

WHITEPAPER

AUDIOVISUAL DISTRACTION

Proven Benefits for Healthcare Personnel, Patients and Clinics



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REDUCED STRESS & ANXIETY

97% of surgery patients experience preoperative anxiety¹

Experiencing surgery-related anxiety is a natural reaction to the unpredictable and potentially threatening circumstances typical of the perioperative period. According to a large-scale survey including 120 patients, 97% of surgery patients, aged 18 years or older, experience preoperative anxiety. Main causes of anxiety in the context of day surgery are general anesthetic, waiting in the day surgery unit prior to operation, and possible postoperative pain and discomfort.¹ Being awake during surgery and the sight of the operation theatre were specifically described as anxiety-provoking.² Patient anxiety can have long lasting consequences on patient health and, subsequently, increases in health care cost. Audiovisual distraction provides a preventative solution to intervene before the loop of anxiety takes its course.

Anxiety increases the need for medication, delays the recovery process and causes a prolonged and cost-intensive hospital stay.

1. SEDATION

50-75% of children experience intense preoperative anxiety which is often caused by separation from parents, unfamiliar surroundings and painful procedures in the hospital.³ Anxiety in children can hinder induction and causes a greater need for sedative medication.⁴ Likewise, preoperative anxiety necessitates higher doses of propofol to require an adequate level of sedation in adults.⁵

2. ANALGESICS

A high level of preoperative anxiety is accompanied by enhanced pain perception and increased consumption of analgesic medication postoperatively. In fact, preoperative anxiety was found to be directly linked to postoperative pain intensity and independent from patients' general anxiety.⁶ A comprehensive study investigating 241 children undergoing tonsillectomy and adenoidectomy states that anxious children experience significantly more pain and thus need higher doses of analgesics postoperatively, compared to less anxious children.⁷ In adults, preoperative anxiety also causes a more painful recovery process.⁸

3. COMPLICATION

Anxiety is a risk factor for a course of treatment littered with complications. "Heightened anxiety can lead to complications in the administration of presurgical drugs; it can hinder the induction of anesthesia and has been found to be associated with poorer post-surgical outcomes."⁹ Children exhibiting preoperative anxiety were found to experience various behavioural postoperative complications, including nightmares, separation anxiety, eating disorders and enuresis.³ Furthermore, preoperative anxiety and pain perception can delay the postoperative recovery process, thus resulting in a lengthier hospital stay and more follow-up costs.¹⁰

4. DELIRIUM

Preoperative anxiety is a risk factor for emergence delirium and associated cognitive complications.¹¹ Children who are anxious before surgery are eight times more likely to develop delirious states than children who are more relaxed. In fact, incidences of emergence delirium occurred in 9.7% of children being anxious compared to 1.5% of non-anxious children. Postoperatively, anxious children required significantly more codeine and amphetamine as well as suffered from pain, anxiety, and sleep disturbances more often.⁷

