Parental anxiety associated with participation in anaesthetic induction in children: questionnaire survey

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Objective. To determine the reasons why Chinese parents accompany their child during anaesthetic induction; to explore the level of anxiety experienced by the parents; and to evaluate the factors that contribute to parental anxiety.
Design. Questionnaire study of Chinese parents who had chosen to be present during the anaesthetic induction of their child between January 1997 and July 1997.
Setting. Day Surgery Unit at a public hospital, Hong Kong.
Participants. One hundred and fifty-one Chinese parents of 151 children undergoing general anaesthesia for surgery.
Main outcome measure. Parental anxiety, as evaluated by a self-reported rating system and the State-Trait Anxiety Scale.
Results. More than half (56%) of the participants graded their experience as either "very anxious but tolerable" or "a little anxious", and only 2% graded the situation as "very anxious, intolerable". All participants were either "satisfied" or "very satisfied" with their experience. The type of surgery and any history of previous surgical intervention were found to be factors that determined the level of anxiety ($P<0.05$).
Conclusions. Most Chinese parents decide to be present at their child's anaesthetic induction because of a sense of duty and concern. Parental presence does not provoke further or intolerable parental anxiety. One limitation of this study is that the level of anxiety measured might be due to the combination of anaesthetic induction and surgery rather than to concerns about anaesthetic induction alone.

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Key words: Anesthesia; Anxiety; Child; Parent-child relations; Preoperative care; Psychology; Questionnaires

Introduction

The presence of a child's parents during the induction of general anaesthesia has always been a controversial issue. While early studies found that parental presence could reduce patient anxiety and increase co-operation,[1,2] more recent reports indicate that parental presence might not always be beneficial.[3,4] Kain et al[5] noted that only children who were older than 4 years and whose parent(s) had a low anxiety trait would benefit from parental presence.

While the role of parental presence in alleviating a child's anxiety has yet to be proven, the effect on parental anxiety has been investigated. Some studies have found that most parents prefer to be present during the induction of anaesthesia.[6] Parents state that they want to be present because of the child's anxiety and a sense of duty.[7] Some studies have found that parental presence can result in their child's disruptive behaviour.[8] In addition, more than 90% of parents report some degree of anxiety during the induction. Parents also report feeling upset to see their child go limp during induction and at having to leave them.[9]

Psychologically, the term 'anxiety' refers to at least two related, but different, constructs. Very often, the word 'anxiety' is used to describe an unpleasant emotional state that relates to a stressful situation. Anxiety can also describe a personality trait. The concepts of state and trait anxiety were first introduced by Cattell[10] and have been elaborated by Spielberger.[11-14] Anxiety states are characterised by subjective feelings of tension, apprehension, nervousness, and by the arousal of the autonomic nervous system. Anxiety states are

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often transitory and can recur when evoked by appropriate stimuli; however, anxiety may be prolonged if the evoking conditions persist. In contrast, a personality trait is a relatively enduring characteristic that relates to an individual's perception of the world and disposition to react or behave in a certain manner with predictable regularity.

Thus, having an anxious personality trait can be considered a consistent feature of a person. Such a person is likely to become anxious easily and to experience an anxiety state when faced with ordinary difficulties. An individual who is not usually anxious, however, may experience only transient episodes of anxiety whenever a stressful situation has to be faced. Hence, the level of anxiety one feels at a given moment (ie anxiety state) is determined both by an individual's personality (anxiety trait) and by how stressful the situation is. In examining the particular effect of a specific situation on an individual's anxiety state, it is important to take their personality trait into consideration.

The important role of anxiety in disrupting the well-being of an individual is demonstrated by its relationship with both physical and psychological health. The conventional view of the stress-illness relationship is that extensive bodily changes can result from stress-generated emotions such as anxiety.[15] In addition, immunological incompetence is considered to be linked to stress and illness.[16-18] The cross-cultural applicability of the stress-illness relationship has been validated in a Chinese population in Hong Kong.[19] Various anxiety disorders, which are classified in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (fourth edition; DSM IV),[20] also outline the relationship between anxiety and mental health. Because of the way stress and anxiety affect the psychological well-being of people of different cultures, the impact of parental presence during anaesthetic induction on parental well-being in Chinese populations is a major concern.

