



PREVALENCE AND FACTORS ASSOCIATED WITH PREOPERATIVE ANXIETY IN ELECTIVE SURGICAL PAEDIATRIC PATIENTS OF AGE 7 TO 12 YEARS

Anaesthesiology

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ABSTRACT

BACKGROUND: Children who undergo surgery experience acute psychological distress in the preoperative period. The objective of this study was to assess the prevalence and factors associated with preoperative anxiety in elective surgical paediatric patients.

METHODS: A cross-sectional observational study was performed with 206 inpatients aged 7-12 years scheduled for elective surgery. Preoperative anxiety was assessed on Visual Analog Scale for Anxiety.

RESULTS: High prevalence of preoperative anxiety was observed. Variables like age, prior surgery or hospitalization and preoperative physical discomfort are significant factors affecting the level of anxiety. Apprehension of parental separation and various fears related to surgery and hospital are found in majority of children.

CONCLUSION: Most of the children have anxiety in preoperative period.

KEYWORDS

Preoperative Anxiety, Elective Surgical, Paediatric Patients.

Introduction

Surgery is one of the most distressful events for a child and anxiety is a common feeling in preoperative period^{1,4}. In operating room the child is exposed to new surroundings, new people in command and fear of repeated painful physical stimuli. In such environment exaggerated sense of helplessness occupies the child's mind. Feeling of no control over the situation and parental absence in the operative room may intensify the anxious behaviour. Preoperative period that corresponds to 24 hours before surgery, discomfort is imminent for the children and their families, regardless of the type of surgery, outpatient or hospital approach and cultural context in which the child is inserted⁵.

Generally anxiety causes sleep disruption, nausea, fatigue, and inadequate responses to anesthesia and analgesia^{1,6}. Preoperative anxiety characterised by subjective feelings of tension, apprehension, nervousness, and worry that may be expressed in various forms in childhood⁷. Some of the children may express their fears verbally while others manifest it in behaviour such as crying, agitation, and cessation of conversation or play and even attempting to escape from care providers. This is accompanied by significant physiological changes such as increase in heart rate and secretion of stress hormones⁷. Children who are shy or inhibited and those who have a high intelligence quotient and lack good adaptive abilities are also at increased risk⁸.

Any unpleasant experience by child during hospitalisation not only creates a fear towards medical systems for the lifetime but also sometimes lead to serious psychological consequences like post-traumatic stress disorders. Children requiring anesthesia for surgery or diagnostic procedures are more likely to be anxious, as are their parents. It is not surprising therefore that up to 65 % of children experience significant anxiety associated with the preoperative period⁹.

Anxiety in children is poorly evaluated and less addressed condition in preoperative period. To reduce the incidence and intensity of Preoperative anxiety there is a need to assess its prevalence and identify the associated factors in the local population which can be modified in the management of patients by clinicians.

Several evidence indicate age^{2,3,10-12} as factor associated with preoperative anxiety in children. Increased anxiety in children in preoperative period is present as early as 9 months and peaks at 1 year; highest risk is at 1 to 5 years of age^{3,13}. Anxiety and factors contributing may differ in infant, toddler, pre-school, school going and adolescents age as per their intellectual development, expressive ability, coping skills and adaptive ability. Different preoperative approaches suggested for children based on Erikson's psychosocial developmental stages i.e. 1-2 years, 1-3 years, 4-5 years, 6-12 years and 13-18 years¹⁴. Age is considered as one of the most important factors and different

presentations of anxiety are noted in children before and after six years of age. This study was designed to assess the prevalence and factors associated with preoperative anxiety in elective paediatric patients of age 7 to 12 years scheduled for elective surgery at the hospitals attached with Government Medical College, Kota Rajasthan which is a tertiary care centre for a large number of patients of Hadoti region and surrounding area.

Aims of study:

1. To assess the prevalence of preoperative anxiety in the elective surgical paediatric patients of age 7 to 12 years
2. To determine the associated factors with preoperative anxiety in the above patients.
3. To find out apprehensions and fears associated preoperative anxiety.