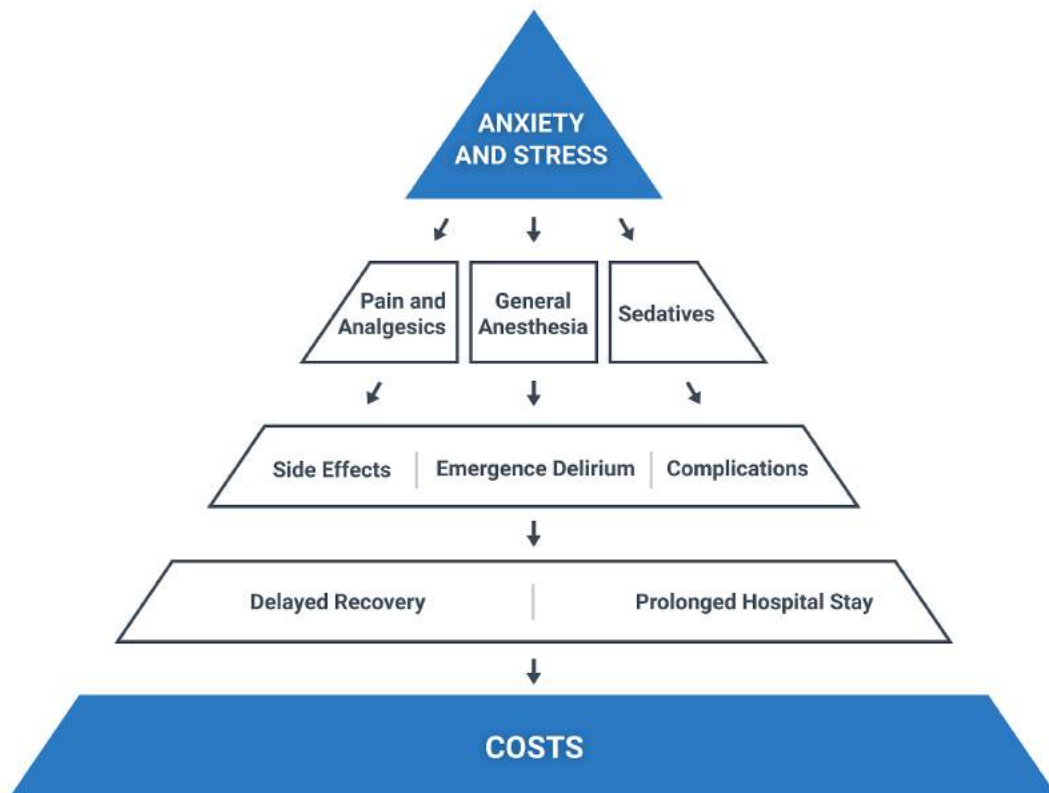
5. PROLONGED HOSPITAL STAY

Excessive levels of anxiety are accompanied by activation of the autonomic nervous system, leading to increased respiratory rate, release of stress hormones and higher levels of pain that may persist into the postoperative period. This can activate proinflammatory pathways and thus lead to prolonged healing and recovery times.¹² According to medical records of more than 300 patients, those patients who had a diagnosis of anxiety and took anxiolytics prior to surgery stayed 1.8 days longer at the hospital than patients who were not anxious.¹³ In addition, anxious patients often opt for narcosis rather than local or regional anesthesia.¹⁴ There, serious complications occur significantly more often in comparison to operations under loco-regional anesthesia.¹⁵

6. PREVENTS INCREASED COST

Complication, delirium and other maladaptive behaviours can cause long-term consequences for the patient, a lengthier hospital stay and further health care costs for the hospital site.⁷

The figure below demonstrates the way patient stress and anxiety can lead to increased financial expenditures for hospitals. Heightened anxiety and stress increase patients' subjective pain perception thus leading to higher doses of administered analgesic and sedative medication. When it comes to deciding on an anesthetic procedure, general anesthesia is an anxious patient's first choice. However, the side effects of the medication include procedural complications and cases of emergence delirium occurring more often. As a result, patients need to stay at the hospital significantly longer and, subsequently, result in higher costs for the hospital.



“Audiovisual distraction is an inexpensive, easy to administer and comprehensive method to reduce anxiety and its consequences”⁴

7. THE PRINCIPAL OF AUDIOVISUAL DISTRACTION

“The brain has limited capacity to process painful, distressing or anxiety-inducing stimuli. When an individual’s attention is shifted towards more pleasant sensations, activation is reduced in the areas of the brain associated with pain.”¹⁶ Distracting patients by shifting their attention to films and more pleasant sensations limits the capacity to focus on anxiety and significantly reduces subjective pain perception by 61%.¹⁷

CLINICALLY PROVEN

- 82% of patients respond that audiovisual distraction reduced their anxiety during elective limb surgery under regional anaesthesia¹⁸

- For children, viewing animated cartoons has been shown to be very effective in alleviating preoperative anxiety, and even more effective than playing with toys ⁴ or traditional distraction methods ¹⁹
- Video distraction significantly reduces children's anxiety at inhaled induction and effectively manages anxiety in the preoperative phase when waiting in the holding area ¹⁹
- Film distraction is an effective strategy for relieving stress and distracting patients during invasive procedures, such as venipuncture ²⁰
- Audiovisual interventions have been systematically reviewed and proven as useful to reduce anxiety in pre-, intra-, and postoperative settings ²¹

