to check for any signs of anxiety and ask whether the patient requires further information about the forthcoming procedure. Healthcare professionals should be encouraged to use appropriate interventions to identify and assess anxious patients. There are several instruments available to measure the patient's level of pre-operative anxiety. This article reviews the Amsterdam Preoperative Anxiety and Information Scale, which is easy for patients to complete and may help to identify which individuals need extra support.

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ANXIETY RELATED to surgery is widely accepted as a normal response in pre-operative patients (Taylor-Loughran et al 1989, Calvin and Lane 1999, Leach et al 2000, Lee and Gin 2005, Mitchell 2008). Hospitalisation and admission for surgical procedures in particular may cause acute distress and high levels of anxiety in patients (Maranets and Kain 1999). This may be linked to a fear of the unknown and a loss of control. McCleane and Cooper (1990) suggested that anxiety begins as soon as the surgical procedure is planned and increases to maximum intensity on admission to hospital.

Some researchers have speculated about the reasons why patients experience anxiety (Koscielniak-Nielsen et al 2002, Matthey et al 2004, Jakobsen and Fagermoen 2005, Mitchell 2009). Anxiety is caused by a variety of factors, including concerns about the surgical procedure and the anaesthetic, and the perceived consequences of surgery (Box 1). The patient's previous experiences of surgery and the experiences of other family members or friends are also important considerations.

Anxiety causes a wide range of responses. Physiological responses include tachycardia, hypertension, elevated temperature, sweating, nausea and a heightened sense of touch, smell or hearing (Pritchard 2009). Psychological responses include changes in behaviour such as increased tension, apprehension, nervousness and aggression (Markland and Hardy 1993).

Anxiety is a subjective emotion. It may be influenced by age, gender, the extent and type of surgery, previous hospital experiences, and susceptibility to and ability to cope with stressful experiences (Boker et al 2002). Studies have reported on the efficacy of a variety of interventions to reduce anxiety, such as how much information should be given to patients and what format to use (Andrewes et al 1999, Montgomery and Bovbjerg 2004, Osborn and Sandler 2004). However, questions remain about how patients grade their levels of anxiety and how anxiety relates to physiology.

Anxiety is a genuine response to undergoing surgery. The provision of appropriate information is essential in reducing anxiety and distress among pre-operative patients. Mitchell (2009) stated that:
‘Patient interaction with the nurse and anaesthetist prior to surgery is vital as [he or she] frequently seeks answers to a number of questions.’ There is emerging evidence that empowering patients and addressing their psychosocial needs can decrease the risk of complications, improve post-operative health outcomes and be cost effective (Lithner and Zilling 2000, Lack et al 2003, Kindler et al 2005). Nurses need to be able to provide effective and supportive pre-operative care for patients in the limited time available. Therefore the use of a validated assessment tool to assess patients’ anxiety levels before surgery is recommended (Cooke et al 2005).

Effects of anxiety

Janis (1958) explored anxiety among surgical patients and its impact on their recovery. He perceived that moderate levels of anxiety were beneficial to patients as they prepare themselves for the stress of surgery. Consequently, levels of anxiety below or above this level were considered to be maladaptive and to have a negative effect on surgical recovery. Janis (1958) hypothesised that a curvilinear relationship exists between a person’s level of anxiety and pain. He believed that a lower anxiety level could leave the patient unprepared for post-operative pain, while a higher anxiety level could sensitise the patient to noxious stimuli, making their pain more acute (Janis 1958).

Anxiety affects the body on a physiological level by altering the patient’s vital signs. It affects patients on a psychological level by causing cognitive and behavioural changes, for example anticipation of post-operative pain and separation from the family, loss of independence and fear of surgery and death (Caumo et al 2001, Cooke et al 2005, Pritchard 2009). The level of psychological distress that a patient experiences can make it difficult for the health professional to manage the individual’s anxiety effectively (Thomas et al 1995). Anxiety can cause patients to be aggressive or demanding, and they may need the constant attention of the nursing staff. Patients may also become so nervous and apprehensive that they are unable to understand or follow simple instructions.

Anxious patients respond differently from non-anxious patients to medication. The level of anxiety that the patient experiences can affect his or her response to the anaesthetic and analgesia. For example, patients may require more anaesthetic to achieve sedation (Maranets and Kain 1999, Hong et al 2003, 2005) or increased doses of analgesia to maintain adequate pain relief (Sjöling et al 2003). Vaughn et al (2007) linked anxiety and pain, stating: ‘If a relationship exists between pre-operative anxiety and post-operative pain, then patients with high levels of anxiety should be identified pre-operatively.’

Physiological responses to stress may include peripheral vasoconstriction, which makes it difficult to cannulate the patient or obtain blood specimens. The patient may have a heightened sense of touch, smell or hearing, which in unfamiliar surroundings can make the individual feel even more unwell and uncomfortable (Pritchard 2009). Research studies have highlighted increases in acute pain and depression (Carr et al 2005), and nausea, fatigue and discomfort (Montgomery and Bovbjerg 2004). A study by Kiecolt-Glaser et al (1998) found that anxiety may lower a patient’s immunity and delay healing, resulting in prolonged hospitalisation.