Although numerous papers have been published on the topic of parental presence at the anaesthetic induction, not many have studied the effect of being present on the parents' psychological well-being. Furthermore, there is currently no report on this subject in a Chinese population. Since the Caritas Medical Centre was the first hospital in Hong Kong to adopt the practice of routinely allowing parents to accompany their children during anaesthetic induction, we felt that there was a need to investigate this practice from a local perspective.

The aims of this study were as follows: to determine Chinese parents' reasons for accompanying their child during the induction of anaesthesia; to explore the level of anxiety experienced by ethnic Chinese parents when they accompany their child during the induction of anaesthesia; and to evaluate factors that contribute to parental anxiety at induction of anaes-thesia in their child.

Methods

Participants

The study population consisted of 151 Chinese parents of 151 children who accompanied their child during anaesthetic induction at the Caritas Medical Centre from January 1997 to July 1997. All the children underwent elective surgery and received general anaesthesia during this period. Approval was obtained from the hospital's ethics committee and verbal informed consent was obtained from all parents.

Questionnaire

The questionnaire used for the present study (available from the authors) consisted of three parts. The first part collected personal information from the participants. The second part explored the reasons for the parent(s) to accompany their child during anaesthetic induction. The third part explored the parents' reactions to being present at their child's anaesthetic induction. Participants were asked to choose one or more of the 10 options offered to indicate their reason(s) for accompanying their child during anaesthetic induction. These choices are shown ranked by order of frequency in Table 1.

Participants were asked if they felt they had the right to choose to accompany their child during anaesthetic induction. They were then asked whether they would opt to accompany their child a second time and to indicate their answer by selecting one of the following five responses: "very willing", "willing", "no comment", "not willing", and "very unwilling". Participants were also asked to indicate the effect of accompanying their child on their own level of anxiety by choosing one of the following six responses: "very anxious, intolerable", "very anxious, but tolerable", "a little anxious", "less anxious", "no effect", and "others, please indicate." The final item of the questionnaire assessed the satisfaction of parents as to the overall arrangement of parental presence during anaesthetic induction by asking them to select one of the following categories: "very satisfied", "satisfied", "no comment", "not satisfied", and "very unsatisfied".

Table 1. The reasons most commonly given by parents for accompanying a child during anaesthetic induction (more than one reason given by the parents was accepted)

Reasons for accompanying child	Respondents, n=151 No. (%)
Obligation of being a good parent	106 (70.2)
Child's anxiety towards surgery and anaesthesia	90 (59.6)
Worried that child would have fearful memory	51 (33.8)
Parental anxiety towards surgery and anaesthesia	28 (18.5)
Expectation of staff	21 (13.9)
Parent's experience with anaesthesia	14 (9.3)
Parent's fear towards operating theatre	13 (8.6)
Effect of parental presence on communication between child and anaesthetist	4 (2.6)
Parent's curiosity	4 (2.6)
Others	2 (1.3)

State-Trait Anxiety Inventory

The original State-Trait Anxiety Inventory (STAI) [Form X] was developed by Spielberger in 1970[21]; the present version of the STAI was revised in 1983.[22] The STAI has two parts: the State Anxiety Inventory (SAI) and the Trait Anxiety Inventory (TAI). The former part measures situational anxiety while the latter measures baseline anxiety; each part consists of 20 items. These items are rated on a 4-point scale, with a higher score equating to a greater anxiety level.

According to studies by Spielberger et al,[22] the test-retest correlation for the TAI is higher than that for the SAI. Despite the fluctuating test-retest correlations of the SAI, which reflect its validity in measuring state anxiety, the internal consistency of the SAI, as measured by the Cronbach's alpha score, has been found to be high.

The STAI was translated into Chinese in 1988. The authenticity, reliability, and validity of the Chinese translation have been tested previously in China and found to have good agreement with the original version.[23]

Procedure

According to the protocol of the Department of Anaesthesia at the Caritas Medical Centre, parents were informed of their right to accompany a paediatric patient during anaesthetic induction either at the Pre-admission Clinic or at the premedication visit prior to surgery. A video showing the anaesthetic induction procedure, the environment of the operating theatre where the anaesthesia would take place, and parents preparing to be present during the anaesthetic induction was screened to the parents and their child. Those who chose to accompany their child were allowed to stay in the operating room during the anaesthetic induction but had to leave before surgery commenced.

Participants were asked to complete the questionnaire and STAI immediately after their child's induction of anaesthesia. The first 50 participants filled in only the questionnaire. The subsequent 101 parents completed both the questionnaire and STAI.