Method of study:

This was a cross-sectional observational study carried out at Hospitals attached with Government Medical College, Kota. Participants of study were Children age 7-12 years with ASA Physical Status I and II who were scheduled to undergo elective surgery under anesthesia. On an average 10-12 children of age 7-12 years age get operated per month as elective cases. The data was collected over a period of 3 years from April 2017 to March 2020. At the start of study ethical clearance for the study was obtained from Institutional research ethics committee of Government Medical College, Kota. Informed consent was obtained from parents along with assent from children. Those children who had a history of chronic illness, prematurity or developmental delay were not recruited. Children who had posted for emergency surgery, taking anti-anxiety or anti-depressant medications, or had been diagnosed with an anxiety disorder were excluded from the study. Children and parent or parents who were sufficiently alert to respond the questionnaires were enrolled for the study. The patients who qualified for the study were then interviewed to collect sociodemographic data such as: Gender, Age, education, locality of residence etc. Other information regarding history of previous surgery, fear of doctors, injection, hospital environment & apprehension of harm or death during operation was asked to every patient. The state anxiety was assessed on self-report numeric Visual Analog Scale (VAS). The VAS has been widely used to assess subjective states, such as general anxiety¹⁵ as well as preoperative anxiety¹⁶⁻¹⁷, and does not show the clustering of responses that is typical of Likert-type scales. It is Valid to assess state anxiety in children as young as 7 year¹⁸.

It is a 10-cm long line on paper with 0 at one end and 10 at the other end, which may have advantage by virtue of simplicity. Word anchors were displayed horizontally with 0 representing 'no anxiety', 2 for 'a little', 5 for 'medium', 8 'a lot' and 10 for 'worst imaginable'¹⁹. Anxiety was also explained in increasing intensity in terms of fear of parental separation, bodily injury and death. VAS of 1-4 depicted nervousness and fear of

parental separation, VAS of 5–7 depicted fear of bodily harm and 8–10 depicted fear of death. This was explained in English, Hindi or the local language, whichever was the patient's mother tongue. Clear instructions on how to mark a response on VAS on their own by encircling the applicable number were provided to the patients. Values of VAS for Anxiety (VAS-A) around 50 mm (5cm) are a reliable threshold for a clinically meaningful level of preoperative anxiety²⁰. For prevalence of preoperative anxiety cut VAS score of 5 cm or above is used. The results were tabulated in number, percentage, mean and standard deviation. Analysis was done with help of student's t test and spearman coefficient of correlation. Level of significance was taken as $p < 0.05$.

Results

The studied population constituted 206 patients. Majority of patients were male children, aged 7-12 years including 64% males and 36% females scheduled for elective surgery. Meaningful level of anxiety i.e. VAS score of 5 or above was found in 90.3% children. The mean age of sample was 9.6 yrs and mean VAS score of anxiety was 7.15. Age of children was found to have negative correlation with level of anxiety as depicted in table-1. Preoperative anxiety was assessed on other variables in Table-2. No significance difference was found for gender, locality of patient, rearing by single parent or both parents, living in joint or nuclear family and belonging to Below Poverty Line (BPL) or Above Poverty Line (APL) family. Primary school children found to have significant higher level of anxiety. Patient with prior history of hospitalization and surgery had higher level of anxiety. Patient with Preoperative pain and nausea or vomiting were found to have significant higher level of anxiety.

Preoperative anxiety in children is associated with various fears and apprehensions. 91.7% children have fear of injections while parental separation is worry for 76.2%. Other fears reported as of surgery in 69.4%, harm in 62.1%, hospital environment itself in 56.3% and fear of death in 34.4%.

Discussion

This study demonstrate that most of children who wait for elective surgery experience preoperative anxiety. Other study reported that 65%-75% of children undergoing surgery experience significant fear and anxiety preoperatively^{9,21}. It begins as soon as the surgery is planned and increases to maximal intensity at the moment of entering the hospital²². Brazilian researchers estimated 81.6% prevalence of anxiety among children at the time of outpatient preoperative evaluation²³. In the evaluation of children aged 4-8 years, prevalence rate of 84.0% was found in the preoperative holding area²⁴. In present study higher prevalence of preoperative anxiety is very likely related to the timing of assessment in waiting area near the entrance of operating room tended to express higher levels of fear and anxiety because they saw post-operated patient distressed or crying.

We chose the self-report numeric VAS for anxiety as it is a simple and easy test to understand as well as reliable for the measurement of preoperative anxiety^{18,19}. Kindler *et al*¹⁷ reported that there was significant and positive correlation between VAS and Spielberger State trait Anxiety Inventory (STAI), $r = 0.64$, $P < 0.001$ when used to assess anxiety preoperatively. Although State-Trait Anxiety Inventory – Children (STAIC) is considered a gold standard for measurement of anxiety, it is complex, lengthy, difficult to understand and interpret in paediatric age group and often requires help of a psychologist²⁵. Most children develop the ability to understand the self-report between the ages of 3 and 7 years^{26,27}. Modified Yale Preoperative Anxiety Scale (mYPAS) is a valid, observational anxiety scale which comprises activity, vocalisation, emotional expression and state of apparent arousal and is modified to be applied in the age group of 2–12 years. It requires a dedicated observer either a psychologist or a trained observer for assessment of behaviour at the time of entering OT and introduction of mask. However, where human resources are limited, it becomes difficult to assign a dedicated observer for assessment of anxiety. Hence, it was not feasible to use this scale in our setup.

