Submitted: 26 February, 2023 Accepted: 10 April, 2023 Published: 08 November, 2023 DOI:10.22514/sv.2023.106

Open Access
Signa Vitae

ORIGINAL RESEARCH

Community's knowledge and attitude of pre-operative fasting in kingdom of Saudi Arabia, 2022

Kareemah Salem Alshurtan[1,*], Ruba Mustafa Elsaid[2], Abdulaziz Khalid Alabdulaali[3], Wjood Fahad Alanazi[4], Raghad Fahad Alruwaili[4]

[1]Department of Internal Medicine, Collage of Medicine, Ha'il University, 55476 Hail, Saudi Arabia
[2]Department of Pathology, Collage of Medicine, Ha'il University, 55476 Hail, Saudi Arabia
[3]Department of Anesthesia, Almoosa Spacilest hospital, 36342 Alhasa, Saudi Arabia
[4]Collage of Medicine, Ha'il University, 55476 Hail, Saudi Arabia

***Correspondence**
k.alshurtan@uoh.edu.sa
(Kareemah Salem Alshurtan)

Abstract

To reduce the risk of pulmonary aspiration, fasting before general anesthesia is essential. Studies reported that despite that traditional "NPO (nothing by mouth) after midnight" regulations are being liberalized, noncompliance with NPO status is still a threat to patient safety and may result in delays of elective surgical procedures, reduce the efficiency of ambulatory surgery setting, and compromise patient safety. This study aimed to assess the community's knowledge of preoperative fasting, as well as their attitudes toward preoperative fasting in Saudi Arabia.This is a cross-sectional study conducted among the Saudi general population. A self-administered questionnaire was distributed among the targeted population using an online surgery. The questionnaire includes socio-demographic data (*i.e.*, age, gender, education, *etc.*) and a 12-item questionnaire to measure the knowledge and attitude toward preoperative fasting. The result of 4257 participants was recruited, 67.2% were females and 39.3% were aged between 18 to 24 years old. The prevalence of participants who had surgery that required anesthesia was 48.9%. The overall mean knowledge score was 4.80 (standard deviation (SD) 2.36) out of 12 points. 60.1% were considered poor knowledge, 38.3% were moderate and only 1.6% were considered good knowledge levels. Factors associated with increased knowledge were being older in age, female gender, living in Northern Region, and having undergone surgery that required anesthesia. The level of knowledge among the general population regarding the importance of fasting before the surgery was inadequate. Older females who were living in the Northern Region and who previously received general anesthesia during their previous operation were more likely to demonstrate better knowledge about preoperative fasting as compared to the rest of the groups. More research is needed to determine the level of understanding of the community toward the importance of fasting before surgical intervention.

Keywords

Fasting; Preoperative; Knowledge; Attitude; Surgical intervention; Anesthesia

1. Introduction

Preoperative fasting (POF) is a common practice used to reduce the risk of aspiration during anesthesia and surgery. POF has been a standard of care for decades, and is still widely used today. The purpose of this practice is to reduce the amount of gastric contents in the stomach, which can cause life-threatening complications if aspirated during surgery. POF typically involves fasting for 6–8 hours before surgery, although the exact length of time varies depending on the type of procedure and patient factors. Clear fluids are usually allowed up to two hours before surgery. The literature on POF is extensive and varied, with debate regarding the optimal duration of preoperative fasting and its effectiveness at reducing aspiration risk. Studies have shown that POF is effective in reducing the risk of aspiration and is generally well tolerated by patients, with no reported adverse effects [1, 2]. However, there are still some controversies surrounding POF, including the optimal duration of fasting and the impact of prolonged fasting on patient safety. Additionally, there is debate about the need for POF for certain procedures or in certain patient populations. Overall, POF is an important safety measure that has been shown to be effective in reducing the risk of aspiration.

