Original Article

A Nationwide Survey on the Knowledge and Attitudes of Malaysian Optometry Students on Patients' Visual Experiences During Cataract Surgery

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Abstract

Introduction: During cataract surgery under regional (retrobulbar, peribulbar or sub-Tenon's) or topical anaesthesia, many patients experience a variety of visual sensations in their operated eye intraoperatively. Between 3% and 16.2% of patients are frightened by their intraoperative visual experiences, which may increase the risk of intraoperative complications and affect patients' satisfaction with the surgery. This study aims to determine optometry students' beliefs and knowledge of visual sensations experienced by patients during cataract surgery under regional and topical anaesthesia. Materials and Methods: A nationwide survey of all Malaysian optometry students using a standardised, self-administered questionnaire. Results: All 129 optometry students participated in the survey, giving a 100% response rate. Overall, 26.4% and 29.5% of the students believed that patients undergoing cataract surgery under regional and topical anaesthesia, respectively, may experience no light perception, while 78.3% and 72.9%, respectively, thought that patients would experience light perception. Many respondents also believed that patients might experience a variety of other visual sensations. Of all respondents, 70.5% and 74.4% of students believed that patients undergoing cataract surgery under regional and topical anaesthesia, respectively, may be frightened by their visual experience and 93.0% and 85.3%, respectively, felt that preoperative counselling might help to alleviate this fear. Conclusion: Many optometry students are aware that patients might encounter a variety of visual sensations during cataract surgery under local anaesthesia. A high proportion of students believe that patients may experience fear as a result of the intraoperative visual sensations and felt that preoperative counselling would be helpful.

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Key words: Cataract surgery, Local anaesthesia, Preoperative counselling, Visual experience

Introduction

Cataract is one of the most common causes of visual impairment in the elderly[1] and its surgery is the most common major ophthalmic surgery,[2,3] with over 8 million performed globally every year.[3] The majority of cataract surgeries are performed under regional (retrobulbar, peribulbar or sub-Tenon's) or topical anaesthesia.[4]

Although some patients experience a transient reduction in visual acuity after injection of anaesthetic fluid during regional anaesthesia,[5-7] only a minority actually lose light perception during cataract surgery.[8-17] Several studies have demonstrated that most patients retain at least light perception and many of them also experience a wide variety of visual sensations during cataract surgery under retrobulbar,[5,9,10,14] peribulbar,[14,15] sub-Tenon's[15-17] and topical anaesthesia.[12,13,15-17] The visual sensations experienced by patients include colours, flashes, movement, instruments, the surgeon's hand or fingers, the surgeon and a change in brightness of the operating light.[8-17] A clinically important finding from these studies is that between 3% and 16.2% of patients find their visual experiences frightening.[8-12,14-17]

Optometrists play an important role in the preoperative and postoperative care of ophthalmic patients. During consultation, optometrists may be asked about patients' experiences during cataract surgery. This discussion may include the question of what patients can expect to see

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intraoperatively, and it is crucial that the information provided be both thorough and accurate. It is therefore essential that we know what optometrists in training know about this clinically important subject. In this study, we sought to determine the knowledge of optometry students about patients' visual sensations during cataract surgery and their beliefs on its clinical significance.

Materials and Methods

A nationwide study on all optometry students studying in Malaysia was conducted using a one-page, self-administered questionnaire. The study was performed in 2002 at the Department of Optometry, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia in Selangor, Malaysia, which is the only institution in Malaysia conducting a course in optometry leading to the degree of Bachelor of Optometry. The students consented to participate in the study which conformed to the tenets of the Declaration of Helsinki.

The questionnaire determined whether students believed that patients might experience or see several different types of visual sensations (light perception, colours, flashes, movement, instruments, the surgeon's hand or fingers, the surgeon and a change in brightness of the light) during cataract surgery under both regional and topical anaesthesia. The respondents were asked specifically about these types of visual sensations because they have previously been described by patients undergoing cataract surgery.[9-17] The students were also asked whether they thought that patients might be frightened by these visual experiences and whether they believe preoperative counselling would help reduce such fear.

As the third year students were nearing the completion of their training and are therefore more reflective, in terms of their knowledge, of qualified optometrists, the responses of the first and second year students were combined into one group and compared against the third year students.

All statistical analyses were carried out using SPSS software version 12.0 (SPSS Inc, Chicago). Chi-square tests were used to compare the 2 groups of students, with P values <0.05 considered statistically significant.

Results

All 129 optometry students enrolled in the year 2002 when the survey was conducted completed the questionnaire (response rate, 100%). The average age of the respondents was 21.4 years (range, 20 to 25; SD ±1.14). There were 105 Malays (81.4%), 20 Chinese (15.5%) and 4 Indians (3.1%). Twenty-five students were males (19.4%) and 105 were females (80.6%). There were similar numbers of students in all 3 years of study, with 45 in the first year (34.9%), 42 in the second year (32.6%) and 42 in the third year (32.6%).

