

Perioperative worries associated with low acceptance of day surgery among outpatients in Zhejiang Province, China: a survey research

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Research article

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Abstract

Background: Day surgery, a popular medical practice in the United States, started rather late in mainland China since 2001 when day surgery was officially launched. Determining Chinese patients' specialty and attitudes towards day surgery is important for proactive patient education to promote day surgery in China. At present, Chinese patients' attitudes towards day surgery are blurred with only few relevant research. The goal of this study was to investigate Chinese patients' specialty, especially perioperative worries, and its relationship with patients' attitudes towards day surgery in Zhejiang Province, China.

Methods: A total of 412 outpatients in Zhejiang Hospital were evaluated by a cross-sectional questionnaire survey between January 2019 and February 2019. To evaluate outpatients' specialty and attitudes towards day surgery, 420 outpatients were asked to fill out questionnaires including their characteristics, perioperative worry and acceptance of day surgery. Multinomial Logistic regression model was used to assess the relationship between them.

Results: Of the 412 outpatients, 83.5% reported perioperative worries about day surgery. Outpatients who were older, less-educated, with comorbidities and lower income were more worried perioperatively and had poorer acceptance of day surgery. Outpatients worried most about preoperative examinations not being done timely and being unable to monitor and manage complications and adverse events. Age, educated degree, comorbidities, financial status, surgery type and perioperative worry had significant associations with patient acceptance of day surgery. Outpatients with worries significantly scored lower in acceptance of day surgery than those without worries, thus had a higher risk of refusing day surgery. Compared with less-educated patients, perioperative worries played a greater role in decreasing patient reception of day surgery in better-educated patients, reducing the possibility of accepting day surgery. **Conclusions:** Perioperative worry was identified as an independent factor in influencing patient acceptance of day surgery among outpatients in Zhejiang Province in China. Results of this study can be used to guide patient education according to patients' characteristics in day surgery, helping promote day surgery in China.

Background

Day surgery is defined as an operation where the patient does not need an overnight stay by the International Association for Ambulatory Surgery (IAAS) in 2003 [1, 2]. In mainland China, our current understanding of day surgery allows patients to stay over one night, while the whole process does not exceed 24 hours [3].

Nowadays, day surgery has become a mainstream in most developed countries. It is reported in 2006 that day surgery account for 89%, 87% and 83% of all surgeries accordingly in Denmark, Spain and the United States [4, 5]. The rates of mature types of day surgery in British hospitals are higher than 90% in 2016 [6]. However, it is not until 2001 when day surgery was officially launched in large hospitals in Beijing, Shanghai and Sichuan Province in China. At present, the overall proportion of day surgery in China is limited. National Health and Family Planning Commission of China reported in 2016 that day surgery accounted for only 11% of all elective surgeries nationwide [7]. As one of the earliest pioneers in

advocating day surgery in mainland China, West China Hospital of Sichuan University carried out 23.97% of all elective surgeries as day surgery [8].

Day surgery is a high-efficient and low-cost medical practice, yet it is still new to common Chinese people for a less-developed history. The fast operating process of day surgery may not be in line with the tradition of many Chinese residents who are used to staying in hospitals till full recovery. There could also be hesitation and concerns among patients because they would be out of the hospital during the perioperative period of day surgery[9]. A survey in the United States showed that there were already 97% of patients being willing to choose day surgery in 1992 [10], however, Chinese patients' attitudes towards day surgery is ambiguous. There is only few research concerning Chinese patients' cognition and attitudes towards day surgery and the results are various [11-13]. Considering that the Chinese education, economy, healthcare system and culture are essentially different from most developed countries, it is crucial to fully understand our patients' worries and acceptance of day surgery under the circumstance of the intense doctor-patient relationship in China today, so that to guide patient education among patients who have not yet formed a full understanding of day surgery [14]. This study was designed to identify Chinese patients' specialty, especially their perioperative worries and patient acceptance of day surgery and to explore the possible association between them in Zhejiang Province, China.