Statistical analysis

Only responses to individual questions were analysed statistically; hence, the number of subjects (n) might have varied in the statistical analysis of each individual question. For the STAI, statistical analysis was performed only for those who completed all items. The Pearson correlation coefficient (r) was calculated to explore the relationship of the SAI and TAI for participants. One-way analysis of variance (ANOVA) was used to explore the main effect of the personal status of participants and patients on the SAI. The variables explored in the questionnaire that related to the SAI were also analysed. When significant results were found for variables with more than two levels, Duncan's multiple range test was performed to determine which group comparisons resulted in a significant difference.

Results

Of the 151 participants, 119 (78.8%) were the mother of the child and 30 (19.9%) were the father of the child; two participants did not state their sex. The age of the participants ranged from 24 to 59 years (mean, 36 years; standard deviation [SD], 6 years) and the majority (146; 96.7%) were married. Fifty-nine (39.1%) of the participants had been educated at the primary level or below, while the remainder had received secondary or post-secondary. Of the paediatric patients who had a parent involved in the study, most (126; 83.4%) were boys and only 25 (16.6%) were girls. Their ages ranged from 1 to 13 years (mean, 5 years; SD, 3 years).

There were two main types of surgery: circumcision (82 [54.3%] patients) and herniotomy (23 [15.2%] patients). The remaining 46 (30.4%) patients had under-

gone various other kinds of surgery—for example, surgery for strabismus or orthopaedic operation. For most of these patients (130; 86.1%), this occasion was the first time the patient had been given general anaesthesia; 124 (82.1%) patients received inhalation induction and 27 (17.9%) received intravenous induction.

Anxiety experienced by parents during the anaesthetic induction

Of the questionnaire participants who responded, 129 (91.5%) replied "yes" to the question that asked whether they felt they had the right to choose to accompany their child (n=141). One hundred and nine (72.2%) parents chose "very willing" and 42 (27.8%) "willing" when asked if they would choose to accompany their child a second time (n=151). None chose "no comment", "unwilling", or "very unwilling" as their answer. To describe the effect on their anxiety state of accompanying their child (n=151), 3 (2.0%) participants chose "very anxious, intolerable", 22 (14.6%) chose "very anxious, but tolerable", 63 (41.7%) were "a little anxious", 38 (25.2%) were "less anxious", and 25 (16.6%) selected "no effect". In response to the question about the satisfaction derived from accompanying their child through the anaesthetic induction (n=100), 56 (56.0%) respondents marked "very satisfied", while the remainder (44; 44.0%) chose "satisfied".

State-Trait Anxiety Inventory results

Of the 100 parents who answered all the items in the SAI (minimum score, 20; maximum score, 80), scores ranged from 20 to 65 (mean, 34.2; SD, 9.3). Of the 99 subjects who answered all the items in the TAI, the scores ranged from 20 to 68 (mean, 39.3; SD, 8.3). The correlation between the SAI and TAI was found to be positive and significant ($r=0.31$; $P<0.05$). As has been found in previous studies,[21] the main effect of gender was found to be significant in the TAI (ratio of variances [F]=5.76; $P<0.05$). The TAI score for the women ranged from 25 to 68 (mean, 40.3; SD, 8.2) whereas for the men, it ranged from 20 to 46 (mean, 34.8; SD, 7.9). However, the main effect of gender on the SAI was not found to be statistically significant.

Group differences in State-Trait Anxiety Inventory results

According to the ANOVA results presented in Table 2, a significant difference in the SAI was found between the different types of surgery ($F=3.67$; $P<0.05$) and whether the child had undergone previous surgery ($F=5.84$; $P<0.05$). Results of the Duncan's multiple range test found that parents of a child undergoing surgery for a hernia had a significantly higher level of state anxiety than those whose child was being circumcised ($P<0.05$). Parents of patients who were having any surgery for the second time had a higher level of state anxiety than those of children having surgery for the first time ($P<0.05$).

Among the various reasons parents gave for choosing to accompany their child (Table 3), parents who did not put "obligation of being a good parent" as the reason for accompanying their child were found to have a higher level of state anxiety than those who gave this as the reason ($F=6.25$; $P<0.05$).

Discussion

This study replicated and extended a number of previous findings. As indicated by the frequency of certain reasons parents chose to justify accompanying their child during anaesthetic induction, Chinese parents in this study were similar to their western counterparts,[7] in that most decided to be present because of a sense of duty and concern for their child. Parents also had the chance to admit that their own emotions towards surgery-related matters might contribute to their decision to stay with their child during the induction.