The results of the survey are summarised in Tables 1 to 3. Overall, 26.4% and 29.5% of the respondents believed that patients undergoing cataract surgery under regional and topical anaesthesia, respectively, might lose light perception intraoperatively. Comparing the 2 groups of students, a higher proportion of first and second year students believed that patients could experience no light perception (31.0% and 36.8% for regional and topical anesthesia, respectively) compared to the third year students (16.7% and 14.3%; $P = 0.092$ and 0.013 for regional and topical anesthesia, respectively).

In contrast, a total of 78.3% and 72.9% felt that patients would experience at least light perception during surgery under regional and topical anesthesia, respectively, and the proportions in the 2 groups of students were similar (Tables 1 and 2).

Generally, a higher proportion of respondents (at least 70%) felt that patients might perceive simple visual sensations such as colours, flashes and movement, while less than 60% believed that patients could see complex, formed images such as surgical instruments, the surgeon or the surgeon's hands and fingers (Table 1). For many of the visual sensations, the proportion who believed that patients might experience a particular visual sensation was higher in the group of third year students compared to the combined group of first and second year students, although the difference was statistically significant only for perception of colours under topical anaesthesia, perception of instruments under regional anaesthesia, and perception of the surgeon's hands or fingers for both regional and topical anaesthesia (Table 2).

A relatively high percentage of all respondents felt that patients might be frightened by their visual experiences during cataract surgery under regional or topical anaesthesia (70.5% and 74.4%, respectively). An even higher proportion (93.0% and 85.3%, respectively) believed that preoperative counselling of patients would help to reduce the fear experienced during the surgery. For both of these questions, there was no significant difference between the responses of the junior students compared to the third year students (Table 3).

Discussion

A significant finding of our study is that overall, more than 70% of all respondents correctly believed that patients would experience at least light perception during cataract surgery. Clinical studies have shown that the majority of patients (80% to 100%) experience at least light perception during cataract surgery under regional or topical anaesthesia;[9-17] hence, it is essential that optometrists are aware of this fact.

Only 26.4% and 29.5% of the respondents believed that

Table 1. Proportion of Optometry Students Who Thought That Patients Might Experience Various Visual Sensations during Cataract Surgery

Visual sensation	Regional anaesthesia				Topical anaesthesia			
	Year 1 (n = 45)	Year 2 (n = 42)	Year 3 (n = 42)	Total (n = 129)	Year 1 (n = 45)	Year 2 (n = 42)	Year 3 (n = 42)	Total (n = 129)
No light perception	44.4	16.7	16.7	26.4	51.1	21.4	14.3	29.5
Light perception	68.9	88.1	78.6	78.3	57.8	83.3	78.6	72.9
Colours	62.2	59.5	73.8	65.1	60.0	64.3	83.3	69.0
Flashes	77.8	85.7	69.0	77.5	64.4	78.6	76.2	72.9
Movement	66.7	81.0	85.7	77.5	55.6	78.6	76.2	69.8
Instruments	44.4	45.2	64.3	51.2	51.1	52.4	66.7	56.6
Surgeon's hands/fingers	46.7	52.4	69.0	55.8	37.8	50.0	66.7	51.2
Surgeon	31.1	59.5	52.4	47.3	31.1	54.8	59.5	48.1
Change in brightness	82.2	59.5	66.7	69.8	62.6	61.9	71.4	65.7

Table 2. Proportion of First and Second Year Optometry Students Combined and Third Year Optometry Students Who Thought That Patients Might Experience Various Visual Sensations During Cataract Surgery

Visual sensation	Regional anaesthesia			Topical anaesthesia		
	Years 1 & 2 (n = 87)	Year 3 (n = 42)	*P* value	Years 1 & 2 (n = 87)	Year 3 (n = 42)	*P* value
No light perception	31.0	16.7	0.092	36.8	14.3	0.013
Light perception	78.2	78.6	1.000	70.1	78.6	0.399
Colours	60.9	73.8	0.172	62.1	83.3	0.015
Flashes	81.6	69.0	0.120	71.3	76.2	0.674
Movement	73.6	85.7	0.176	66.7	76.2	0.311
Instruments	44.8	64.3	0.041	51.7	66.7	0.131
Surgeon's hands/ fingers	49.4	69.0	0.039	43.7	66.7	0.016
Surgeon	44.8	52.4	0.456	42.5	59.5	0.091
Change in brightness	71.3	66.7	0.683	62.1	71.4	0.330

Table 3. Proportions of First and Second Year Students Combined Compared to Third Year Optometry Students Who Believed That Patients May Be Frightened by Their Intraoperative Visual Experience and That Preoperative Counselling Helps Alleviate This Fear