Pre-operative fasting is a common part of the pre-surgery process, as it helps ensure patient safety during the procedure. The community's knowledge and attitude towards pre-operative fasting is largely positive, as it is typically viewed as a necessary and beneficial step in the preparation for surgery. Most people understand the importance of pre-operative fasting, and its benefits when it comes to patient safety. According to surveys, many patients feel that pre-operative fasting helps

them to feel more prepared and relaxed before surgery. Additionally, many report that they are more comfortable with the idea of fasting due to the knowledge that it is necessary for their safety. However, some individuals may have misconceptions about pre-operative fasting, or may be unaware of the guidelines for fasting before surgery [3, 4]. It is important for medical professionals to provide clear and accurate information about pre-operative fasting, as well as give patients tips for making fasting easier. Additionally, medical professionals should be prepared to answer questions about pre-operative fasting and provide support and guidance to those who are fasting before surgery. Overall, the community's knowledge and attitude towards pre-operative fasting is largely positive. Most patients understand the importance of pre-operative fasting.

Fasting before surgical operations is usually recommended before induction of anesthesia for operative procedures to help decrease the volume and acidity of gastric contents and prevent pulmonary aspiration due to the inhibition of gag, cough, and swallow reflexes. Nil or non per os (NPO) after middle of the night remains a common practice in elective surgery patients [5].

Preoperative fasting (POF) is a time tested professional practice that is usually done for physiological and precautionary benefits to the patients worldwide. Patients are deprived of certain or all foods and drinks for specified period of time before surgery. For clinical purposes, POF is abstinence from all foods and liquids for a specified duration of time before induction of anesthesia or commencement of surgery. The duration for POF is usually set by the type of diet, patient condition, and the kind of surgery whether emergency or elective among other factors [6].

Prolonged fasting times can cause physical discomforts such as nausea, headaches, low blood sugar, and dehydration. These discomforts can lead to restlessness, irritability, and fatigue, all of which can be detrimental to a patient's overall experience with their surgical procedure. In addition, prolonged fasting times can lead to increased risk of hypoglycemia and electrolyte imbalance, which can be dangerous for patients who are undergoing surgery. These risks can further decrease patient satisfaction as they may be concerned about the safety of their procedure. Finally, prolonged fasting times can lead to poor patient satisfaction with their surgical experience due to the feeling of being deprived and restricted. These feelings can be compounded by the fact that the patient may not understand the reasons for the fasting, and may feel that their needs are not being taken into consideration [7, 8].

According to studies done in Western countries, around 2%–3.5% of patients admitted on the day of surgery are uncooperative with fasting instructions. Noncompliance with fasting instructions has caused surgeries being delayed or postponed, leading to inconvenience and increasing costs for both the patient and the hospital. More prominently, nonfulfillment of fasting instructions may compromise patient safety, mostly when patients lie about their fasting times to prevent their surgeries from being delayed or postponed [9].

Aspiration during anesthesia is one of the leading causes of anesthesia-related deaths. Despite the fact that the incidence of aspiration is moderately low, currently reported at 0.3 to 4.7 per 10,000 anesthetics, it is still a serious and potentially preventable complication of anesthesia. Therefore, preoperative fasting is still the mainstay of efforts to reduce the risks of regurgitation and aspiration during general anesthesia for surgery [10].

A previous study [9] reported that almost 4% of their patients would lie about their fasting times if nonfulfillment meant that their surgery would be delayed or postponed. Reasons proposed for these findings include poor communication between patients and health workers, poor patient understanding, and misinformation [9].

Therefore, this study is conducted to assess community's knowledge on preoperative fasting, as well as their attitudes toward preoperative fasting.

2. Literature review

Yimer *et al.* [11] conducted a cross-sectional survey to evaluate adherence to preoperative fasting guidelines and associated factors in pediatric patients undergoing elective surgery in public hospitals in Addis Ababa, Ethiopia in 2020. A total of 279 pediatric patients aged under 17 years scheduled for elective surgery were included in the study, and data were analyzed using logistic regression. The results revealed that the majority of the participants (89.96%) did not adhere to the preoperative fasting guidelines, with mean fasting times of 10 $\pm$ 4.03 hours for clear liquids, 7.18 $\pm$ 2.26 hours for breast milk, and 13.5 $\pm$ 2.76 hours for solid foods. The most common reasons for delayed preoperative fasting were incorrect order (35.1%), longer prior case procedures (34.1%), and changing sequence of schedule (20.8%). Thus, the study suggests that staff should receive guidance and training to adhere to international fasting guidelines [11].

Hapugoda M *et al.* [12] conducted a clinical audit to assess preoperative fasting (POF) practices and associated complications in adult patients scheduled for elective surgery at Teaching Hospital Anuradhapura. Of the 430 patients interviewed, 95.3% considered POF important, but only 32.6% were educated on the correct POF standards. The average fasting time for solids and fluids was 12.85 and 7.38 hours, respectively. Most patients fasted longer than the recommended time, and 11.6% experienced postoperative nausea and vomiting. The study highlights the need to educate healthcare staff and patients on updated POF guidelines [12].

Rawlani SS *et al.* [13] conducted a study to assess preoperative fasting times in children undergoing elective surgery and the effect of interventions to promote compliance with fasting guidelines. The initial audit of 85 children showed that the mean fasting times were much longer than recommended guidelines. The study found incorrect orders by doctors (47%) and ward nurses (38%) as important causes of non-adherence. After interventions, mean fasting times decreased to 7.7 hours for solids and 2.6 hours for water. The study concludes that education and multidisciplinary teamwork can optimize fasting duration and improve preoperative experiences for children [13].

Zhu Q *et al.* [14] aimed to investigate the implementation of new fasting guidelines and evaluate actual fasting times in patients undergoing elective surgery. The study found that both nurses and anesthesiologists prescribed longer fasting

times than recommended, resulting in excessive fasting durations for patients. The authors concluded that multidisciplinary efforts are necessary to ensure adherence to updated fasting instructions in clinical practice [14]. The different method related to POF:

1. Traditional method: This method relies on a set of preoperative fasting instructions, generally 8–12 hours for food and 2–6 hours for clear liquids.

2. Enhanced recovery after surgery (ERAS) protocol: This protocol [15] is based on evidence-based practice and is designed to reduce stress, optimize nutrition, and speed up recovery. It includes a modified preoperative fasting period of 4–6 hours for food and 2 hours for clear liquids. ERAS (Enhanced Recovery After Surgery) is a multidisciplinary approach to surgical care that seeks to improve patient outcomes and reduce length of hospital stay. The protocol focuses on preoperative patient optimization, intraoperative techniques, and postoperative recovery strategies. It involves a comprehensive bundle of interventions including optimized nutrition, multimodal analgesia, early mobilization, and enhanced communication among members of the healthcare team. The Enhanced Recovery after Surgery (ERAS) protocol is a surgical care pathway designed to reduce perioperative stress, improve patient recovery, and reduce hospital costs. It involves a multidisciplinary approach, focusing on preoperative patient optimization, perioperative management and postoperative rehabilitation. The protocol is based on evidence-based guidelines, with an emphasis on patient education and preoperative consultation. Key components of the protocol include preoperative patient education, preoperative optimization of nutrition and fluid balance, intraoperative fluid management and avoidance of postoperative complications [16, 17]. Other components include early mobilization, early feeding, multimodal analgesia, and early discharge. The ERAS protocol has been shown to reduce postoperative morbidity and mortality, as well as hospital costs. It has been successfully implemented in a variety of surgical settings, including colorectal, orthopedic, urological and gynecological surgeries in different countries [18, 19]. Implementation of the protocol requires an interdisciplinary team of healthcare professionals, including surgeons, anesthesiologists, nurses, physiotherapists and dietitians.

3. Clear liquids only: This method is recommended for low-risk procedures and involves a preoperative fasting period of 2 hours for clear liquids only.

4. Early breakfast: This method is recommended for low-risk procedures and involves allowing the patient to have a light meal, such as toast and tea, 2 hours before surgery.

5. Specialized fasting: This method is recommended for high-risk procedures and involves a specialized fasting protocol tailored to the patient's medical history.

Current preoperative fasting protocols from international anesthesia associations:

1. The American Society of Anesthesiologists (ASA) recommends a minimum preoperative fasting time of six hours for clear liquids and eight hours for solids [20].

2. The Association of Anaesthetists of Great Britain and Ireland (AAGBI) states that adults should fast for at least six hours before elective surgery.

3. The Canadian Anesthesiologists' Society (CAS) recommends a minimum of four hours preoperative fasting for clear liquids and six hours for solids.

4. The Japanese Society of Anesthesiologists (JSA) recommends a minimum of four hours preoperative fasting for clear liquids and eight hours for solids.

5. The Korean Society of Anesthesiologists (KSA) recommends a minimum of four hours preoperative fasting for clear liquids and six hours for solids.

3. Materials and methods

3.1 Study design

A descriptive cross-sectional study will be conducted from November 2022 to December 2023. The study will target Saudi and non-Saudi, male and female, individuals, aged 20 years or more in the Kingdom of Saudi Arabia. Individuals less than 20 years old and those who refuse to participate in this study will be excluded from the study. Data will be collected using standardized online self-administered questionnaires using Google forms. A structured and self-administrated electronic questionnaire which includes questions on demographic information, knowledge about pre-operative fasting, the importance of pre-operative fasting and complications related to noncompliance, in addition to the attitude of participants towards pre-operative fasting will be formed including all aspects of the objectives. It will be a questionnaire created on the basis of intensive literature by researchers. Examination and consultancy of experts will be done to meet the requirements of the ideal questionnaire. The questionnaire from the report will be open for 1 month.

3.2 Study populations

The study carried out among people live in KSA which their age between 18–60 years old.

3.3 Data collections

A self-administered online questionnaire. The questionnaire has been created to meet the objectives of this study. Demographic data is typically collected through surveys, interviews, and focus groups. Other methods of data collection include observation and tracking consumer behavior, such as through web analytics or consumer loyalty programs. It is unclear what population is included in the study and what method was used to collect the data. Additional information is needed about the population, such as their age, gender, location, and any other relevant characteristics. It is also important to know how the data was collected, such as through surveys, interviews, or other methods. This information will help to better understand the findings of the study and the implications for further research. Normally, the questions are related to following categories:

1. What is your understanding of pre-operative fasting?

2. How long do you think a patient should fast before a surgery?

3. What do you think are the advantages of pre-operative fasting?

4. What are some of the risks associated with pre-operative

fasting?

5. Have you ever had to fast pre-operatively?

6. Do you think pre-operative fasting is necessary?

7. What kind of information do you think is important to give a patient before they have to fast pre-operatively?

8. How do you think pre-operative fasting can be improved?

9. What difficulties, if any, have you experienced with pre-operative fasting?

10. Do you have any advice for someone who has to fast pre-operatively?

3.4 Total number

4257.

3.5 Standardizing the questionnaire

Standardizing the questionnaire of socio-demographic data involved a few steps. First, the questionnaire was reviewed by experts from the field to ensure that the questions asked were relevant to the study and that the language used was clear and non-biased. Second, the questionnaire was pilot tested with a small group of subjects to assess the validity and reliability of the items. This was done to ensure that the questions were clear and that the responses were consistent. Third, the responses were assessed for accuracy and completeness. This was done to ensure that any irrelevant or incomplete responses were excluded from the final data. Finally, the questionnaire was evaluated for accuracy and consistency by comparing the responses to other sources of data. This comparison was done to ensure that the responses were valid and that the data collected was a true representation of the population.

Each pilot study served as a test of the questionnaire's efficacy, which allowed researchers to identify any issues with the questionnaire, such as unclear wording or confusing response options. After any issues were identified, the questionnaire was revised and tested again in a second pilot study. This process continued until the questionnaire was clearly understood by all participants and the response options were appropriate for the study. The questionnaire was also evaluated for reliability and validity. Reliability was assessed by testing the consistency of the responses obtained from the questionnaire, while validity was assessed by comparing the questionnaire results to another measure of the same variables.

3.6 Statistical analysis

The knowledge of the community regarding preoperative fasting has been assessed using a 12-item questionnaire, where the correct answer for each question has been identified/marked and was coded with 1 while the incorrect answer has been coded with 0. The total knowledge score has been calculated by adding all 12 items. A score ranging from 0 to 12 points had been generated, a higher score indicates a higher knowledge of preoperative fasting. By using 50% and 75% as the cutoff points to determine the level of knowledge, participants were considered as having poor knowledge if the score was below 50%, 50% to 75% were considered moderate knowledge and above 75% were categorized as having a good level of knowledge.

Categorical variables were shown as numbers and percentages (%) while continuous variables were summarized as mean and standard deviation. The differences in the score of knowledge in relation to the socio-demographic characteristics of the participants had been conducted using Mann Whitney Z-test. The normality test was carried out using the Shapiro-Wilk test and Kolmogorov-Smirnov test. The knowledge score follows a non-normal distribution. Therefore, the non-parametric test was applied. Two-tailed analyses with $p < 0.05$ were used as the cutoff for statistical significance. All data analyses were performed using the statistical package for social sciences, version 26 (SPSS, IBM Corp, Armonk, NY, USA).

4. Results

In total, 4257 participants were recruited. Table 1 described the socio-demographic characteristics of participants. 39.3% were aged between 18 to 24 years old with females being dominant (67.2%). Nearly 60% had bachelor's degrees and 45.1% were living in the Northern Region. The proportion of participants who underwent surgery that required general or partial anesthesia was 48.9%.

Regarding the assessment of the knowledge and attitude toward preoperative fasting (Table 2), 79.1% agreed that the patient should fast before any surgery while only 28.3% were aware that local anesthesia will also require fasting. Approximately 35.4% of the respondents knew that 8 hours' duration of fasting among adults is needed before the surgery while only 14.5% were aware of 4 hours of fasting for a breastfed child and 11.3% were aware of 6 hours of fasting duration for a formula-fed baby. 31.6% knew that the patient can eat if the surgery is delayed for approximately 10 hours. Respondents who believed that there is a danger to the patient if did not fast before the surgery was 56.3% and the most common complication was reflux of stomach components and entry into the lungs (37.5%). A great proportion of the respondents knew that eating and drinking are related to fasting. 31.6% were aware that patients can take daily medications (*i.e.*, antihypertensive, anticoagulants, *etc.*) before the surgery while only 29.2% believed that the patient can drink water two hours before the medical intervention. Nearly two-thirds (62.4%) believed that smoking is prohibited during fasting. Based on the above statements, the overall mean knowledge score was 4.80 (SD 2.36) with poor, moderate, and good knowledge levels accounting for 60.1%, 38.3% and 1.6%, respectively as show in Table 2.

When measuring the differences in the score of knowledge in terms of the socio-demographic characteristics of participants (Table 3), it was found that a higher knowledge score was more associated with being older in age ($Z = 3.048$; $p = 0.002$), gender female ($Z = 6.115$; $p < 0.001$), living inside Northern Region ($Z = 3.569$; $p < 0.001$) and those who underwent surgery that required anesthesia ($Z = 9.903$; $p < 0.001$). No differences were observed regarding the knowledge score in terms of education ($p = 0.057$).

5. Discussion

The majority of the community showed good knowledge of preoperative fasting (POF). They knew that fasting before

TABLE 1. Socio-demographic characteristics of participants (n = 4257).

Study data	n (%)
Age group in yr	
• 18–24 yr	1675 (39.3%)
• 25–34 yr	920 (21.6%)
• 35–44 yr	826 (19.4%)
• 45–54 yr	615 (14.4%)
• ≥55 yr	221 (5.2%)
Gender	
• Male	1395 (32.8%)
• Female	2862 (67.2%)
Educational level	
• Uneducated	23 (0.5%)
• Elementary school	41 (1.0%)
• Intermediate school	126 (3.0%)
• High school	766 (18.0%)
• Diploma	495 (11.6%)
• Bachelor's degree	2537 (59.6%)
• Postgraduate	269 (6.3%)
Residence region	
• Central Region	895 (21.0%)
• Northern Region	1922 (45.1%)
• Southern Region	409 (9.6%)
• Eastern Region	270 (6.3%)
• Western Region	761 (17.9%)
Have you had surgery that required general or partial anesthesia?	
• Yes	2083 (48.9%)
• No	2174 (51.1%)

surgery was necessary to reduce the risk of aspiration and respiratory complications during and after surgery. The majority also knew that the type and duration of fasting varied depending on the type of surgery and anesthesia used. The majority of the community had a positive attitude towards preoperative fasting (POF). Most respondents agreed that fasting was an important part of surgery and that it should be followed as instructed by their medical team. Some people expressed concerns about the potential side effects of fasting, such as hunger, nausea, and dehydration, but most still agreed that it was necessary. Overall, the community had a good understanding of and positive attitude towards POF.

This study evaluates the knowledge and attitude of the community regarding preoperative fasting (POF). The results of this study revealed that there was unsatisfactory knowledge of the importance of fasting before the surgical operation. Based on our criteria, 60.1% were categorized into a poor level of knowledge, 38.3% were moderate levels and only 1.6% were categorized into a good knowledge level (mean score: 4.80; SD 2.36, out of 12 points. To our knowledge, this is the first study in Saudi Arabia that determined the level of POF knowledge among the general public which could serve as a basis subjected for further investigations. Consistent with our reports, a knowledge deficit about the reason for preoperative fasting had also been reported in Kenya [2]. Based on the reports, nearly all (93.8%) demonstrated a lack of understanding regarding certain reasons for POF and less than half felt that the instructions were unclear and less important. This had also been observed in New Zealander patients presenting to the peri-operative unit for day surgery [21]. Accordingly, they found that only 22% of the patients were able to understand the importance of fasting before the surgery adding that patients who did not understand the reason for fasting were almost 5 times more likely to underestimate the importance of POF. Providing patients with information about POF can significantly improve patient compliance which is an important step leading to a better preoperative outcome.

Data from this study indicate that increased knowledge was more likely demonstrated by the older respondents, gender females, living in the Northern Region, and those who underwent surgery that required general or partial anesthesia. However, the level of knowledge between educated and less educated respondents was not significantly different. This is also consistent with the report of Lim *et al.* [9]. Based on their

TABLE 2. Assessment of the knowledge and attitude toward preoperative fasting (n = 4257).

Knowledge statement	n (%)
1. Should the patient fast before performing any surgery that requires general or partial anesthesia?	
• Yes*	3369 (79.1%)
• No	201 (4.7%)
• I don't know	687 (16.1%)
2. Does local anesthesia require fasting before performing a medical intervention?	
• Yes*	1203 (28.3%)
• No	1704 (40.0%)
• I don't know	1350 (31.7%)
3. How many hours of fasting must be completed for an adult before the surgery?	
• 6 h	562 (13.2%)
• 8 h*	1506 (35.4%)
• 12 h	1362 (32.0%)
I don't know	827 (19.4%)
4. How many hours of fasting must be completed for a breastfed child before the surgery?	
• 2 h	650 (15.3%)
• 4 h*	619 (14.5%)
• 6 h	444 (10.4%)
• 8 h	235 (5.5%)
I don't know	2309 (54.2%)
5. How many hours of fasting must be completed for a formula-fed baby before the surgery?	
• 2	456 (10.7%)
• 4	592 (13.9%)
• 6*	481 (11.3%)
• 8	266 (6.2%)
• I don't know	2462 (57.8%)
6. If the time for the surgery is delayed by 10 hours, does the patient have to remain fasting until the surgery is performed, or can he/she eat and drink?	
• Yes, he/she can*	1346 (31.6%)
• No, he/she can't	1384 (32.5%)
• I don't know	1527 (35.9%)
7. Is there a danger to the patient if he/she did not fast before the surgery?	
• Yes*	2396 (56.3%)
• No	375 (8.8%)
• I don't know	1486 (34.9%)
8. What are the complications that may occur to the patient if he/she was not fasting before the surgery?	
• Defecation during the surgery	281 (6.6%)
• Reflux of stomach components and entry into the lungs*	1597 (37.5%)
• The power of anesthesia decreases	383 (9.0%)
• Bleeding during the surgery	129 (3.0%)
• Blood clots during the surgery	83 (1.9%)
• I don't know	1784 (41.9%)

TABLE 2. Continued.

Knowledge statement	n (%)
9. Fasting before the surgery is from?	
• Eating and drinking*	2689 (63.2%)
• Only eating	982 (23.1%)
• Only drinking	56 (1.3%)
• I don't know	530 (12.5%)
10. Can the patient take daily medications such as antihypertensive, anticoagulants, and others that are taken orally?	
• Yes*	1344 (31.6%)
• No	1164 (27.3%)
• I don't know	1749 (41.1%)
11. Can the patient drink water two hours before the surgery?	
• Yes*	1244 (29.2%)
• No	1684 (39.6%)
• I don't know	1329 (31.2%)
12. Does fasting before the surgery include smoking?	
• Yes*	2656 (62.4%)
• No	380 (8.9%)
• I don't know	1221 (28.7%)
Total knowledge score (mean ± standard deviation)	4.80 ± 2.36
Level of knowledge	
• Poor	2557 (60.1%)
• Moderate	1632 (38.3%)
• Good	68 (1.6%)

** Indicates correct answer.*

TABLE 3. Differences in the score of knowledge in relation to the socio-demographic characteristics of participants (n = 4257).

Factor	Knowledge Score (12) Mean ± SD	Z-test	*p*-value[§]
Age group in yr			
• <35 yr	4.71 ± 2.40	3.048	0.002**
• ≥35 yr	4.96 ± 2.29		
Gender			
• Male	4.46 ± 2.46	6.115	<0.001**
• Female	4.97 ± 2.29		
Educational level			
• Diploma or below	4.71 ± 2.36	1.905	0.057
• Bachelor or higher	4.85 ± 2.37		
Residence region			
• Inside Northern Region	4.96 ± 2.29	3.569	<0.001**
• Outside Northern Region	4.68 ± 2.41		
Underwent surgery that required general or partial anesthesia			
• Yes	5.19 ± 2.16	9.903	<0.001**
• No	4.43 ± 2.49		

[§] *p-value has been calculated using Mann Whitney Z-test. ** Significant at $p < 0.05$ level.*
SD: standard deviation.

reports, educational status along with age and gender were observed as non-relevant factors in knowing the reason for POF's importance while in a study of Kramer [4], when comparing the knowledge between patients who received comprehensive "nothing by mouth" (NPO) instructions (experimental group) versus patients who received the usual NPO instructions (control group), they found no significant differences in knowledge between the two groups. Furthermore, they emphasized that the relevance of NPO instructions has the most significant rationale to increase patients' perception of NPO's importance. Further investigations are required to determine the true effect of the socio-demographic factors in terms of the knowledge of POF.

Even though, the overall knowledge of our respondents toward POF was lacking, however, most of them (79.1%) were aware that surgical patients should undergo fast before the time of surgery. Despite this awareness, their knowledge of certain times for fasting duration seems suboptimal. Only 28.3% knew that 8-hour intervals between fasting and surgery are needed for adult patients and only 14.5% and 11.3% were aware of the time intervals among breastfed and formula-fed babies before undergoing a surgical operation. However, in terms of delayed operation, 31.6% believed that the patients can eat and drink to avoid being starved and dehydrated. Notwithstanding these reports, several papers indicated a long-duration fasting duration among patients who are scheduled for day surgery [5–22], which invalidated guidelines set by the American Society of Anaesthesiologists, the Royal College of Nursing, the Association of Anaesthetists of Great Britain and Ireland, and the Royal College of Anaesthetist [23]. These patterns may increase the patient's discomfort which could lead to several detrimental factors such as thirst, hunger, mouth dryness, lengthy waiting for prior surgery, and tiredness [22, 24, 25]. On the other hand, a study conducted in Ethiopia [25], found that the shortening of POF could be beneficial in patients scheduled for elective laparoscopic cholecystectomies (LC) operation as it may improve the comfort levels of patients, alleviates thirst and hunger, promotes the recovery of gastrointestinal function, and relieves postoperative pain, preoperative anxiety, and adverse reactions.

Conversely, 56.3% of our respondents believed that there is a risk if the patient did not adhere to fasting wherein 37.5% were able to identify the most prominent complication of non-compliance which is the reflux of stomach components that could be penetrated the lungs. However, only 31.6% were aware that patient can take their daily medications and although 62.4% were properly informed about smoking prohibitions during fasting, they are less aware that a patient can drink water two hours before the surgery (29.2%). These outcomes may have been observed by the paper published in Singapore [9]. According to reports, 103 out of 130 patients that POF was necessary to avoid perioperative complications while poor understanding had been discovered of the reason for fasting compliance and a minority (10.8%) thought that POF is not related to abstinence from beverages and sweets. In Sri Lanka [24], research indicated that 81% of the patients would refuse a meal at early dawn (2 AM), however, 66% indicated that a cup of tea two hours before the scheduled operation was appreciated. Greater emphasis on patients' education toward the proper POF information is warranted.

The knowledge and attitude of pre-operative fasting among the community is largely positive. Most people understand the importance of fasting before surgery, as it helps to reduce the risk of aspiration during anesthesia. People are generally aware that pre-operative fasting is an important part of the pre-operative process and that it should be done in accordance with their doctor's instructions. The majority of people understand that they should not eat or drink anything for a set period of time prior to their surgery. Additionally, people are generally aware of the potential risks associated with pre-operative fasting, such as dehydration, low blood sugar, and malnutrition. People are also aware that pre-operative fasting is a necessary part of the process and that it is part of their responsibility to adhere to the pre-operative instructions given by the doctor. