

ORIGINAL ARTICLE

Assessing patients' knowledge and concerns about anesthesia risks at King Abdullah hospital: a cross-sectional study

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ABSTRACT

Background: Preoperative anesthesia-related anxiety is common and may adversely affect surgical outcomes. However, data on patient perceptions of anesthesia in regional Saudi hospitals remain limited. This study assessed patients' knowledge, perceptions, preferences, and concerns regarding anesthesia at King Abdullah Hospital, Bisha, Saudi Arabia.

Methods: A hospital-based cross-sectional study included 405 adult preoperative patients. Data were collected through face-to-face interviews using a structured questionnaire covering sociodemographic characteristics, perceptions of anesthesiologists, anesthesia preferences, and preoperative concerns. Concern levels were measured using a 16-item Likert scale and classified as low, moderate, or high. Data were analyzed using IBM SPSS Statistics for Windows, Version 28 (IBM Corp., Armonk, NY, USA), with chi-square tests to identify associated factors.

Results: The mean participant age was 36.5 years; 62.7% were female, 54.3% had a university education, and 69.1% had previous surgical experience. Although confidence in anesthesiologists was generally high, 46.4% of patients reported moderate concern and 25.2% reported high concern. The leading fears were postoperative pain, paralysis, failure to wake up, and prolonged intensive care unit stay. General anesthesia was preferred by 71.1%, mainly due to fear of pain. Higher concern levels were significantly associated with female sex, age 40-49 years, higher education, and lower confidence in anesthesiologists and surgeons.

Conclusion: Despite positive perceptions of anesthesiologists, anesthesia-related concerns remain common, particularly regarding pain and serious complications. Improving patient education and communication may help reduce preoperative anxiety.

Keywords: Preoperative anxiety, patient perception, anesthesia concerns, anesthesiologist communication, surgical fear, Saudi Arabia.

Background

Anesthesia is an essential component of current medical practice, enabling patients to undergo surgical and diagnostic procedures without pain or distress [1]. It includes a range of techniques, such as general, regional, and local anesthesia, each adjusted to the type of procedure and the patient's clinical condition [2]. Anesthesiologists are specialized physicians responsible not only for administering anesthesia but

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also for maintaining patient safety through continuous monitoring, pain control, and management of perioperative complications [3].

Despite significant advances in anesthetic techniques and patient safety, many individuals continue to experience considerable anxiety and concern regarding anesthesia before surgery [1,4]. For some patients, fear related to anesthesia exceeds fear of the surgical procedure itself. Common concerns include waking up during surgery, not waking up after anesthesia, postoperative pain, nausea and vomiting, breathing difficulties, and long-term health effects [5–7]. These fears are often due to limited knowledge, misconceptions about anesthesia risks, and an inadequate understanding of the anesthesiologist's role.

Preoperative anxiety has been shown to negatively influence surgical outcomes [8]. Elevated anxiety levels are associated with increased anesthetic requirements, heightened postoperative pain, delayed recovery, and reduced patient satisfaction with perioperative care [9,10]. Effective communication and preoperative counseling by anesthesiologists can play a critical role in reducing patient anxiety, improving trust, and enhancing informed decision-making [11]. However, studies suggest that many patients have limited interaction with anesthesiologists before surgery, which may contribute to persistent fears and misunderstandings [12–14].

Several international studies have explored patients' perceptions and concerns regarding anesthesia. Research from Canada and Europe has demonstrated that a substantial proportion of the public holds inaccurate beliefs about anesthesia and anesthesiologists' training, with many patients underestimating the length and intensity of anesthesiology education [15,16]. Additionally, lack of confidence in anesthesia care led to higher levels of preoperative fear and reluctance to accept certain anesthetic techniques [17,18].

In Saudi Arabia, available evidence indicates that anesthesia-related fears are common among surgical patients. Studies conducted in Riyadh and Jeddah have reported a high prevalence of preoperative anxiety, particularly fears related to postoperative pain, intraoperative awareness, and anesthesiologist competence [7,17]. King Abdullah Hospital in Bisha serves a large and diverse population in the southern region of Saudi Arabia. To date, there are limited published data assessing patients' knowledge, perceptions, and concerns related to anesthesia in this setting. Understanding these factors is essential for developing targeted educational interventions, improving preoperative communication, and enhancing patient-centered anesthesia care.

Therefore, this study aimed to assess patients' knowledge, perceptions, preferences, and preoperative concerns regarding anesthesia risks at King Abdullah Hospital, Bisha. Identifying the level of concern and its associated factors may help anesthesiologists and surgical teams modulate patient fears more effectively and improve the overall quality of perioperative care.

Materials and Methods

Study design and setting

This hospital-based quantitative cross-sectional study was conducted from March to June 2026 at King Abdullah Hospital in Bisha, Saudi Arabia, which serves as the main referral center for the Bisha region and surrounding areas.

Study population

The study targeted adult preoperative patients scheduled for elective or one-day surgical procedures who attended the anesthesia clinic for preoperative assessment.

Inclusion and exclusion criteria

Patients were eligible for inclusion if they were 18 years of age or older, able to understand Arabic, and willing to provide informed consent. Patients who declined participation or were unable to communicate effectively were excluded.

Sample size determination

The required sample size was calculated using Cochran's formula for cross-sectional studies, based on an estimated monthly population of 431 patients undergoing elective and one-day surgeries at the study site, a 95% confidence level, and a 5% margin of error. This yielded a minimum required sample size of 203 participants per month.

Sampling technique

Participants were recruited using a simple random sampling technique.

Data collection procedures

Data were collected through face-to-face interviews using a structured questionnaire adapted from a previously published questionnaire assessing patients' knowledge, perceptions, preferences, and concerns regarding anesthesia [19]. Interviews were conducted by trained researchers within 24 hours before surgery in the inpatient setting to ensure consistency and minimize information bias.