Methods

Patients and sampling

Estimation of sample size was based on the assumption of a 50% incidence of worries in our patient group [12]. With $\alpha=0.05$, $\beta=0.05$, and $\delta=0.20$, a minimum of 210 patients was required. A total of 420 outpatients in Zhejiang Hospital were actually recruited from January 2019 to February 2019, with 412 valid respondents. The inclusion criteria were outpatients over 18 years old, being able to understand and complete the questionnaires independently, with no previous history of day surgery experience. Patients who were unable to complete the questionnaires, with poor compliance, mental disorders, or use of psychotropic drugs were excluded from the study.

Study design and measurement

The survey was conducted by a designated investigator after training. Questionnaires were given out to 420 outpatients before they had any day surgery and were collected on-site after independent completion. The investigator introduced to outpatients of the day surgery concept and basic process, explained what needs to be filled out in the questionnaires. Outpatients having difficulty in reading or writing got assistance from the investigator without interference of comprehension. If an outpatient did not understand the investigated content, the investigator would explain to them and the interpretation would be consistent.

Out of all 420 outpatients, 412 completed all three parts of the questionnaire, including: (1) background information covering the outpatient's age, sex, educated degree, comorbidities (including hypertension, diabetes mellitus, coronary heart disease, hepatic or renal dysfunction and tumors), surgery type and financial status; (2) status of perioperative worries of day surgery (outpatients choose "Yes" if perioperative processes of day surgery worry them, otherwise, "No"), stages of day surgery process that outpatients' worry exists, and specific reasons causing such worry; (3) we designed an evaluation tool imitating Numeric Rating Scale for pain, rated patient acceptance of day surgery on an 11-point scale ranging from 0 (complete refusal) to 10 (full acceptance). Patient acceptance improves as the number increases (0-3 represent rejection, 4-6 represent a wavering attitude, 7-10 represent a positive attitude).

Statistical analyses

Two researchers entered data independently and created an original database using Microsoft Excel. Data analyses were performed using IBM SPSS Statistics for Windows (version 19.0; IBM Corp, New York, NY, USA). All statistical tests were two-sided and $p<0.05$ was regarded as statistically significant. Categorical variables were presented as frequencies and percentages and continuous variables were presented as means and standard deviations. (1) A Chi-square test was applied to compare the different status of perioperative worries according to outpatients' demographic characteristics. (2) Mann-Whitney U test was used to compare the acceptance scores between two groups divided by outpatients' demographic characteristics, Kruskal-Wallis test was used between three or more groups. (3) A multinomial logistic regression model was used to assess the relationship between perioperative worries and patient acceptance, with the criteria for entry and deletion being 0.05 and 0.10, the test level α being 0.05.

Results

Four hundred and twenty questionnaires were distributed and 98.1% (412) returned as valid. The demographic characteristics, perioperative worries and patient acceptance of 412 outpatients are summarised in Table 1.

Demographics of studied patients

The age of sample patients ranges from 18 to 94 years, with a mean age of 48.27 ± 19.22 years. Outpatients with lower education levels, including junior high school and high school diploma, account for 70% of all 412 outpatients. Totally, 198 (48.1%) outpatients have one or more comorbidities. Only 28 (6.8%) outpatients considered themselves to be in poor economic condition.

Situation of outpatients' perioperative worries

Table 1 shows the number of outpatients having perioperative worries about day surgery for different demographics and medical categories. In all, 344 study participants chose “with worries”, with the percentage of 84% (344/412). Table 1 also shows that age, education, comorbidity, and economic status significantly influence outpatients’ status of perioperative worries. Better-educated patients were less worried and patients with comorbidities were more concerned about day surgery.

Specific reasons of preoperative worries included: preoperative examinations not being done timely (345), longer commuting time (156), lack of necessary preoperative instruction and education (230). In the postoperative stage, patients’ worries included: unable to monitor and manage complications and adverse events (330), hard to communicate with doctors in a timely fashion (244), lack of adequate care (219), unguided disease prevention (173), inconvenient transportation and accommodation (141), healthcare payment (67), uncertain medical capacity of community hospitals (99).

Relationship between outpatients’ perioperative worries and acceptance of day surgery

Outpatients without worries significantly scored higher in acceptance of day surgery than those with worries (Table 2). In the multivariate analysis performed by the multinomial Logistic regression model, after adjusting age, comorbidities, economic status, and surgery type, outpatients without worries had a lower risk of refusing day surgery compared with those with worries. Compared with less-educated patients who were below high school, perioperative worries had a bigger impact on patient acceptance of day surgery among better-educated patients, reducing the possibility of accepting day surgery (Table 3).