“Preoperative anxiety leads to increases in analgesic consumption, prolonged stays in recovery areas, delay in entry to ORs, and longer hospital stays, which together increase suffering and health care costs. Audiovisual interventions appear to be a promising tool for reducing preoperative anxiety.” ²¹

REDUCED SEDATIVES & ANALGESICS

Sedative & pain medication - putting patient health at risk

Sedative premedication is commonly used to calm patients prior to surgery and other stressful medical treatments. Although sedation is meant to improve patient health by relieving stress and anxiety, that medication can have a variety of adverse side effects. Sedative premedication can negatively affect the cardiovascular and respiratory system, impair cognitive functioning and may even provoke paradox reactions. Deep sedation also poses the risk of developing emergence delirium after surgery, leading to prolonged convalescence and hospital stays. Audiovisual interventions are an effective, non-pharmacological and low cost method to prevent premedication with sedatives and overconsumption of analgesics.

1. PREMEDICATION

Premedication with sedatives has been established as the standard procedure to deal with patient anxiety in the perioperative period. The mode of action of sedative medication is to block several functions of the nervous system, numbing respiratory activity and therefore decreasing blood pressure and heart rate. Depending on the administered dose, the patient gets slightly numbed or knocked out and consequently falls asleep.

Although it might be relieving for patients not to be fully awake during the anxiety-evoking medical treatment, they are also at risk for suffering from various side effects in the postoperative period. Clinical studies identified cognitive impairments, such as memory loss, as a frequent adverse effect after surgery. Patients who had been premedicated with midazolam and had then undergone 1–2 hours of general anesthesia with propofol and remifentanyl were found to suffer from measurable memory impairment one day after their surgery.²²

Anxiolytic premedication has further been linked to poorer short-term postsurgical outcome. These include longer hospital stay, higher risk for follow-on operations, cardiovascular complication and a higher mortality rate.²³ For patients with a diagnosis of obstructive sleep apnoea (OSA), sedation bears a heightened risk of airway obstruction. Furthermore, sedative premedication is assumed to contribute to the development of OSA postoperatively.²⁴

Essentially, health practitioners tend to overly sedate patients in order to make them feel more comfortable. However, data shows that the depth of sedation does not affect patients' subjective feelings of distress.²⁵

Reducing or even going without preoperative sedation can significantly prevent elderly patients from developing new onset of postoperative cognitive dysfunction (POCD) or emergence delirium. These include memory impairment, diminished ability to combine tasks, psychomotor

dexterity and other cognitive impairments, and can, if persisting, enter into the differential diagnosis of dementia. POCD symptoms are present in 41% of patients aged 60 and up on hospital leave, but also appear in 36% of younger patients between 18 and 39 years old. To prevent POCD and other complications, new guidelines recommend using sedative premedication with extreme caution.²⁶

The official organ of the German Medical Association and the National Association of Statutory Health Insurance Physicians advises critically reconsidering the habitual practice of premedicating patients with sedatives such as midazolam.²⁶

2. PROCEDURAL SEDATION

Procedural sedation can lead to prolonged recovery and delayed side effects in children undergoing MRI and CT diagnostic procedures. Their research found that 52% of children did not return to baseline levels of consciousness and vital signs until 8 hours after being sedated for the procedure. Fifty-three per cent of children were asleep during the trip home and 31% continued to sleep for at least 6 hours after discharge. Five per cent of children were still impaired in those activities on the second day after their procedure. Side effects reported by parents included breathing difficulties, agitation and aggressive behavior, nausea and vomiting, diarrhea and motor imbalance, which bears the risk of falls and injuries.²⁷ Reduction of the need to sedate children undergoing CT scanning is therefore desirable.²⁸