Beliefs	Regional anaesthesia			Topical anaesthesia		
	Years 1 & 2 (n = 87)	Year 3 (n = 42)	*P* value	Years 1 & 2 (n = 87)	Year 3 (n = 42)	*P* value
Patients may be frightened	75.9	59.5	0.066	75.9	71.4	0.668
Counselling helps	93.1	92.9	1.000	87.4	81.0	0.427

it is possible for patients to lose light perception either transiently or throughout the operation during cataract surgery under regional and topical anaesthesia, respectively. In fact, between 15.7%[10] and 20.0%[9] of patients lose light perception during cataract surgery under retrobulbar anaesthesia. Under topical anaesthesia, 0% to 10.3% of patients reported transient no light perception during the surgery.[12,13,15] Although the actual proportion of patients who experience loss of light perception is small, it is important for healthcare workers to be aware of this possibility so that they do not inform patients otherwise. A patient who expects to retain vision but unexpectedly loses light perception intraoperatively might be alarmed and wrongly assume that a complication has occurred.

Several studies have shown that between 3% and 16.2% of patients are frightened by their visual sensations during cataract surgery under local anaesthesia.[9-12,14-17] The fear experienced by patients is of clinical significance since it may cause patients to become uncooperative during the surgery. The sympathetic stress response may also cause

hypertension, tachycardia, ischaemic strain on the heart and hyperventilation which, combined with patients' typically advanced age and comorbidities, may contribute to a higher incidence of perioperative complications. It may also reduce patient satisfaction with the surgery.[18]

An illustration of the severity of the fear experienced can be seen in one study[12] where 28.8% of patients who received topical anaesthesia during cataract surgery subsequently indicated that they would have preferred a retrobulbar or peribulbar anaesthetic injection specifically to reduce their ability to see. Even after being informed of the potential risks of injection anaesthesia, including retrobulbar haemorrhage and globe perforation, 7.7% would still have preferred it.

Our study showed that between 59.5% and 75.9% of the respondents believed that patients might be frightened by their visual sensations during cataract surgery. There have been several other surveys on the knowledge, attitudes and perceptions of healthcare workers on intraoperative visual sensations during cataract surgery.[19-22] The proportion of respondents who felt that patients might be frightened by their visual sensations ranged from 53.1% to 73.7% in Singapore optometry students,[19] 44.9% to 80.0% in an international survey of anaesthesia providers from the United States of America, the United Kingdom and Singapore,[20] and 51.1% in a nationwide survey of Singapore ophthalmologists.[21,22] These findings are important because if healthcare workers are not convinced that intraoperative visual experiences may be frightening and that this fear is of clinical significance to the surgical outcome, they are less likely to discuss these visual sensations in detail.

An encouraging finding is that over 80% of the respondents felt that preoperative counselling may reduce fear experienced by patients. An optometrist is more likely to take the time to counsel patients thoroughly if he believes that counselling will be of benefit to the patient. The findings in this survey are similar to the survey of Singapore optometrists and anaesthesia providers.[19,20] In contrast, only 50% of Singapore ophthalmologists shared this view and only 11.1% to 17.8% routinely offered such counselling.[21,22] A multicentre randomised clinical trial showed that patients who were counselled in detail about potential intraoperative visual sensations were less likely to find their visual experience frightening compared to those who were not counselled.[23] Based on these findings, ophthalmologists and allied healthcare workers should consider routinely discussing intraoperative visual sensations as part of the preoperative counselling prior to cataract surgery.

Since the visual images seen by patients during cataract surgery can vary considerably,[24] it is essential that doctors and healthcare workers discuss the full range of visual sensations that patients might experience during preoperative counselling so that they will know what to expect and not be unduly alarmed during the surgery.[11] The patient information leaflet in *Cataract Surgery Guidelines* published in 2004 by the Royal College of Ophthalmologists, London[25] states that patients given local anaesthesia during cataract surgery "*will not be able to see what is happening, but will be aware of a bright light*". However, since a small proportion of patients will experience no light perception during surgery, these patients will not be aware of a bright light. Most patients will perceive light and many will experience other visual sensations during the surgery.[26,27] Therefore, patients who interpret the advice in the *Cataract Surgery Guidelines* literally may become alarmed when they either see more than "a bright light" or wrongly assume that a complication has occurred should they have no perception of light during the surgery.[11]

Although most respondents did not expect patients to experience no light perception, the majority are aware that patients might experience a variety of visual sensations during cataract surgery under local anaesthesia. Since optometrists are part of the team of healthcare professionals patients turn to for advice on possible experiences during cataract surgery, it is essential that they have an accurate understanding of what patients experience during cataract surgery. The findings of this survey are encouraging in this respect.

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