Alleviating anxiety

There is general agreement that psychological preparation for surgery is beneficial to patients because they will be less anxious, and therefore more co-operative and compliant in the post-operative phase of their recovery (Johnston and Vögele 1993). Horne et al (1994) concluded that ‘to ignore psychological factors in preparing adults for surgical or invasive medical procedures causes unnecessary suffering and adds to the economic costs of surgery and hospitalisation’.

Traditionally, pre-operative anxiety management has been associated with the provision of information about the surgery to alleviate the patient’s fears and/or concerns. However, this view has been challenged (Kiyohara et al 2004, Ivarsson et al 2005). Kiyohara et al (2004) suggested that increasing the patient’s knowledge of the forthcoming surgery may reduce his or her anxiety levels, but that not all patients would respond positively to such information, and in some cases information provided no benefit. Ivarsson et al (2005) found that most but not all patients were positive about

**BOX 1**

**Causes of pre-operative patient anxiety**

- Fear of the unknown.
- Fear of medical and surgical treatments.
- Concern about pain.
- Concern about safety.
- Concern about recovery and how this will influence daily activities and lifestyle.
- Loss of control.
- Fear of death and dying.
the detailed information they were given.

A number of treatment techniques designed to reduce pre-operative anxiety, such as the provision of surgical information in written or video form, or in an interview conducted by a healthcare professional, have been studied with mixed results (Maranets and Kain 1999, Caumo et al 2001). Therefore the effects of anxiety-reducing techniques, such as providing detailed pre-operative information about the patient’s surgery or anaesthetic, remain unclear.

One method that has been used to reduce anxiety is to offer the individual the opportunity to interact freely with a nurse throughout the intra-operative period (McCarthy et al 2004, Marran 2005). Another approach may involve adapting the care environment to make the patient more comfortable, for example by permitting a family member to be present before the patient goes to theatre, or giving him or her a side room and allowing relatives to stay.

The use of individualised and patient-centred nursing approaches to reduce anxiety are important. For example, if a patient is afraid of needles it may be possible to take blood after he or she has been sedated. If the patient needs to have a cannula inserted, local anaesthetic may be used to reduce discomfort. It may be useful to give the patient a variety of information leaflets, not only about the operation, but also about the anaesthetic and, if necessary, blood transfusion. One limitation of this method is that it relies on the individual reading and understanding the leaflets, and the anxious patient may not be able to concentrate on and absorb all the information provided. It may help if the nurse reiterates this information and answers any questions the patient may have. The key here is to adapt as much as possible to the needs of the individual.

Measuring anxiety

It has been suggested that pre-operative management of patients’ anxiety may be improved if the healthcare professional has more knowledge about potential predictors of pre-operative anxiety (Caumo et al 2001). The use of an assessment tool to identify a patient who is anxious or in need of information could be incorporated into the patient’s care plan. This would allow healthcare professionals to assess the patient’s level of anxiety and develop supportive strategies. These strategies may involve discussing the surgical procedure again with the patient and answering any questions, or changing the order of the theatre list to allow a particularly anxious patient to go first. The overall aim of these measures is to ensure that the patient is physically and psychologically prepared for the procedure.

A variety of tools are available to measure anxiety, including the Hospital Anxiety and Depression Scale (Zigmond and Snaith 1983), the Short-Form 36 Health Status Questionnaire (Ware and Sherbourne 1992), the General Well-Being Questionnaire (Bradley and Gamsu 1994) and the State-Trait Anxiety Inventory (STAI) (Spielberger et al 1983). These tools are effective in identifying patients with anxiety in the context of a pre-operative assessment.

The drawback of such tools is that they are complex and time consuming to use. This article reviews the Amsterdam Preoperative Anxiety and Information Scale (APAIS), which is an effective and easy tool to use when time is limited.

The Amsterdam Preoperative Anxiety and Information Scale

In a review of the literature, Moerman et al (1996) found that the assessment tools available to measure anxiety were either not specific enough to identify patients’ anxiety and their need for information, or they were considered too lengthy to use in a pre-operative environment. Moerman et al (1996) developed the APAIS, which is a six-item questionnaire. The aim of this questionnaire was two-fold: to identify those patients who are anxious and to identify the level of information required by each individual (Figure 1).