Additionally for endoscopic procedures, sedation has been identified as a major risk factor for complications. In fact, short narcosis in terms of propofol has been found to account for 50% of complications that occur directly during the investigation. These include especially cardiopulmonary complications, which are the most frequent cause of mortality in the context of colonoscopies. In 2014, the German Association for Gastroenterology, Digestive and Metabolic Diseases published S3-Guidelines on sedation use in gastrointestinal endoscopy: Although sedation is often essential for patients to better bear the investigation, it is recommended to go without sedation whenever possible to promote patient safety and health.²⁹

3. INTENSIVE CARE

Sedatives are also commonly used to handle delirium at the intensive care unit. Ironically, for delirious patients those medications can have serious side effects and may even contribute to the development or manifestation of delirium:

It is widely known that sedatives disrupt the melatonin circadian rhythm, therefore impairing patients' sleep patterns. As a consequence, patients experience less phases of deep sleep, hindering the brain from recovering as well as impairing sleep quality. The additional administration of sedation can further lead to a higher chance of mortality and a lengthier hospital stay.³⁰

Investigating quality of life in intensive care patients, Nelson and colleagues (2000) found that the administration of sedatives was positively associated with long lasting depression and posttraumatic stress disorder (PTSD) symptoms, which were measurable until 3.4 years after ICU treatment for acute lung injury.³¹ The incidence of PTSD in ICU patients was found to lie between 25 and 34%, and thus seen as a frequent complication. Both depression and symptoms of PTSD were correlated with days of sedation.³²

According to the evidence and consensus-based German “S3-Guideline for the management of analgesia, sedation and delirium in intensive care”, sedative medication is critically involved in the development of emergence delirium and shall not be given to patients, if not absolutely necessary. Importantly, patients shall be awake, understand their procedure and be free of pain and anxiety. They shall be actively involved in their treatment and recovery.³³

4. AUDIOVISUAL DISTRACTION - A NON-RISK ALTERNATIVE TO SEDATIVES

During the last few decades, the anxiety relieving effect of music has been intensively studied in the medical context. In 1998, Koch and colleagues conducted a first randomized controlled trial and found that patients who listened to music during their procedures required significantly less propofol and alfentanil to acquire the same level of sedation than their controls.³⁴ This finding was reproduced and supported by a variety of following studies:

Relaxing music was found to decrease the level of patient anxiety in the preoperative setting to a greater extent than orally administered midazolam. The authors stressed that the higher effectiveness and absence of apparent side effects makes music interventions a useful alternative to sedative premedication.³⁵

Years later, a comprehensive Cochrane review concluded that given the fact that preoperative sedatives and anti-anxiety drugs often have negative side effects and may prolong patient recovery and discharge, music interventions are a valuable alternative to these drugs and should be offered to patients more frequently.³⁶

Simultaneously, researchers across the world started to investigate the new concept of audiovisual distraction in the operating room. To audiovisually distract patients before and during procedures, researchers displayed films via monitors, tablets or video glasses to their patients. In 2004, Lee and colleagues conducted a randomized controlled trial using patient controlled sedation during colonoscopies. They compared 53 patients receiving standard care with 52 patients receiving audiovisual distraction through video glasses while undergoing their endoscopic procedures. Results showed that patients who received audiovisual distraction required significantly less propofol.³⁷

Four years later, Etzel-Hardman and Jones (2009) tested an audiovisual distraction technique during a computer tomography scan. Instead of procedurally sedating kids, which is a standard procedure in many institutions, they distracted them before and during their procedures by showing

them child-appropriate films and music. By doing so, the need for procedural sedation in kids was decreased by 91%.³⁸

In 2014, Seiden and colleagues confirmed that audiovisual distraction techniques prior to surgery are superior to preoperative sedation in children. Their research claims that distracting children prior to surgery does not only reduce anxiety and the need for additional sedation, but also minimizes the associated risk of emergence delirium. Children that did not receive midazolam as premedication but audiovisual distraction had a 5% lower incidence of postoperative delirious states. Moreover, children who received distraction prior to induction could leave the postoperative recovery room on average 24 minutes earlier. The researchers concluded that using audiovisual distraction as an alternative to sedative premedication improves recovery and thus leads to earlier discharge from the postanesthesia care unit.³⁹