Discussion

Our study shows that outpatients in Zhejiang Hospital have relatively high levels of worries about day surgery, similar to previous studies in mainland China. 84.5% of respondents were worried about perioperative periods of day surgery, which was perceived as an innovative medical service in mainland China. Yu Deliang proposed that patients and families generally required a high level of professional nursing care during the postoperative period. However, such a high level of care may be absent in the outpatient setting, therefore, patients and their families undergoing day surgery may worry[9]. According to a survey in a Shanghai community, residents’ perceptions of day surgery were poor, more than 70% of community residents had doubts about day surgery[11]. An investigation in West China Hospital showed that more than 60% of patients undergoing day surgery did not understand the concept of day surgery, including how it works and its values[12]. However, those studies did not explore which population is at risk of being worried. In our study, we identified several risk factors. Patients who were older and had more systemic diseases tend to worry more in the day surgery setting. This is consistent with a Swedish study showing that older patients had more concerns about anesthesia and surgery during day surgery. Also, lower levels of education and worse economic status lead to more worries. Therefore, we suggest hospitals establish a standardized process to screen out patients who may have more worries, and develop a personalized patient education system for this targeted patient population.

Moreover, we comprehensively investigated the specific reasons for patients' concerns. Before receiving any day surgery, outpatients worried about both preoperative and postoperative periods, and the worries covered almost all possible aspects of preoperative preparation, transportation and accommodation, rehabilitation, healthcare payment, etc. That is, outpatients believed when they were not in the hospital, it was difficult to obtain professional guidance and relevant information in time, which suggested that an effective perioperative communication mechanism between doctors and patients was absent. Studies in France and America focusing on perioperative communication channels suggest that better doctor-patient communication is correlated with higher patient satisfaction and better outcomes[15-17]. Similarly, studies in mainland China also indicate that establishing a good communication channel could promote doctor-patient communication, hence reducing patients' perioperative worries[18]. Nanjing Drum Tower Hospital applied extended nursing management during the perioperative period for patients undergoing laparoscopic day-surgery, based on the WeChat platform- one of the most popular instant messengers in mainland China, relieved the anxiety of patients effectively[19]. For those reasons, it is significant to establish a convenient, immediate and effective doctor-patient communication mechanism when patients are outside the hospital.

Patient acceptance of day surgery in our study is different from both domestic and foreign studies, the proportion of outpatients willing to undergo day surgery (scores 7-10) was 35.2%. While a study by Dai Yan in Sichuan Province showed that 94.5% of day-surgery patients are open to day surgery in 2016[12], yet a recent survey in 2019 revealed that 24.88% of residents in a Shanghai community accept day surgery[11]. These diversified results may derive from different samples in those studies and unbalanced development of day surgery across China. Furthermore, compared with western countries where day surgery is highly popular, Zhejiang outpatients' acceptance of day surgery is fairly low.

The multivariate analysis revealed that patient acceptance of day surgery in this study was related to a variety of personal characteristics, suggesting that patients with younger age, higher education, no underlying disease, and better financial ability were more likely to accept the concept of day surgery. Better-educated patients were less worried but once they had any worries, patient acceptance would be affected more than those less-educated patients. These findings raised a possibility that with the improvement of national education level, physical quality and economic ability, Chinese patients would gradually be more open-minded about day surgery. Besides, surgery type also affected patient acceptance of day surgery. For example, orthopedic outpatients were relatively more reluctant to take operations as day surgery, we consider this may result from Chinese patients' traditional thinking that patients should have a full recovery in the hospital, not in the day surgery setting, as orthopedic surgeries are perceived as extensive and complex in China. Given that Chinese people's attitude towards day surgery has much to do with individual characteristics[20], age, education, comorbidities, income and surgery type must be taken into consideration in patient education of day surgery to promote day surgery.

Our study implies that patient acceptance of day surgery was influenced by their perioperative worries and this association was related to patients' characteristics. Accordingly, patient education must be tailored for specific populations and sufficient doctor-patient communication need to be guaranteed by

strengthening perioperative systems of day surgery, focusing on providing patients timely, effective and professional guidance, so that to dispel worries of patients during the perioperative period, thereby increase patient acceptance of day surgery.

Limitations

The major drawback of the study lies in the sample taken from one center. Nevertheless, whether other patients like inpatients and patients who have experienced day surgery are of the same situation needs further investigation. Moreover, more researches are warranted not only in Zhejiang province but also across China to provide more evidence for present patient attitude towards day surgery in mainland China. Second, we used a subjective method to assess the patient acceptance of day surgery, similar to previous studies that also utilized various subjective evaluations. However, whether those subjective methods are reliable and valid need further proof. Third, future studies could investigate how to establish an effective doctor-patient communication mechanism to address patient worries during perioperative periods so that to increase patient acceptance of day surgery.

Conclusion

The prevalence rate of perioperative worries about day surgery among Zhejiang outpatients was relatively high, leading to lower acceptanc of day surgery. Patients with different characteristics focused on various aspects of perioperative worries, and higher education aggravated the influence that perioperative worries had on patient acceptance of day surgery. Results of this study can be used to guide patient education according to patients' characteristics during day surgery.

Abbreviations

IAAS: International Association for Ambulatory Surgery

Declarations

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Availability of data and materials

The datasets used and analyzed in our study are available from the corresponding author on reasonable request.

Authors' contributions

HW and TF conceived and designed the study, conducted the survey, analyzed and interpreted the data, and wrote the manuscript.

All of the authors participated in the study design and revised the manuscript, they have read and approved the manuscript.

Ethics approval and consent to participate

The study was approved by the Ethics Committee of Zhejiang Hospital with decision number: 24K. Before the survey, a written informed consent form was obtained from all respondents to participate in the study.

Consent for publication

Consent for publication was obtained from all the study participants.

Competing interests

The authors declare that they have no competing interests.

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Tables

TABLE 1. Patient demographic data, perioperative worries and patient acceptance in Zhejiang Province of China

Characteristic	No. (%) of patients (n=412)	Perioperative worries			Ranking of patient acceptance	
		With (n=344)	Without (n=68)	P value	Median	P value
				<0.0001		<0.0001
Age, years						
≤ 35	139 (33.7%)	102	37	<0.0001	7.0	
36-59	135 (32.8%)	110	25		6.0	
≥60	138 (33.5%)	132	6		4.0	
Gender				0.190		0.097
Male	175	151	24		5.0	
Female	237 ■ 42.5% ■	193	44		6.0	
Education				0.006		<0.0001
Junior high school or below	160	142	18		5.0	
High school	129 ■ 38.8% ■	110	19		6.0	
Undergraduate and above	123 ■ 31.3% ■	92	31		7.0	
Comorbidity				<0.0001		<0.0001
With	198	183	15		4.0	
Without	214 ■ 48.1% ■	161	53		7.0	
Economic status				0.017		<0.0001
Less well off	28	18	10		6.5	
Fair	253 ■ 61.4% ■	216	37		6.0	
Well off	131 ■ 31.8% ■	110	21		6.0	
Surgery type				0.799		<0.0001
Gynaecology and obstetrics	63	49	14		6.0	
Orthopedics	79 ■ 15.3% ■	68	11		5.0	
Urology	80 ■ 19.2% ■	68	12		6.0	
General surgery	84 ■ 19.4% ■	121	25		6.0	

Gastroenterology	62	51	11	5.0
Ear, nose, throat and eye	44	38	6	6.0
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TABLE 2. Score of patient acceptance of day surgery between outpatients with and without worries (median)

variable	With worries(n=344)	Without worries(n=68)	χ^2 value	P value
Score of patient acceptance of day surgery	5.0	7.0	71.334	<0.0001

TABLE 3. Odds ratio (95% CI) for patients without perioperative worries relative to patients with worries

Perioperative worries	n	OR (95%CI) value	P value
with	344	1.000	
without	68	0.174[0.075-0.405]	<0.0001 ^a
Below high school			
with	142	1.000	
without	18	<0.0001	<0.0001
High school or above			
with	202	1.000	
without	50	0.316[0.131-0.765]	<0.05 ^b

^aThe perioperative worry was an independent variable in the multinomial Logistic regression model. Confounding factors entering the model were age, education, comorbidities, financial status and surgery type.

^bThe perioperative worry was an independent variable in the multinomial Logistic regression model. Confounding factors entering the model were age, comorbidities, financial status and surgery type.