### The Amsterdam Preoperative Anxiety and Information Scale (Moerman et al 1996)

<table>
<thead>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td>1.</td>
<td>I am worried about the anaesthetic</td>
<td>□</td>
<td>□</td>
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<td>2.</td>
<td>The anaesthetic is on my mind continually</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<tr>
<td>3.</td>
<td>I would like to know as much as possible about the anaesthetic</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>4.</td>
<td>I am worried about the procedure</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<td>□</td>
</tr>
<tr>
<td>5.</td>
<td>The procedure is on my mind continually</td>
<td>□</td>
<td>□</td>
<td>□</td>
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<tr>
<td>6.</td>
<td>I would like to know as much as possible about the procedure</td>
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The APAIS is a simple tool designed to be used in the clinical area. Each question has a five-point Likert scale ranging from 1 (not at all) to 5 (extremely). Scoring is straightforward and patients mark their feelings with regard to each question. The tool allows the healthcare professional to identify what the patient is feeling at that time. The scores from questions 1, 2, 4 and 3 are added together to show the patient’s level of anxiety, while the scores from questions 3 and 6 are added together to identify the patient’s need for information (Table 1). Moerman et al (1996) felt that it would be beneficial clinically for anaesthesiologists to know the level of information the patient requires.

For the purpose of measuring anxiety using the APAIS, Moerman et al (1996) developed a cut-off point based on a comparison with the STAI (Spielberger 1983) by performing several analyses of the two tools, including construct (content) validity and criterion. Using the STAI as a reference point, the sensitivity (proportion of correctly identified cases), specificity (proportion of correctly identified non-cases) and the predictive value (probability of a high-scale score being a case) were calculated at different cut-off points on the anxiety scale. From this, Moerman et al (1996) suggested that a patient with a score of 11 or more on the anxiety scale is experiencing anxiety. This figure was reached as an acceptable balance between false-positive and false-negative results.

The cut-off point was considered acceptable for research purposes and also for use in the clinical area by medical staff. In clinical practice, the cut-off point of 11 should alert nursing staff that a patient may require anti-anxiety medication.

On the information scale, patients scoring 2-4 are classified as having little or no information requirements, patients scoring 5-7 are classified as having an average information requirement and patients scoring 8-10 are considered as having high information requirements (Moerman et al 1996). Patients with a score of 5 or above should be given information on the topics about which they wish to be informed, and in accordance with their score. A score below 5 should be a signal to provide the patient with no more information than is legally required (Moerman et al 1996).

The advantages of the APAIS are its brevity and its ability to be used in a wide range of clinical settings. It has been used in several countries and has proven an effective and useful tool when compared to other anxiety measures (Nishimori et al 2002, Berth et al 2007). The main limitation identified was that the tools did not distinguish well between fear of anaesthesia and fear of surgery (Moerman et al 1996).

Boker et al (2002) further subdivided the anxiety and information questions in the APAIS to assist analysis. The anxiety questions (1, 2, 4 and 5) were separated. Questions 1 and 2 now related to anxiety about anaesthesia (Sum A), questions 4 and 5 now related to surgical anxiety (Sum S) and a combined anxiety total (Sum C) was identified. The information component remained the same with the score taken from questions 3 and 6.

Boker et al (2002) suggested that the APAIS had the potential to be used to assess the need for consultation and pre-medication and that anxiety testing is feasible in the pre-operative period. The authors concluded that the anxiety component of the APAIS (Sum C), because of its brevity, showed potential as a new practical tool to assess patients’ pre-operative anxiety levels (Boker et al 2002).
The simple structure of the APAIS means that it only takes a patient about five minutes to complete, which is ideal during a busy clinical outpatient appointment.

**Use of the Amsterdam Preoperative Anxiety and Information Scale**

Since its development in 1996, the APAIS has been used in Canada (Boker et al 2002), South Korea (Shin et al 1999), Germany (Berth et al 2007), the Netherlands (Van den Bosch et al 2005) and Japan (Nishimori et al 2002). These studies have proven that the tool is easy to use in any language and its results remain consistent when compared with other anxiety measures. The studies also conclude that the APAIS is a simple and effective tool that can identify patients who are anxious or in need of information about their forthcoming procedure.

The APAIS can be used by nursing staff during a pre-operative clinic or following admission to the ward. The tool allows the patient’s responses to be divided into two categories – anxiety and the need for information – while its subscale allows the healthcare professional to identify whether the patient’s anxiety is related to anaesthesia, surgery or the need for information.

**Conclusion**

The effects of anxiety and stress on the body are widely accepted as a normal response in pre-operative patients. Consequently, there has been a growing interest in the possible influences of pre-operative anxiety on surgical outcomes. The levels of anxiety that a patient experiences can affect his or her response to the anaesthetic and analgesia. It may also increase pain, cause depression, nausea and fatigue, and delay healing, which can impede the patient’s discharge from hospital.

It is vital that healthcare professionals actively manage patients’ anxiety in the

**References**


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pre-operative period. This should involve early recognition and assessment of anxiety and the implementation of strategies to reduce patients’ fears and concerns.

The APAIS is an important tool that can be used to assess patients’ levels of anxiety. It provides valuable insight into the psychological needs of patients before surgery and helps to identify individuals who require additional support. The APAIS has been used in a wide variety of clinical settings and there is sufficient evidence to support its use in pre-operative care.

The tool enables the implementation of supportive and individualised interventions to reduce pre-operative anxiety and optimise post-operative recovery.