Researchers from the Oxford University Hospitals NHS Foundation Trust recently conducted a survey with 50 patients undergoing elective limb surgery under regional anesthesia and offered them an audiovisual distraction device instead of standard sedation. Patients aged 18 to 80 years could then select from a variety of films and music to occupy themselves during their surgery. Analysis showed that 45% of patients could go without minimal sedation when using the distraction device.⁴⁰

Also for ICU patients, distraction in the form of music and videos has been found to reduce delirious symptoms. A randomized controlled trial with 66 patients found a significant decrease in the number of episodes of postoperative confusion and delirium in elderly patients (65 and older) after elective hip and knee surgery. Those patients could choose from a selection of nature sounds, classical and meditation music and listened to it in the postoperative period.⁴¹ Music and distraction therapy are generally recommended to be used for non pharmacological prevention of emergence delirium.⁴²

5. AUDIOVISUAL DISTRACTION - AN EFFECTIVE PAIN MANAGEMENT TOOL

Distraction has been proven to positively impact patients' pain perception during and after various medical treatments and subsequently results in decreased needs for pain medication. Patients who undergo urologic procedures with spinal anesthesia consume significantly less opioid medication when they listen to music during their procedures. In total, the reduction of overall alfentanil requirements amounted to 44%.³⁴

During lithotripsy for kidney and ureter stones, distraction by means of videos and music has been found to reduce the subjective pain perception and lower the need for analgesic medication. 118 patients were included in a clinical trial and randomized into an intervention and a control group. The patient-reported pain score was significantly lower in the intervention group and reduced from a mean of 6.1 to 2.4 ($P < 0.0001$). Similarly, the distress score was reduced from a mean of 4.4 to 1.0 ($P = 0.0001$) for patients receiving audiovisual distraction during their treatment. Subsequently, pain perception and distress were reduced by 61% and 77% respectively.⁴³

Distraction therapy with nature sights and sounds was found to significantly reduce pain in patients undergoing flexible bronchoscopy (Diette, Lechtzin, Haponik, Devrotes, & Rubin, 2003). Another randomized controlled trial found that audiovisual distraction with video glasses significantly reduces subjective pain perception during colonoscopies (mean pain score 5.1 for AVD intervention, versus 7.0 for no intervention on a scale ranging from 0-10).³⁷

For children, audiovisual distraction in the form of animated short films has been proven to alleviate pain during puncture procedures. A novel cross-over design enabled all 40 school-aged children (6-11 years) to undergo periods with and without distraction, therefore serving as their own controls. During treatment phases of film distraction, children experienced significantly less pain compared to phases without distraction.⁴⁴

Previous research found that the audiovisual distraction technique is even more effective in alleviating children's pain during puncture procedures than active play interventions and comparable to psychological interventions.^{45,46} When comparing passive distraction through television versus parent play with interactive toys, children experienced a greater pain relief when watching films. On average, children's self pain ratings were 49% lower when watching films during their blood draw (17,4 versus 8,9). Passive compared to active distraction seems to be more effective in reducing pain, as children's distress hinders them from actively interacting with the distractor.⁴⁵

In 2017, The Journal of Pain and Symptom Management published a systematic review which concluded that distraction is a promising intervention for procedural pain.⁴⁷

The authors point out that research studies and clinical guidelines have recommended using nonpharmacologic interventions, such as distraction, for procedural pain management in children. Pharmacologic interventions do not improve the overall pain experience of children as they still complain of pain and remain distressed.⁴⁷

Additionally, the World Health Organisation (WHO) indicates in their report "Promoting safety of medicines for children" that there is a lack of research on the effect of pain medication in children. Existing clinical trials include small sample sizes and are therefore not capable of detecting potential side effects. Avoiding pain medication and making use of nonpharmacological interventions is strongly advised.⁴⁸

