A survey of patient satisfaction with obstetric anaesthesia service in Tuen Mun Hospital, Hong Kong

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Patient satisfaction is an important healthcare performance indicator that has come to the forefront in recent years. Although patient satisfaction surveys have been performed assessing various medical services, there is a lack of survey evaluating patient satisfaction towards the anaesthesia services in Hong Kong. In this study, we looked into the perioperative concerns and patient satisfaction in a group of obstetric patients undergoing anaesthesia for caesarean section (CS) in Tuen Mun Hospital (TMH), which is a large regional hospital in Hong Kong with more than 5500 deliveries per year.

Between June 2017 and May 2018, 263 Chinese obstetric patients undergoing elective or emergency CS were recruited into the survey. The median of the satisfaction mark obtained was 139 out of 190. Patients were less satisfied in the aspect of "fear" and "discomfort", which were correlated with severe postoperative pain, general anaesthesia and emergent CS. Improvement in pain management program and alleviating fear and discomfort were recommended. Follow-up survey is recommended to assess the effectiveness of improvement measures. Further patient satisfaction survey can be considered in other patient groups.

Introduction

Patient satisfaction survey provides a valuable source of information to improve the healthcare service quality. Patients' feedback indicates whether things are going in the right direction and helps us to formulate effective quality improvement plans. In Germany, patient satisfaction evaluation has been mandatory since 2005 and plays an important part in the quality management reports.[1] In the United Kingdom, all hospitals have to perform patient satisfaction surveys on an annual basis since 2002.[2]

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Obstetric patients have high expectations of the health delivery system. Negative obstetric experience may influence the success of breast feeding, leading to postpartum depression and prolonged hospital stay. There are studies looking at maternal satisfaction from their perinatal experience, however, studies regarding peri-caesarean section (CS) experience are scanty.[3,4]

Patient satisfaction could be related to various factors, including age, school education and marital status, expectations, information given, emotional support, duration of anaesthesia, physical discomfort, perioperative complications, postoperative pain etc.[1,2,5,6] A European study showed that most problems were related to 'Information/Involvement in decision-making', and 'Continuity of personal care by anaesthetist'.[7] From a published survey in our hospital, post CS patient dissatisfaction was associated with long waiting time in getting the breakthrough dose of analgesia, severe postoperative pain and lack of pain assessment.[8]

This study aims at evaluating the patient satisfaction and perioperative concerns regarding the obstetric anaesthesia service in TMH and finding out the attributes that affect the overall patient satisfaction.

Material and methods

Between June 2017 and May 2018, all Chinese obstetric patients who underwent elective or emergency CS, were recruited into the survey. Written informed consent was obtained. The recruited mothers were interviewed face-to-face by a research assistant or by the principal investigator within 24 hours postoperatively for completion of the questionnaire.

The questionnaire consisted of several parts: a socio-demographic section, 38 questions adopted from the German Heidelberg Peri-anaesthetic Questionnaire-HPQ[5], maximum pain score within the postoperative 24 hours and an open question for other opinions.

The HPQ is psychometrically designed. It has been validated in a large sample size study at 3 different hospitals with patients of a broad spectrum of risks. It is the first peri-anaesthetic questionnaire tested by a standard pretest and a cognitive method. It has five dimensions, namely:1. Trust and atmosphere, 2. Fear, 3. Discomfort, 4. Treatment by personnel, 5. Information and waiting. Patient establishes a level of agreement with a 5-point Likert scale. The degree of satisfaction is reflected by the total score. As described in the original study of HPQ[5], the first quartile of the total score was taken as the cut-off for an insufficient patient satisfaction, which is 132.

A third phase follow up pain audit (S3) was also performed on postoperative day 2 or 3 (D2/3) to study the patients' opinion and satisfaction on pain management, similar to the 2014-2015 study performed in TMH.[8]

Statistical analysis

SPSS software version 21 was used for statistical analysis. Univariate analysis was carried out between satisfaction values and for clinical and sociodemographic characteristics. Linear association was determined through the Spearman's correlation coefficient. As appropriate, Mann-Whitney U test and the Kruskal Wallis test were used to assess significance of the difference between satisfaction values and qualitative variables. P-value less than 0.05 would be considered as statistically significant.