Data collection instruments and their validity/reliability

The questionnaire was developed from previously validated instruments. To ensure content validity, the questionnaire was reviewed by a panel of anesthesiology experts. It was subsequently pilot-tested on a small sample of eligible patients to assess its clarity, comprehensibility, and feasibility prior to the commencement of data collection. The questionnaire included four main sections covering participants' sociodemographic characteristics and surgical history, perceptions of anesthesiologists' training and professional roles, preferences for anesthetic management, and preoperative concerns related to anesthesia risks and outcomes.

Preoperative concerns were assessed using a multi-item scale, with each item rated on a four-point Likert

scale ranging from 1 (not concerned at all) to 4 (very concerned). For each participant, an overall concern score was calculated by computing the mean of all concern-related items, with higher scores indicating greater levels of preoperative concern. Based on the mean score, participants were categorized into low, moderate, or high concern groups using predefined cut-off points corresponding to the scale range.

Study variables and operational definitions

The primary outcome variable was the level of preoperative anesthesia-related concern. Preoperative concerns were assessed using a 16-item scale, with each item rated on a four-point Likert scale ranging from 1 (not concerned at all) to 4 (very concerned). For each participant, an overall concern score was calculated by computing the mean of the responses across all 16 items, with higher scores indicating greater levels of concern. Based on the mean score, participants were categorized into three concern levels: low concern (mean score 1.00 to <2.00), moderate concern (mean score 2.00 to <3.00), and high concern (mean score 3.00-4.00).

The independent variables included participants' sociodemographic characteristics, clinical history, perceptions of anesthesiologists' training and professional roles, confidence in healthcare providers, and preferences for anesthetic management.

Ethical considerations

Ethical approval for the study was obtained from the Research Ethics Local Committee of the University of Bisha College of Medicine (Ref. No. UB-RELOC H-06-BH-087/(11/08/47); approved on March 3, 2026). All participants were informed about the purpose of the study and assured of confidentiality and anonymity. Written informed consent was obtained from all participants before enrollment, and participation was entirely voluntary.

Statistical analysis

Data were analyzed using IBM SPSS Statistics for Windows, Version 28 (IBM Corp., Armonk, NY, USA). Before analysis, data were checked for completeness, accuracy, and consistency, and all variables were appropriately coded. Descriptive statistics were used to summarize participants' sociodemographic and clinical characteristics. Categorical variables were presented as frequencies and percentages, while continuous variables were summarized using means and standard deviations.

Inferential statistical analyses were conducted to assess associations between overall concern levels and participants' sociodemographic characteristics, clinical history, perceptions of anesthesiology training and roles, confidence in healthcare providers, and preferences for anesthetic management. The chi-square test of independence (Pearson's χ^2 test) was used to assess associations between categorical variables. When the assumptions of the chi-square test were not met, exact probability tests were applied as appropriate. All

statistical tests were two-tailed, and a p -value of less than 0.05 was considered statistically significant.

Results

A total of 405 participants were included in the study, with a mean age of 36.5 ± 14.9 years. Participants younger than 30 years constituted the largest age group (167, 41.2%), followed by those aged 50 years and above (86, 21.2%), 30-39 years (78, 19.3%), and 40-49 years (74, 18.3%). Females represented nearly two-thirds of the sample (254, 62.7%), while males accounted for 151 participants (37.3%). More than half of the participants had a university education (220, 54.3%), whereas 94 (23.2%) had completed secondary education. Smaller proportions reported below secondary education (39, 9.6%), no formal education (37, 9.1%), or a postgraduate degree (15, 3.7%). Regarding work status, 155 participants were not working (38.3%), 150 were employees (37.0%), and 100 were students (24.7%). Most participants reported a history of previous surgery (280, 69.1%), while 125 (30.9%) had not undergone surgery

Table 1. Sociodemographic and clinical characteristics of the study participants (N = 405).

Demographics	No	%
Age in years		
< 30	167	41.2%
30-39	78	19.3%
40-49	74	18.3%
50+	86	21.2%
Mean $\pm$ SD	36.5 $\pm$ 14.9	
Gender		
Male	151	37.3%
Female	254	62.7%
Educational level		
No formal education	37	9.1%
Below secondary education	39	9.6%
Secondary education	94	23.2%
University education	220	54.3%
Post-graduate degree	15	3.7%
Work status		
Not working	155	38.3%
Student	100	24.7%
Employee	150	37.0%
Have you had surgery before?		
Yes	280	69.1%
No	125	30.9%
What type of anesthesia was used?		
General anesthesia	221	78.9%
Local anesthesia	20	7.1%
Spinal/Epidural anesthesia	28	10.0%
I don't know	11	3.9%
Have you met your anesthesiologist before surgery?		
Yes	219	78.2%
No	61	21.8%

before. Among those with prior surgical experience, general anesthesia was the most commonly reported type (221, 78.9%), followed by spinal or epidural anesthesia (28, 10.0%) and local anesthesia (20, 7.1%), whereas 11 participants (3.9%) were unsure of the anesthesia type used. Additionally, the majority indicated that they had met their anesthesiologist before surgery (219, 78.2%), compared with 61 participants (21.8%) who had not. The sociodemographic and clinical characteristics of the study participants are summarized in Table 1.

Cesarean section was the most frequently reported procedure, accounting for 13.6% of all surgeries, followed by appendectomy (11.4%) and gallbladder surgery (8.6%). Orthopedic procedures, including fracture fixation and internal stabilization, represented 10.0% of the sample, while ear, nose and throat surgeries, primarily tonsillectomy and nasal septal correction, comprised 6.4%. Hernia repair accounted for 5.4%, and dental surgeries constituted 4.3%. Endoscopic procedures represented 3.6%, whereas bariatric, thyroid, urologic, gynecologic, and anorectal surgeries each contributed smaller proportions. The distribution of previous surgical procedures among the study participants is presented in Figure 1.

Most participants perceived anesthesiology training to be lengthy and intensive, with 282 respondents (69.6%) expressing this view, while smaller proportions reported uncertainty (87, 21.5%) or disagreed (36, 8.9%). This perception did not differ significantly between participants with a history of surgery and those without ($p = 0.391$). Regarding the perceived role of anesthesiologists, the majority identified putting patients to sleep as a primary function (356, 87.9%). Slightly more than half of the participants recognized monitoring vital signs as part of the anesthesiologist's role (217, 53.6%), whereas fewer identified administering pain relief (170, 42.0%) or managing intraoperative complications (170, 42.0%). These perceptions were comparable between participants with and without previous surgical experience, with no statistically significant differences observed ($p = 0.140$). As for professional confidence, more than half of the participants reported being very confident in anesthesiologists' skills (224, 55.3%), while 139 participants (34.3%) indicated moderate confidence. Similarly, high levels of confidence were expressed toward surgeons, with 241 respondents (59.5%) reporting being very confident in surgeons' skills. Confidence levels in both anesthesiologists and surgeons did not significantly vary according to prior surgical experience ($p = 0.874$).

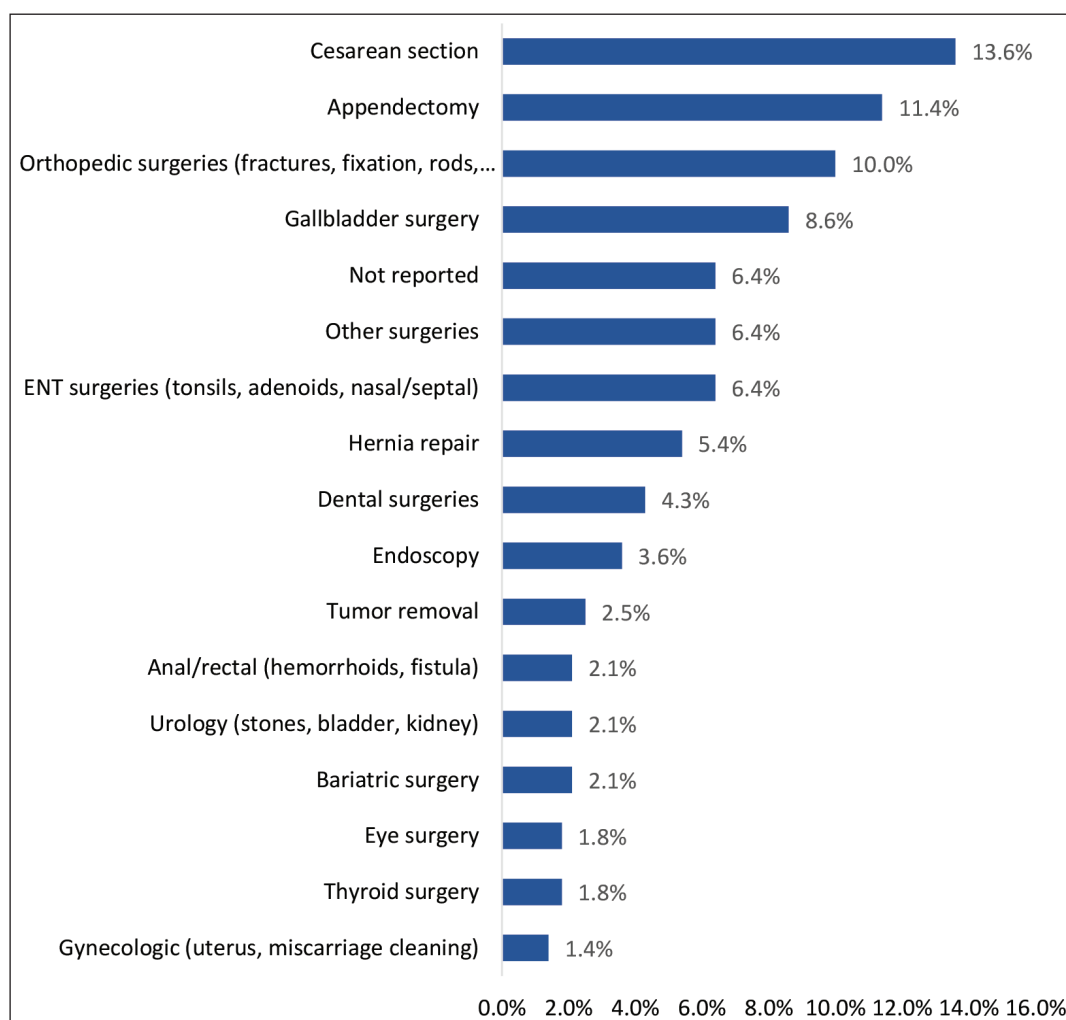


Figure 1. Distribution of previous surgical procedures among participants undergone surgery (N = 280).

and $p = 0.346$, respectively). Participants' perceptions of anesthesiologists' training, professional roles, and confidence in healthcare providers are summarized in Table 2.

Most participants indicated a preference for general anesthesia if given a choice, with 288 respondents (71.1%) favoring this option. This preference differed

significantly according to previous surgical experience ($p = 0.001$), as participants with a history of surgery were more likely to prefer general anesthesia (209, 74.6%) compared with those without prior surgery (79, 63.2%). In contrast, local anesthesia was more commonly preferred among participants without previous surgical experience (34, 27.2%) than among those who had undergone surgery before (30, 10.7%). Preference

Table 2. Participants' perceptions of anesthesiologists' training, roles, and professional competence according to previous surgical experience.

Perception of Anesthesiologists' Training and Roles	Total		Have you had surgery before?				p-value
	Yes		No				
	No	%	No	%	No	%	
Do you think that training for an anesthesiologist is lengthy and intensive?							0.391
Yes	282	69.6%	192	68.6%	90	72.0%	
No	36	8.9%	23	8.2%	13	10.4%	
I don't know	87	21.5%	65	23.2%	22	17.6%	
What is the role of the anesthesiologist?							0.140
Putting patients to sleep	356	87.9%	252	90.0%	104	83.2%	
Monitoring vital signs	217	53.6%	148	52.9%	69	55.2%	
Administering pain relief	170	42.0%	110	39.3%	60	48.0%	
Managing intraoperative complications	170	42.0%	120	42.9%	50	40.0%	
How confident are you in anesthesiologists' skills?							0.874
Not confident at all	12	3.0%	7	2.5%	5	4.0%	
Slightly confident	30	7.4%	21	7.5%	9	7.2%	
Moderately confident	139	34.3%	97	34.6%	42	33.6%	
Very confident	224	55.3%	155	55.4%	69	55.2%	
How confident are you in surgeons' skills?							0.346
Not confident at all	14	3.5%	10	3.6%	4	3.2%	
Slightly confident	22	5.4%	19	6.8%	3	2.4%	
Moderately confident	128	31.6%	87	31.1%	41	32.8%	
Very confident	241	59.5%	164	58.6%	77	61.6%	

P: Pearson X^2 test.

Table 3. Participants' preferences for anesthetic management and their association with previous surgical experience.

Preferences for Anesthetic Management	Total		Have you had surgery before?				p-value
	Yes		No				
	No	%	No	%	No	%	
If you were to choose, what type of anesthesia would you prefer?							0.001**
General anesthesia (fully unconscious)	288	71.1%	209	74.6%	79	63.2%	
Local anesthesia	64	15.8%	30	10.7%	34	27.2%	
Spinal/Epidural anesthesia	53	13.1%	41	14.6%	12	9.6%	
Why would you prefer this type of anesthesia?							0.049*
Fear of pain	240	59.3%	174	62.1%	66	52.8%	
Avoiding the side effects of general anesthesia	110	27.2%	71	25.4%	39	31.2%	
Trust in the doctor's recommendation	47	11.6%	28	10.0%	19	15.2%	
Stress/ anxiety	8	2.0%	7	2.5%	1	.8%	
If your anesthesiologist recommended a different type of anesthesia, would you agree?							0.788
Yes	324	80.0%	223	79.6%	101	80.8%	
No	81	20.0%	57	20.4%	24	19.2%	

P: Pearson X^2 test

[^]: Exact Probability test.

* $p < 0.05$ (significant).

Table 4. Distribution of participants' preoperative concerns related to anesthesia according to level of concern (N = 405).

Concern items	Not concerned		Slightly concerned		Moderately concerned		Very concerned	
	No	%	No	%	No	%	No	%
Waking up during surgery	127	31.4%	64	15.8%	80	19.8%	134	33.1%
Nausea and vomiting after anesthesia	127	31.4%	85	21.0%	87	21.5%	106	26.2%
Breathing problems due to anesthesia	116	28.6%	67	16.5%	100	24.7%	122	30.1%
Long-term health issues due to anesthesia	127	31.4%	59	14.6%	86	21.2%	133	32.8%
Anesthesiologist's experience level	166	41.0%	63	15.6%	91	22.5%	85	21.0%
Meeting the anesthesiologist before surgery	243	60.0%	61	15.1%	50	12.3%	51	12.6%
Fear of being hospitalized	212	52.3%	69	17.0%	61	15.1%	63	15.6%
Fear of surgical safety	123	30.4%	70	17.3%	101	24.9%	111	27.4%
Fear of postoperative pain	78	19.3%	68	16.8%	90	22.2%	169	41.7%
Fear of pain during recovery	114	28.1%	78	19.3%	101	24.9%	112	27.7%
Becoming paralyzed due to anesthesia	123	30.4%	51	12.6%	52	12.8%	179	44.2%
Being unable to wake up postoperatively	134	33.1%	59	14.6%	50	12.3%	162	40.0%
Staying in the ICU for a prolonged time	131	32.3%	58	14.3%	59	14.6%	157	38.8%
Disclosing personal matters while under anesthesia	145	35.8%	54	13.3%	75	18.5%	131	32.3%
Fear of needles	191	47.2%	69	17.0%	60	14.8%	85	21.0%
Feeling nervous in the hospital environment	155	38.3%	89	22.0%	71	17.5%	90	22.2%

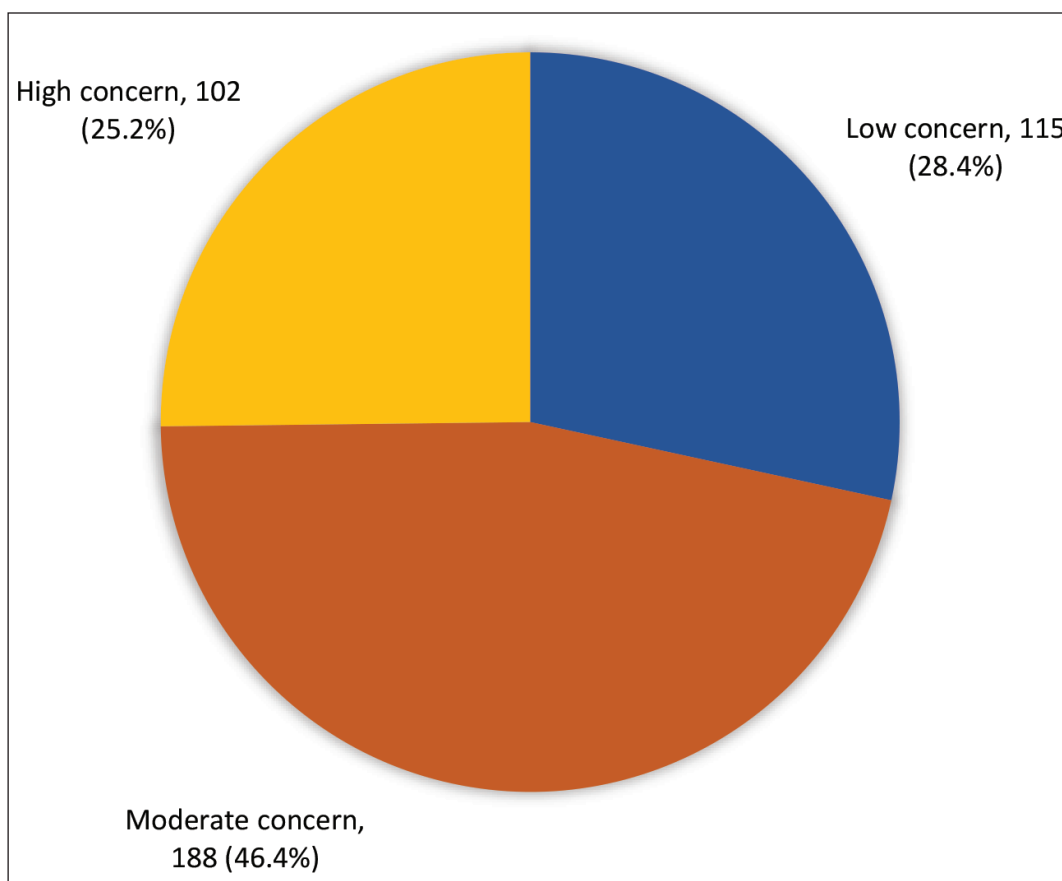


Figure 2. The overall participants' preoperative concerns related to anesthesia according to level of concern (N = 405).

for spinal or epidural anesthesia was reported by 53 participants (13.1%), with a higher proportion among those with prior surgical experience (41, 14.6%) than those without (12, 9.6%).

Regarding the reasons for anesthesia preference, fear of pain was the most frequently reported factor, cited by 240 participants (59.3%). This reason was more commonly reported among participants with previous

Table 5. Factors associated with overall preoperative concern levels regarding anesthesia among the study participants (N = 405).

Factors	Overall concern level						p-value
	Low concern		Moderate concern		High concern		
	No	%	No	%	No	%	
Age in years							0.038*
< 30	41	24.6%	85	50.9%	41	24.6%	
30-39	21	26.9%	40	51.3%	17	21.8%	
40-49	17	23.0%	32	43.2%	25	33.8%	
50+	36	41.9%	31	36.0%	19	22.1%	
Gender							0.001*
Male	58	38.4%	70	46.4%	23	15.2%	
Female	57	22.4%	118	46.5%	79	31.1%	
Educational level							0.027*
No formal education	17	45.9%	14	37.8%	6	16.2%	
Below secondary education	16	41.0%	14	35.9%	9	23.1%	
Secondary education	31	33.0%	43	45.7%	20	21.3%	
University education	50	22.7%	108	49.1%	62	28.2%	
Post-graduate degree	1	6.7%	9	60.0%	5	33.3%	
Work status							0.867
Not working	43	27.7%	73	47.1%	39	25.2%	
Student	25	25.0%	48	48.0%	27	27.0%	
Employee	47	31.3%	67	44.7%	36	24.0%	
Have you had surgery before?							0.632
Yes	76	27.1%	134	47.9%	70	25.0%	
No	39	31.2%	54	43.2%	32	25.6%	
What type of anesthesia was used?							0.145^
General anesthesia	63	28.5%	105	47.5%	53	24.0%	
Local anesthesia	5	25.0%	11	55.0%	4	20.0%	
Spinal/Epidural anesthesia	3	10.7%	13	46.4%	12	42.9%	
I don't know	5	45.5%	5	45.5%	1	9.1%	
Have you met your anesthesiologist before surgery?							0.674
Yes	62	28.3%	104	47.5%	53	24.2%	
No	14	23.0%	30	49.2%	17	27.9%	
Do you think that training for an anesthesiologist is lengthy and intensive?							0.006*
Yes	68	24.1%	132	46.8%	82	29.1%	
No	10	27.8%	18	50.0%	8	22.2%	
I don't know	37	42.5%	38	43.7%	12	13.8%	
How confident are you in anesthesiologists' skills?							0.001*
Not confident at all	1	8.3%	8	66.7%	3	25.0%	
Slightly confident	4	13.3%	13	43.3%	13	43.3%	
Moderately confident	26	18.7%	66	47.5%	47	33.8%	
Very confident	84	37.5%	101	45.1%	39	17.4%	
How confident are you in surgeons' skills?							0.003*
Not confident at all	1	7.1%	7	50.0%	6	42.9%	
Slightly confident	3	13.6%	9	40.9%	10	45.5%	
Moderately confident	26	20.3%	68	53.1%	34	26.6%	
Very confident	85	35.3%	104	43.2%	52	21.6%	
If you were to choose, what type of anesthesia would you prefer?							0.530^
General anesthesia (fully unconscious)	83	28.8%	133	46.2%	72	25.0%	
Local anesthesia	21	32.8%	30	46.9%	13	20.3%	
Spinal/Epidural anesthesia	11	20.8%	25	47.2%	17	32.1%	
If your anesthesiologist recommended a different type of anesthesia, would you agree?							0.049*
Yes	100	30.9%	148	45.7%	76	23.5%	
No	15	18.5%	40	49.4%	26	32.1%	

P: Pearson X² test

^: Exact Probability test

* $p < 0.05$ (significant).

surgical experience (174, 62.1%) compared with those without (66, 52.8%). Avoiding the side effects of general anesthesia was reported by 110 participants (27.2%), followed by trust in the doctor's recommendation (47, 11.6%) and stress or anxiety (8, 2.0%). The distribution of reasons differed significantly between participants with and without prior surgical experience ($p = 0.049$).

When asked whether they would agree to a different type of anesthesia if recommended by the anesthesiologist, the majority of participants responded affirmatively (324, 80.0%). This level of agreement was similar among participants with (223, 79.6%) and without (101, 80.8%) previous surgical experience, with no statistically significant difference observed between the two groups ($p = 0.788$). Participants' anesthesia preferences and the reasons underlying these preferences are summarized in Table 3.

High levels of concern were particularly evident for fear of postoperative pain, reported as very concerning by 169 participants (41.7%), followed by concerns about becoming paralyzed due to anesthesia (179, 44.2%) and being unable to wake up after surgery (162, 40.0%). Prolonged stay in the intensive care unit (ICU) was also a prominent concern, with 157 participants (38.8%) reporting very high concern. Concerns related to intraoperative awareness and physiological complications were also common. Waking up during surgery was reported as very concerning by 134 participants (33.1%), while breathing problems due to anesthesia were reported by 122 participants (30.1%). Similarly, long-term health effects of anesthesia elicited high concern among 133 participants (32.8%). In contrast, relatively lower levels of concern were observed for issues related to communication and logistics. Meeting the anesthesiologist before surgery was not a concern for most participants (243, 60.0%), and fear of being hospitalized was reported as not concerning by more than half of the sample (212, 52.3%). Fear of needles and concern about the anesthesiologist's experience level were also less frequently rated as very concerning, reported by 85 (21.0%) and 85 (21.0%) participants, respectively. Participants' responses to the individual preoperative concern items are summarized in Table 4.

Nearly half of the participants were classified as having a moderate level of concern (188, 46.4%), representing the most prevalent category in the study population. A lower proportion of participants had high levels of concern, with 102 individuals (25.2%) falling into this group. On the other hand, 115 participants (28.4%) were categorized as having low concern regarding anesthesia-related issues. The distribution of participants according to their overall preoperative concern level is presented in Figure 2.

Several factors were significantly associated with overall preoperative concern levels regarding anesthesia. Age showed a statistically significant association ($p = 0.038$), with higher levels of concern more frequently observed among participants aged 40–49 years, where 33.8% reported high concern, compared with 24.6% among those younger than 30 years and 21.8% among those aged 30–39 years. In contrast, participants aged 50 years and

above were more likely to report low concern (41.9%). Gender was strongly associated with concern level ($p = 0.001$). High concern was more prevalent among females (79, 31.1%) compared with males (23, 15.2%), whereas males were more likely to report low concern (58, 38.4%) than females (57, 22.4%). Educational level was also significantly related to overall concern ($p = 0.027$). Participants with postgraduate education showed the highest proportion of high concern (33.3%), followed by those with university education (28.2%). In contrast, participants with no formal education were more likely to report low concern (45.9%). Perceptions of anesthesiology training demonstrated a significant association with concern level ($p = 0.006$). Participants who believed that anesthesiologists undergo lengthy and intensive training reported higher levels of concern, with 29.1% classified as highly concerned, compared with 22.2% among those who did not share this perception. Those who were uncertain about the training intensity were more likely to report low concern (42.5%). Confidence in anesthesiologists' skills was significantly associated with overall concern ($p = 0.001$). High concern was most common among participants who were slightly confident (43.3%) or moderately confident (33.8%), whereas those who were very confident were less likely to report high concern (17.4%) and more likely to report low concern (37.5%). Similarly, confidence in surgeons' skills showed a significant association with concern level ($p = 0.003$). Participants who were not confident or slightly confident in surgeons' skills reported higher proportions of high concern (42.9% and 45.5%, respectively), compared with those who were very confident (21.6%). Finally, willingness to agree with an anesthesiologist's recommendation for a different type of anesthesia was significantly associated with concern level ($p = 0.049$). The associations between participants' characteristics and overall preoperative concern levels are summarized in Table 5.

Discussion

This study provides a full assessment of patients' knowledge, perceptions, preferences, and preoperative concerns regarding anesthesia at King Abdullah Hospital in Bisha. Overall, the findings reveal that while most participants established reasonable confidence in anesthesiologists and acknowledged the importance of their role, a substantial proportion continued to experience moderate to high levels of preoperative concern, mainly related to postoperative pain, anesthesia safety, and loss of control during or after surgery. The study population was relatively young, with a mean age of 36.5 years, and predominantly female. The high proportion of participants with university-level education may reflect increased healthcare access and awareness among educated individuals, but it also underscores that higher education does not necessarily protect against anesthesia-related fears, as demonstrated later in the analysis.

Most participants reported prior surgical experience, with general anesthesia being the most common modality used. This matches findings from regional and international studies showing that general anesthesia remains the predominant technique for elective procedures [15,17].

Interestingly, the majority of participants reported having met their anesthesiologist before surgery, which is higher than what has been reported in some earlier studies where limited preoperative interaction was identified as a key contributor to patient anxiety [7]. Despite this interaction, concerns remained prevalent, suggesting that the quality and depth of communication may be more important than mere contact.

Considering knowledge and perceptions of anesthesiologists' training and role, most participants perceived anesthesiology training as lengthy and intensive, showing a relatively good level of awareness compared with earlier Saudi studies. In contrast, a study conducted in Jeddah reported substantial misconceptions, with many patients underestimating the duration of anesthesiology training and misunderstanding the anesthesiologist's role [7]. This improvement may reflect increasing public exposure to healthcare information and greater visibility of anesthesiologists within perioperative teams. Nevertheless, misconceptions continued regarding the scope of anesthesiologists' responsibilities. While most participants associated anesthesiologists with inducing sleep, fewer recognized their roles in pain management and intraoperative complication control. Similar patterns have been reported in both regional and international studies, where patients often perceive anesthesiologists primarily as providers of anesthesia rather than perioperative physicians responsible for comprehensive patient care [7,15]. These findings highlight the current need for structured patient education emphasizing the full scope of anesthesiology practice.

About preferences for anesthetic management, general anesthesia was the preferred option for most participants, particularly among those with previous surgical experience. This preference may indicate familiarity and perceived comfort with being fully unconscious during surgery. Similar preferences have been documented in studies from Saudi Arabia and Canada, where patients often favor general anesthesia due to fear of awareness or pain during procedures [17,20].

Fear of pain emerged as the most important factor moderating anesthesia preference, especially among participants with prior surgical experience. This finding is consistent with previous research identifying postoperative pain as a dominant concern among surgical patients [17,21]. Avoidance of anesthesia side effects and trust in physician recommendations were also relevant factors, uncovering the importance of effective communication and reassurance. Most participants expressed willingness to accept an alternative anesthetic technique if recommended by the anesthesiologist, revealing a generally high level of trust in professional judgment despite existing fears.

Considering preoperative concerns related to anesthesia, preoperative concerns were widespread, with postoperative pain, paralysis, failure to awaken after surgery, and prolonged ICU stay reported as the most prominent fears. These concerns closely resemble those reported in earlier Saudi studies, mainly the Riyadh-based study that identified postoperative pain and intraoperative awareness as leading sources of anxiety [17]. Similar

fears have also been reported internationally, reinforcing the universal nature of anesthesia-related anxiety [15,20].

In contrast, concerns related to interpersonal communication, such as meeting the anesthesiologist or logistical issues, were reported less frequently. This mostly means improved perioperative practices and patient-centered care in the study setting. However, fears related to catastrophic outcomes, even if rare, appear to have a disproportionate psychological impact, underlining the need for targeted counseling focused on risk clarification and expectation management.

Generally, most participants were classified as having a moderate level of overall concern, with a smaller but clinically relevant proportion reporting high concern. This distribution is consistent with findings from studies in southwestern Saudi Arabia, where moderate satisfaction and mixed anxiety levels were reported [21]. The persistence of moderate concern even with previous surgical experience suggests that repeated exposure alone does not fully alleviate anesthesia-related fears.

Age and gender were significantly associated with concern levels. Higher concern among middle-aged participants and females is consistent with prior findings indicating that women and individuals over 40 years are more vulnerable to preoperative anxiety [17]. Biological, psychological, and sociocultural factors may contribute to these differences and should be considered in preoperative counseling strategies. Educational level also showed a significant association, with higher concern observed among participants with university and postgraduate education. This finding contrasts with the assumption that higher education reduces anxiety and aligns with evidence suggesting that educated individuals may be more aware of potential risks, leading to heightened concern [15]. Similarly, participants who perceived anesthesiology training as intensive reported higher concern, possibly reflecting increased awareness of procedural complexity rather than reassurance.

Confidence in anesthesiologists' and surgeons' skills was a critical determinant of concern levels. Lower confidence was associated with higher concern, reinforcing the importance of trust in healthcare providers. This finding is consistent with previous Saudi and international studies demonstrating that patient confidence strongly influences perioperative anxiety and acceptance of care plans [15,19]. Furthermore, participants unwilling to accept an alternative anesthesia recommendation exhibited higher concern, suggesting that resistance to shared decision-making may be rooted in underlying fear rather than lack of trust alone.

The findings of this study reflect the need for structured, patient-centered preoperative education that goes beyond procedural explanations to address emotional concerns and misconceptions. Anesthesiologists should be encouraged to allocate sufficient time for preoperative discussions, focusing on pain management, safety reassurance, and individualized risk communication. Such interventions may be useful for female patients, middle-aged adults, and those expressing uncertainty or moderate confidence in healthcare providers.

Strengths and limitations

This study benefits from a relatively large sample size and the inclusion of participants with and without previous surgical experience, enhancing the robustness of the findings. However, its cross-sectional design limits causal inference, and the single-center setting may affect the generalizability of the results. In addition, the analyses were limited to univariate statistical tests, and multivariable regression analysis was not performed. Therefore, the observed associations between participant characteristics and preoperative concern levels should be interpreted as unadjusted associations that may be influenced by potential confounding factors, such as age, sex, educational level, and previous surgical experience. Furthermore, self-reported responses may have been subject to recall bias. Despite these limitations, the study provides valuable insights into patients' knowledge, perceptions, preferences, and anesthesia-related concerns in a regional Saudi hospital setting. Future multicenter studies incorporating multivariable analytical approaches are recommended to identify independent predictors of preoperative anesthesia-related concerns.

Conclusion and recommendations

In conclusion, patients undergoing surgery at King Abdullah Hospital show generally good awareness of anesthesiology training and high trust in healthcare providers, yet moderate to high levels of preoperative concern remain common and are characterized predominantly by moderate to high concern focused on pain-related outcomes and severe risks such as intraoperative awareness, postoperative paralysis, or prolonged intensive care stays, while logistical issues are less concerning. These concerns are affected by demographic factors, educational level, and confidence in medical professionals. Addressing these concerns through targeted education and improved communication may improve patient experience, reduce anxiety, and support informed decision-making in anesthesia care. The authors recommend applying structured preoperative education targeting common fears, optimizing consultations for shared decision-making, developing communication strategies to build trust, and pursuing further research to evaluate interventions aimed at reducing this anxiety to improve patient satisfaction and care quality.

List of Abbreviations

ENT	Ear, nose and throat
ICU	Intensive care unit
SD	Standard deviation
SPSS	Statistical Package for the Social Sciences

Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent to participate

Written informed consent was obtained from all participants before enrollment in the study.

Ethical approval

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Supplementary content (If any) is available online.

References

1. Fu G, Xu L, Chen H, Lin J. State-of-the-art anesthesia practices: a comprehensive review on optimizing patient safety and recovery. *BMC Surg.* 2025;25(1):32. <https://doi.org/10.1186/s12893-025-02763-6>
2. Barash P, Cullen BF, Stoelting RK, Cahalan M, Stock MC, Ortega R. *Handbook of clinical anesthesia*. Philadelphia, PA: Lippincott Williams & Wilkins; 2013.
3. National Institute of General Medical Sciences. Anesthesia [Internet]. Bethesda, MD: NIGMS; Available from: <https://www.nigms.nih.gov/education/fact-sheets/Pages/anesthesia.aspx>
4. Liu LL, Larson MD. Patient safety during anesthesia: 100 years of progress documented in *Anesthesia & Analgesia*. *Anesth Analg.* 2022;135(2S Suppl 1):S37–47. <https://doi.org/10.1213/ANE.0000000000005906>
5. Kain ZN, Wang SM, Mayes LC, Caramico LA, Hofstadter MB. Distress during the induction of anesthesia and postoperative behavioral outcomes. *Anesth Analg.* 1999;88(5):1042–7. <https://doi.org/10.1213/00005539-199905000-00013>
6. Zambouri A. Preoperative evaluation and preparation for anesthesia and surgery. *Hippokratia.* 2007;11(1):13–21.
7. Skowrońska D, Garczyk A, Kluzik A, Grześkowiak M. What do patients know about anesthesia and anesthesiologists? *J Clin Med.* 2025;14(23):8459. <https://doi.org/10.3390/jcm14238459>
8. Ji W, Sang C, Zhang X, Zhu K, Bo L. Personality, preoperative anxiety, and postoperative outcomes: a review. *Int J Environ Res Public Health.* 2022;19(19):12162. <https://doi.org/10.3390/ijerph191912162>
9. Kehlet H, Dahl JB. Anaesthesia, surgery, and challenges in postoperative recovery. *Lancet.* 2003;362(9399):1921–8. [https://doi.org/10.1016/S0140-6736\(03\)14966-5](https://doi.org/10.1016/S0140-6736(03)14966-5)
10. Ali A, Altun D, Oguz BH, İlhan M, Demircan F, Koltka K. The effect of preoperative anxiety on postoperative analgesia and anesthesia recovery in patients undergoing laparoscopic cholecystectomy. *J Anesth.* 2014;28(2):222–7. <https://doi.org/10.1007/s00540-013-1712-7>
11. Tylee MJ, Rubenfeld GD, Wijesundera D, Sklar MC, Hussain S, Adhikari NK. Anesthesiologist to patient

- communication: a systematic review. *JAMA Netw Open*. 2020;3(11):e2023503. <https://doi.org/10.1001/jamanetworkopen.2020.23503>
12. Klapka JM, Roizen MF. Current understanding of patients' attitudes toward and preparation for anesthesia: a review. *Anesth Analg*. 1996;83(6):1314–21. <https://doi.org/10.1097/00000539-199612000-00031>
 13. Smith AF, Mishra K. Interaction between anaesthetists, their patients, and the anaesthesia team. *Br J Anaesth*. 2010;105(1):60–8. <https://doi.org/10.1093/bja/aeq132>
 14. Nagrampa D, Bazargan-Hejazi S, Neelakanta G, Mojtahedzadeh M, Law A, Miller M. A survey of anesthesiologists' role, trust in anesthesiologists, and knowledge and fears about anesthesia among predominantly Hispanic patients from an inner-city county preoperative anesthesia clinic. *J Clin Anesth*. 2015;27(2):97–104. <https://doi.org/10.1016/j.jclinane.2014.05.012>
 15. Jovanovic K, Kalezić N, Sipetić Grujić S, Zivaljević V, Jovanović M, Savić M, et al. Patients' fears and perceptions associated with anesthesia. *Medicina (Kaunas)*. 2022;58(11):1577. <https://doi.org/10.3390/medicina58111577>
 16. Shevde K, Panagopoulos G. A survey of 800 patients' knowledge, attitudes, and concerns regarding anesthesia. *Anesth Analg*. 1991;73(2):190–8. <https://doi.org/10.1213/00000539-199108000-00013>
 17. Ruhaiyem ME, Alshehri AA, Saade M, Shoabi TA, Zahoor H, Tawfeeq NA. Fear of going under general anesthesia: a cross-sectional study. *Saudi J Anaesth*. 2016;10(3):317–21. <https://doi.org/10.4103/1658-354X.179094>
 18. Arefayne NR, Getahun AB, Melkie TB, Endalew NS, Nigatu YA. Patients' knowledge and perception of anesthesia and the anesthetists: cross-sectional study. *Ann Med Surg (Lond)*. 2022;78:103740. <https://doi.org/10.1016/j.amsu.2022.103740>
 19. Roublah EA, Alqurashi RN, Kandil MA, Neama SH, Roublah FA, Arab AA, et al. Patients' concerns and perceptions of anesthesia-associated risks at University Hospital: a cross-sectional study. *Saudi J Anaesth*. 2020;14(2):157–63. https://doi.org/10.4103/sja.SJA_560_19
 20. Matthey P, Finucane BT, Finegan BA. The attitude of the general public towards preoperative assessment and risks associated with general anesthesia. *Can J Anaesth*. 2001;48(4):333–9. <https://doi.org/10.1007/BF03014959>
 21. Alnashri YM, Alfaqih OY, Buhaliyqh MA, Mossery RA, Alamri IR, Mahfouz NA, et al. Patient satisfaction and its predictors with perioperative anesthesia care at two general hospitals in southwestern Saudi Arabia. 2023;15(1):e33824. <https://doi.org/10.7759/cureus.33824>