PROCESS OPTIMISATION

Keeping track of fast-track concepts: How to save time in the hospital

In times of fast track surgery, early convalescence after anaesthesia is gaining more and more importance in OR management. To enhance patient recovery, it is essential to supply the patient with effective pain management, choose anaesthetic procedures with consideration, use sedative premedication with extreme caution, and mobilise the patient early after operation in order to prevent a lengthy hospital stay. Sedatives are commonly used to deal with patient anxiety and stress, but these medications bear the risk of cognitive impairment, which is clearly incompatible with the modern fast-track concepts of perioperative management. Importantly, patient anxiety in the perioperative period may prolong the recovery period by increasing the risk of complications and augmenting the decision for a general anaesthetic procedure. Audiovisual distraction to reduce patient anxiety was proven to save resources in terms of time and money by optimising processes; decreasing the risk of complications, emergence delirium and delayed recovery; and positively impacting patient attitude towards local and regional anaesthetic procedures. Thus, audiovisual distraction is seen as a valuable future fast-track tool for hospitals.

Attenuating perioperative stress response - an essential component of fast-track methodology

Fast-track programs have been developed with the aim of reducing perioperative surgical stress, thus facilitating early hospital discharge and fast return to daily activities with minimal morbidity. By extending the clinical pathway and integrating new modalities in surgery and anaesthesia, fast-track surgery enforces early patient mobilisation.⁴⁹

Changing structures and procedures as well as rethinking standard healthcare is necessary to fulfill these standards, and positively affect patient recovery. Implementing accelerated recovery concepts into OR management comes with optimised processes, saved resources in terms of time and cost, secured treatment quality and enhanced patient satisfaction.⁴⁹

During the last decades, research has been conducted to prove the effectiveness of those recovery programs with an emphasis on attenuating intraoperative stress response, improving surgery outcome and reducing healthcare costs. Latest studies prove that the implementation of fast-track concepts amounts to cost savings between 11 and 26%, by reducing recovery time and length of hospital stay.⁵⁰

Audiovisual distraction - an effective contribution to fast-track concepts

1. PROCESS OPTIMISATION

Attenuating patient stress response related to surgery and medical treatments is considered an integral part of modern fast-track concepts. During the last decade, physicians became more and more aware that patient anxiety in the perioperative period is detrimental not only to the outcome of surgery but may also contribute to delays in recovery. To deal with patient stress and anxiety, researchers suggest shifting patients' attention from negative surroundings and emotions to positive stimuli by using non-pharmacological but psychological methods.

Planning procedure time and OR availability is ultimately important in order to keep cost low and optimize processes. However, complications can occur, causing delays and waiting times. Notably, waiting in day-surgery units prior to surgery is one of the main causes of patient anxiety in the hospital.¹

Audiovisual distraction devices can be an effective tool to bridge waiting times in the hospital and occupy patients' minds in this sensitive period of time, thus reducing loneliness and the fear of the unknown. In fact, various studies have found that audiovisual distraction effectively reduces preoperative anxiety in holding areas.¹⁹ This method also gives doctors the opportunity to prepare patients on time for their surgery and keep them waiting in front of the OR while being distracted by films and music. Audiovisual distraction methods can further be used as an alternative to sedative premedication, thus reducing the risk of prolonged duration until awakening in the postoperative recovery room.

CT

Reducing sedatives can further lead to savings on average per-patient procedure time. The number of children requiring sedation for a CT scan declined by 87% when offered distraction methods as an alternative. As a result, children could undergo their CT scan within 35 to 45 minutes, whereas sedated children stayed at the hospital about 4 hours. Additional time was related to administration of medication, endured time spent on the CT table for completing the procedure and prolonged recovery for pediatric patients. Average time savings through video distraction thus amounted to more than 3 hours, which subsequently limited the need to eliminate following CT procedures from the backlog and increased the volumes that could be performed. Within a time span of three years, the CT volumes performed were increased to a total of 10,9%.⁵¹

VENIPUNCTURE

Time savings have also been reported during venipuncture procedures. A randomized controlled trial including 300 patients aged 8 to 9 years investigated film distraction as a non-pharmacological method of pain management. By reducing procedural pain and stress, venipuncture time of children who received audiovisual distraction was significantly lower compared to controls. Overall, distracted children coped better and were easier to handle for the medical personnel. The authors concluded that audiovisual distraction is an effective, non-pharmacological method of analgesia which is easy to administer and labour-saving for nurses performing venipunctures with pediatric patients.⁴⁶