Twenty-one (13.9%) parents in the study indicated "expectation of staff" as their reason for accompanying their child at induction. While the majority of parents

Table 2. State-Anxiety Inventory scores according to type of surgery and number of previous surgeries

	Score by type of surgery		
	Circumcision	Surgery for hernia	Other conditions
Mean	32.3	39.3	34.8
SD	8.1	10.9	9.5
n	53	15	32
	Score by number of previous surgeries		
	1st surgery	2nd surgery	3rd surgery
Mean	33.0	42.0	42.0
SD	8.5	12.0	2.8
n	87	11	2

Table 3. State-Anxiety Inventory scores according to reason for parental presence

	Score by reason for accompanying child	
	Parental obligation	Other reason(s)
Mean	32.6	37.5
SD	8.7	9.6
n	66	33

felt that they had the right to accompany their child, 13 (8.5%) of the respondents indicated that they did not feel they had the right to choose. However, when they were asked hypothetically if they would be willing to stay with their child another time, all indicated their willingness. Although most parents were willing to be present during anaesthetic induction and most likely chose to do so freely, care should be taken by staff so that a parent's right to be present is not taken for granted. Parents should be told to take their own emotions and coping mechanisms into consideration before they make a decision. Parents should also be given time to decide whether or not to be present. As a parental sense of duty was the most frequently cited reason for staying, care should be taken to ensure that parents who choose not to stay do not feel guilty because of their choice.

The STAI results obtained in this study show that the population questioned was a heterogeneous group of parents in terms of their levels of state and trait anxiety. The results are similar to those found by other studies of the STAI.[22] The small positive relationship between the SAI and TAI indicate that parents with a higher trait anxiety tend to have a higher state anxiety as well, but this relationship was not a strong one. Consequently, while the personality trait of a parent in terms of trait anxiety contributes to their anxiety state during anaesthesic induction to a certain extent, other variables should also be considered. Of the variables explored, the type of surgery and history of previous surgery were identified as having a significant effect on the level of a parent's anxiety state. This result seems to be related to the perception of parents as to the nature of the surgery. Apparently, surgery for hernia is considered treatment for an illness and was more anxiety-provoking than circumcision. Similarly, the parental perception of the physical condition of the child was an important factor that affected the level of anxiety. A higher level of state anxiety was seen in parents whose child had a previous experience of surgery and general anaesthesia.

The difference in the SAI between parents who were grouped according to the reason they gave for their presence can be used to devise ways that might be employed to help parents cope with the situation. Parents who gave "obligation of being a good parent" as the reason for their presence had a comparatively lower level of state anxiety than those who gave other reasons. This was probably due to the fact that parental obligation, compared with the other reasons offered, was a more rational and less emotional reason. More in-depth study of parental reasoning would be helpful. It might also be useful to explore the specific meanings of "obligation of being a good parent" and other reasons via qualitative methodologies such as focus groups or narrative interviews.

The hypothesis that parental presence during anaesthetic induction does not necessarily provoke further or intolerable parental anxiety was also confirmed. The participants of this study were a heterogeneous group of parents, and the level of parental anxiety as a result of their presence varied substantially. Most did not report having an intolerable level of anxiety, and more than one third reported feeling less anxious or no change. For the minority of parents who reported feeling anxious to an intolerable level, further study with a larger sample would be required to investigate the factors contributing to their level of anxiety. Parental anxiety related to being present during anaesthetic induction was measured after the anaesthetic induction had taken place and mainly relied on the subjective self-reporting of parents. While this method was less intrusive for the parents and other people concerned during anaesthetic induction, its validity in terms of reflecting parental reaction during the induction awaits confirmation. Since the questionnaire and the STAI were completed after induction, the results might reflect a parent's level of anxiety after the induction rather than during it. However, bearing in mind that the questionnaire and STAI were completed immediately after the child's induction, the measures should reliably reflect their anxiety towards the induction, if not during the induction.

One other limitation of the present study was that the anxiety measured might not be due to anaesthetic induction alone. Most probably, it was due to the surgery as well as the anaesthetic induction. The fact that the type of surgery was found to be a factor determining the level of state anxiety seems to suggest that much. Further studies on this subject should investigate ways of differentiating anxiety due to anaesthetic induction from anxiety due to surgery.

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