Results

Our study recruited 263 Chinese post CS patients. 42 subjects were excluded due to missing data in the HPQ.

Part 1. Patient's demographic data

Majority of patients were ASA 1 (65.8%, n=144) and only 6patients (2.7%) were classified as ASA 3. Most patients had secondary school education level (69.9%, n=144) and were married (94%, n=188). Half of them were housewives (51.4%, n=107) and the rest were working women (48.6%, n=101). There were more emergency cases (56.6%, n=125) than elective cases (43.4%, n=96). Number of gravidities of the participants ranged from 1 to 6, with a median of 2, and the number of parities ranged from 1 to 5 (including the baby born in this admission), with a median of 1. Median number of past CS done was one.

Most of the patients had CS performed under spinal anaesthesia (SA) (78.7%, n=174), while others had general anaesthesia (GA) (11.8%, n=26), epidural anaesthesia (5.9%, n=13) or combined spinal epidural anaesthesia (2.3%, n=5). A total of 3 cases (1.4%) needed to convert from regional anaesthesia (RA) to GA intraoperatively. The median operative time was 53 minutes (range 15-152 minutes).

Part 2. Overall satisfaction

Satisfaction median score as 139 out of 190, ranging from 102 to 185.

Factors affecting overall satisfaction

Table 1: Univariate analysis of clinical and demographic characteristics and the postoperative HPQ total score

Parameter	Category	n	HPQ total score		P value
			Median	Interquartile range	
Education level	Primary school	1	168	168-168	0.297
	Secondary school	144	138	130-151	
	Bachelor's degree	55	141	134-152	
	Master or above	6	136.5	135-140	
Occupation	Housewife	107	141	132-152	0.259
	Working	101	138	131-148	
Marital status	Single	10	138	133-141	0.528
	Married	188	140	132-152	
	Divorced	2	134	132-136	
History of GA	No	146	139	132-149	0.864
	Yes	75	139	131-152	
History of SA	No	140	138	129-148	**0.029**
	Yes	81	141	134-152	
Anaesthetic method	GA	26	135	128-139	**0.016**
	RA	195	140	133-151	
Conversion of anaesthetic technique	No	218	139	132-150	0.863
	Yes	3	139	129-149	
ASA	1	144	138	130-148	0.156
	2	69	140	134-155	
	3	6	145	141-169	
Urgency of operation	Emergency	125	138	130-149	0.152
	Elective	96	141	133-151	
Postop 24hr max pain score	< 7	147	141	133-154	**0.011**
	≥ 7	**65**	**136**	**131-144**	

From our study, previous experience with SA was associated with higher HPQ score (median 141 vs. 138, p=0.029). Besides, higher score was associated with the use of RA median 140 vs. 135, p=0.016). The total score was also positively correlated with

the number of CS done before (p=0.031). As expected, higher maximal pain score was statistically significantly associated with poorer satisfaction score.

Table 2: Spearman's correlation between clinical variables and HPQ total score

	Total Score of Q1 to Q38		
	N	Correlation Coefficient	Significance(2-tailed)
Gravidity	212	0.078	0.26
Parity	212	0.093	0.177
Number of previous caesarean section	210	0.149	**0.031**
Operation time	221	-0.01	0.88
Postop 24hr max pain score	214	-0.156	**0.023**

Part 3. Individual dimension of satisfaction

Table 3: Results for each dimension in HPQ questionnaires

Dimension	Mean total score divided by number of items
Trust and atmosphere	4.23
Fear	**3.04**
Discomfort	**3.50**
Treatment by personnel	4.19
Information and waiting	3.94

In our study, it was shown that the score of 'fear' and 'discomfort' ranked lowest among the 5 dimensions (Table 3).

Table 4: Fear score according to socio-demographic and clinical variables

Parameter	Category	N	Fear score*		P value
			Median	Interquartile range	
Education level	Primary school	1	19	19-19	0.827
	Secondary school	144	18	14-21.5	
	Bachelor degree	55	18	15-21	
	Master or above	6	16.5	15-18	
Occupation	Housewife	107	18	15-22	0.367
	Working	101	18	15-21	
Marital status	Single	10	19.5	15-20	0.629
	Married	188	18	15-21	
	Divorced	2	20.5	19-22	

History of GA	No	146	18	15-21	0.924
	Yes	75	18	14-22	
History of SA	No	140	17	14-20	**<0.001**
	Yes	81	19	17-23	
Anaesthetic method	GA	26	15.5	14-18	**0.02**
	RA	195	18	15-22	
Conversion of anaesthetic technique	No	218	18	15-21	0.058
	Yes	3	23	21-23	
ASA	1	144	18	15-21.5	0.047
	2	69	17	14-20	
	3	6	22.5	20-24	
Urgency of operation	Emergency	125	17	15-20	**0.026**
	Elective	96	19	15-22	
Postop 24hr max pain score	< 7	147	18	15-22	0.093
	≥ 7	65	17	14-20	

Regarding fear dimension, previous history of SA, current CS performed under SA, high ASA grading and elective operation were all shown to be associated with a higher fear score (i.e. less fear) (Table 4).

Table 5: Spearman's correlation between clinical variables and fear score

	Fear Score*		
	N	Correlation Coefficient	Significance (2-tailed)
Gravidity	212	0.138	**0.045**
Parity	212	0.223	**0.001**
Number of previous caesarean section	210	0.272	**<0.001**
Operation time	221	0.097	0.152
Postop 24hr max pain score	214	-0.116	0.091

On the other hand, increased number of parity, gravidity and number of previous CS were associated with less fear, though the correlation is weak (Table 5).

Concerning discomfort dimension, our study showed that severe postoperative pain was associated with increased discomfort.

Discussion
Factors affecting overall satisfaction
We found that patients with history of SA, had SA for current CS and those with good postoperative pain control were more satisfied with the anaesthesia service. The number of previous CS in the range of 0 to 4 was also positively correlated with patient satisfaction.
A likely explanation would be that patients with similar past operative experience would have less uncertainty about the procedure and would usually be more psychologically prepared. This echoed with the findings that patients with increasing number of parities, gravidity and past CS history were associated with less fear. In this sense, patient satisfaction could be improved by providing information about the upcoming procedure, for example, we could provide information leaflets, antenatal talks, videos, small group counselling about C Sand anaesthesiafor all parturients. Therefore, during the peri-CS period, both in anticipated elective or unanticipated emergent fashion, they would be more psychologically prepared for the procedures.

Central neuraxial technique was associated with better performance in 3 dimensions, namely "treatment by personnel", "information and waiting", "fear" and hence a positive overall satisfaction. Under central neuraxial anaesthesia, an awake patient could interact more with the staff throughout the procedure and thus her sense of fear and uncertainty could be alleviated. Immediate skin-to-skin contact with her baby could improve patient satisfaction. RA is the most commonly used technique for CS nowadays. It is associated with less anaesthesia-related maternal mortality[9], minimal anaesthetic exposure to the neonate, better post-operative pain with neuraxial opioids and RA avoids the risks of maternal aspiration and difficult airway associated with GA.[10] Therefore, RA should be performed whenever possible for CS and GA should only be considered when absolutely necessary.