EMERGENCY

Eighty-four children were included in a randomized trial investigating the effect of audiovisual distraction in the emergency department. Doctors who performed laceration repair with children aged 3 to 10 years old, expressed that it was easier to perform the procedures when children were distracted. Applying audiovisual distraction therapy in the emergency department might thus reduce time taken for painful procedures such as laceration repair.⁵²

BRONCHOSCOPY

Another randomized trial with 60 patients found that the duration of flexible bronchoscopy was significantly shortened when patients watched nature images on a screen while listening to a selection of folk music. This finding was explained by the observation that distracted patients behaved more cooperatively during their procedure. Patients also experienced significantly less pain, dyspnea and cough during the procedure. Overall, the tolerance of flexible bronchoscopies and patient satisfaction was notably improved.⁵³

2. ENHANCED RECOVERY

Greater fear or distress prior to surgery is associated with a slower and more complicated postoperative recovery. This was already found in the early 1990s, where research in psychoneuroimmunology discovered that stress and pain delay wound healing, a key variable in postsurgical recovery.⁵⁴

PAIN

In 2006, researchers in the US discovered that pain plays an important role in post-surgery wound healing. In this prospective trial, the correlation between subjective pain intensity and healing of a biopsy wound was investigated in 17 women after elective gastric bypass surgery. The finding was a significant association between greater acute postoperative pain and delayed wound healing. In fact, patients who rated their pain intensity lower, experienced on average 7 days shorter healing times than patients who reported significantly higher pain scores. Pain intensity was strongly

predicted by patients' moods and depressive symptoms on the day of surgery.⁵⁵

STRESS & ANXIETY

Stress is critically linked to wound healing and therefore recovery. The physiological stress response provokes an increase in cortisol levels, which in return down-regulates the early inflammatory response. As a consequence, mechanisms of wound repair get interrupted and impaired.⁵⁶

In addition to diminished immune response, anxiety has been identified as a risk factor for infection. A higher level of anxiety can further lead to complications in the administration of presurgical drugs; it can hinder the induction of anaesthesia and has been found to be associated with poorer postsurgical outcomes. Decreasing anxiety will therefore not only improve patient experience but could also impact the course of recovery.⁹

SEDATIVES

Audiovisual distraction methods have been established as an effective tool to manage pain and anxiety in the perioperative hospital setting. When given as an alternative to sedative premedication, distraction devices can promote an earlier discharge from the postoperative recovery room, amounting to time savings of about 24 minutes per patient. This finding has also been related to emergence delirium, which was prevented when offering audiovisual distraction instead of administering midazolam.³⁹

DELIRIUM

"30-50% of elders experience a period of acute confusion or delirium after hip or knee surgery and that percentage increases with age. Increased stress of hospitalization, the hip or knee fracture itself and the accompanying pain, being placed in unfamiliar surroundings, and the prolonged effects of medications such as anaesthetics and analgesics are predisposing."⁵⁷

Delirium as a secondary complication of surgery has been estimated to be an immense healthcare problem of our time. It is critically associated with a longer hospital stay, therefore consuming resources in terms of bed availability, personnel time and cost in general. On average, delirious patients stay at the hospital 5-10 days longer than patients without delirium but with the same diagnosis.³⁰ Delirious and especially agitated patients are not easy to handle. Nurses often need to keep an extra eye on delirious patients since they are likely to pull out IV catheters, dressings or drains, and hurt themselves by accident.

Moreover, delirium is closely linked to secondary complications, such as posttraumatic stress disorders (PTSD). In fact, 25 to 34% of intensive care patients are diagnosed with PTSD within 2 years after staying at the intensive care unit (ICU). These high volumes are explained by the ICU environment which patients often perceive as enormously stressful. According to a systematic review, a longer administration period of sedatives as well as frightening ICU experiences are

directly linked to the incidence of PTSD.³²

Sedatives are commonly used to treat patients with delirium, especially when they are agitated or experience a lot of stress because they lose orientation and thus feel frightened and confused. Unfortunately, sedative medication, such as propofol (which is commonly administered to ICU patients), is known to interrupt the body's circadian melatonin cycle, therefore interfering with the natural human sleep rhythm. Since the human brain can mostly recover and regenerate during phases of deep sleep, sedative medication is actually a strong contraindication in the treatment of emergence delirium.