Factors such as age and schooling level of child influence the level of anxiety. This study found that as age advances the anxiety level decreases and same is reflected in level of schooling; middle class children found to have significant lower level of anxiety. Preoperative anxiety in young children undergoing surgery is associated with a more painful postoperative recovery and a higher incidence of sleep and other problems⁸.

Variables like gender, type of family, locality of residence, poverty status and rearing of child by single or both parents are comparable and do not affect preoperative anxiety at significant level.

Higher anxiety level reported in children with prior history of hospitalization or surgery as in previous studies¹². Previous GA experience and referral for GA at a very young age are factors contributing to increased anxiety in child¹⁰. Previous negative hospital experiences, paediatrician or dentist visits contributes to preoperative anxiety in children¹³.

Physical discomfort like symptoms of pain, nausea or vomiting is associated with higher level of anxiety. Apprehension of parental separation and fears of physical harm, hospital environment, surgery and injection are found in more than half of children. Lack of understanding about the surgical procedure, unknown hospital environment, fear of physical injury, separation from their parents exaggerates anxiety²⁸. The main causes of anxious behaviours seems to include fear of medical examinations, pain, death, fear of separation from the parents, and fear of diagnosis, uncertainty, loss of control and safety²⁹⁻³².

Proper management of fear and anxiety by anesthesiologists may provide better preoperative assessment, less pharmacological premedication, smoother induction and may be even better outcome⁶. The preoperative period is particularly important in this scenario because it is very difficult to manage an anxious and fearful child posted for surgery. It is of utmost importance that the antianxiety measures should start immediately after admission to avoid such a scenario and the anaesthesiologists have a crucial role in it. Further researches on preoperative anxiety in children at different stages of the development are desirable.

Conclusion

Most of the children in age of 7-12 years who wait for elective surgery experience preoperative anxiety. Age, prior surgery or hospitalization and physical discomfort influence the occurrence of this phenomenon. Parental separation, fear of surgery or physical harm and hospital environment are major concern of preoperative anxiety. Anaesthesiologist taking care of children should recognize the risk factors, and individualize management of preoperative anxiety.

Table-1: Correlation of Age of children with preoperative anxiety level

Age in years	N (%)	Average VAS	Spearman coefficient
7	32 (15.5)	7.59	
8	28 (13.6)	7.68	
9	36 (17.5)	7.53	-0.90293
10	42 (20.4)	6.76	
11	37 (18.0)	6.95	
12	31 (15.0)	6.55	

Table-2: Potential factors associated with preoperative anxiety, including sociodemographic and clinical characteristics of children.

Variables	N (%)	Mean VAS	Std Dev VAS	P value (t test)
Gender				
Male	132 (64.1)	7.2	1.84	0.147
Female	74 (35.9)	7.07	1.95	
Locality				
Rural	154 (74.8)	7.22	1.93	0.479
Urban	52 (25.2)	6.96	1.85	
Family				
Joint	85 (41.3)	7.2	1.89	0.752
Nuclear	121 (58.7)	7.12	1.88	
School				
Primary	115 (55.8)	7.47	1.8	0.006
Middle	91 (44.2)	6.75	1.91	
Parents				
Single	38 (18.4)	7.4	1.64	
Both	168 (81.6)	7.1	1.93	0.33
Economic status				
BPL	97 (47.1)	7.01	1.91	
APL	109 (52.9)	7.31	1.85	0.253

H/o prior Hospitalization				
Yes	88 (42.7)	7.5	1.52	
No	118 (57.3)	6.89	1.93	0.019
H/o prior Surgery				
Yes	44 (21.4)	7.77	1.31	
No	162 (78.6)	6.98	1.98	0.0021
C/o Pain				
Yes	47 (22.8)	8	1.55	
No	159 (77.2)	6.98	1.98	0.0001
C/o Nausea/Vomiting				
Yes	57 (27.7)	7.7	1.54	
No	149 (72.3)	6.94	1.96	0.0039

Table-3: Fear or apprehension in Preoperative Anxiety Patients

Fears or Apprehension	N	% (N=206)
Fear of Injection	189	91.7
Parental separation	157	76.2
Fear of surgery	143	69.4
Fear of harm	128	62.1
Fear of Hospital environment	116	56.3
Fear of doctors & nurses	96	46.6
Fear of death	71	34.4

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