Severe pain within the first 24 hours postoperatively was shown to be associated with "discomfort" and had a negative impact on the overall satisfaction. In TMH, a procedure specific pain management programme (PSPMP) was introduced in 2015.[8] After its implementation, a follow-up audit (S2) demonstrated a more than 50% reduction in patients with severe pain and a positive increase in patient satisfaction. However, the third follow up pain audit(S3), which was done simultaneously with this survey, showed no significant increase in patients with severe pain but significant increase in D2/3 patient dissatisfaction as compared to the last survey (S2) (0.7% in S2 rose to 1.7% in S3). Percentage of patient receiving

patient information leaflets (64.7% in S2 vs 35.3% in S3), having post-operative pain assessment (89.6% in S2 vs 69.2% in S3) and reassessment (61.3% in S2 vs 22.2% in S3), which were factors correlating with patient satisfaction, dropped significantly in S3. Therefore, apart from designing an effective analgesic regimen, good collaboration between anaesthetists, pain nurses, obstetricians and obstetric ward nurses is required for a holistic pain management program.

To further improve the postoperative pain management, dexamethasone could be introduced into the pain regime with further pain study to evaluate its effectiveness. Systematic review had shown a single dose of intravenous dexamethasone could decrease postoperative pain with no increase in infection or delayed wound healing[11] and adding dexamethasone to local anaesthetics in trans versus abdomen is plane block could decrease opioid consumption and prolong the time to first request for additional analgesics.[12] It could also decrease the incidence of postoperative nausea and vomiting.

Surprisingly, patient satisfaction was not decreased by intraoperative conversion of RA to GA nor prolonged operating time. It is postulated that as long as the patient is well informed of the reasons for conversion to GA and long procedure, they will generally accept the decision.

Different dimensions of satisfaction
Fear
Psychosocial stressors produce immunological dysregulation through the immune–brain loop, acting via the same pathways that produce the surgical stress response.[13] Psychological distress and anxiety perioperatively contribute to greater postoperative pain, delayed recovery, postoperative complications, and impaired wound healing.[14] It may affect the success of breast feeding, increase the risk of postpartum depression and increase the length of hospital stay.[3,4]

Providing more psychological intervention or support for patients may alleviate perioperative fear, for example as simple as providing sensory information (i.e. what the perioperative experience will feel like) or providing procedural information

(i.e. details regarding all aspects of the patient's surgery).[15]
From our survey, less fear was associated with increasing past obstetric experience and elective CS, which reflected that these groups of patients were psychologically better prepared than the nulliparous or emergency group.

Discomfort
Within the "discomfort" dimension, we included several items, namely thirst, cold and shivering, nausea and vomiting, pain, pruritus, sore throat, muscle weakness and tiredness. These unpleasant symptoms could be reduced by pharmacological or non-pharmacological measures, for example, providing active and passive warming device perioperatively to alleviate cold and shivering; prophylactic antiemetic or ensuring euvolemia and pain free to decrease nausea and vomiting etc.
From our survey, intraoperative discomfort was associated with severe postoperative pain (pain score ≥7), and high pain score was associated with lower overall total HPQ score (p=0.023).

Limitations of our study
Limitations of our study mainly come from the questionnaire design and validation. Firstly, the questionnaire used was only validated in Germany and it had not been used in the obstetric patients. Direct translation to Chinese with mild modification to accommodate the obstetric patient group was done, therefore the Chinese version had not been validated. Although without validation, the results from this study are generally coherent with previous satisfaction surveys and we can regard this as a pilot study to aid future audits on peri-anaesthetic service in Chinese population.

Second problem encountered when using the HPQ is that, some questions in the "discomfort" dimension are only specific to GA, e.g. sore throat and hard to breathe. As the majority of caesarean sections were done under RA, questions such as intraoperative nausea and vomiting, cold and shivering, or pruritus were included instead. Although the questionnaire was also validated in the patients with sole RA[5], it may be more suitable for patients with GA. Future survey may consider giving 2 different sets of questions for GA or RA for better interpretation of results.

Conclusion

Our study showed that there is room for improvement in our obstetric anaesthesia service. Fine adjustment of postoperative pain management, alleviation of fear and discomfort, increase in pain assessment and reassessment and provision of patient information leaflets are modifiable factors that may improve outcome. Multidisciplinary teamwork between the anaesthetic and obstetric unit is important to improve obstetric patient satisfaction. Further follow-up survey can be done in future to assess the effectiveness of respective improvement measures.

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