Sleep deprivation is a major health problem at the ICU related to the permanent beeping of machines, glaring lights and the generally noisy environment.³⁰ Relaxation exercises, music therapy and decoupling from the stressful environment is clearly recommended. A first pilot study has found that nature and relaxation videos displayed on video glasses are effective in improving the subjective and objective sleep quality of elderly patients.⁵⁸

Oversedation is further critically linked to a prolonged period of mechanical ventilation. A prospective randomized study compared patients' health status when receiving continuous sedation to patients with daily awakenings. Patients who were only minimally sedated and woke up every day could stop mechanical ventilation 2.4 days earlier than oversedated controls. As a consequence, those patients were discharged from the ICU 3.5 days earlier than controls.³⁰

Hence, non-pharmacological methods as an alternative to common medication are urgently needed to deal with agitation, stress and anxiety in delirious patients.

Listening to music is an effective nursing intervention to decrease acute postoperative confusion and delirium in the elderly undergoing elective hip and knee surgery. Study results of a randomized controlled trial with 66 elderly patients demonstrate a significant reduction in acute confusion in patients who listened to music in the postoperative period. Moreover, those patients achieved higher scores on a scale measuring the readiness to ambulate.⁵⁷

In particular, nature-based relaxation methods positively affect patient health by relieving anxiety and agitation in intensive care patients. 60 patients were randomized into control and intervention groups, where patients could listen to pleasant nature sounds via headphones. The relaxation intervention led to significantly lower systolic and diastolic blood pressure as well as decreased anxiety and agitation levels, compared to controls. The longer patients were allowed to listen to nature sounds, the more sustainable the effect on patient stress parameters. Researchers recommend integrating nature-based relaxation methods into the daily care of ICU patients.⁵⁹

When displaying videos before induction, children were found to develop delirious states less often. In total, the reduction of emergence delirium amounted to 5% in a randomized controlled trial. Audiovisual distraction can hence function as a delirium prevention.³⁹

3. REGIONAL VERSUS GENERAL ANAESTHESIA

In the context of fast-track surgery, the choice of anaesthetic procedure is known to crucially impact recovery time and length of hospital stay.

When comparing different types of anaesthesia, studies indicate that local and regional anaesthetic procedures pose less risk for patient health and a reduced mortality rate. According to a retrospective trial with 10,868 patients, the risk of complications and mortality was reduced by 58% when conducting surgery under spinal compared to general anaesthesia.⁶⁰

Advantages of regional nerve blockade over general anaesthetic procedures include reduced opioid requirements, earlier ambulation and hospital discharge, enhanced rehabilitation, and less frequent persistent postsurgical pain.⁴⁹

Although regional anaesthetic procedures are preferable to general anaesthesia in many respects, the majority of patients opt for narcosis when given the choice.

Patients stated the anxiety of fully experiencing the surgical procedure while being awake as the main reason for choosing general instead of regional anaesthesia.⁶¹

To raise acceptance of surgery under regional anaesthesia, researchers introduced audiovisual distraction devices to patients undergoing longer epidural anaesthetic procedures lasting for more than 9 hours. Patients reported to have been highly satisfied with the procedure and would recommend undergoing regional anaesthesia to others when being audio-visually distracted from the operation.⁶²

Another survey with 50 patients found that 90% of patients who had previously undergone general anaesthesia stated that regional anaesthesia along with an audiovisual distraction technique was better than previous experiences with narcosis.⁴⁰

Researchers expect that more patients are willing to undergo surgery under regional anaesthesia if they are offered to wear video glasses during the operation.⁶³ Hence, risks, complications and follow-up costs associated with general anaesthesia could be avoided.⁶² Promoting the choice for regional anaesthesia along with an audiovisual distraction technique can contribute to better surgical outcomes and optimal conditions for fast-track surgery.

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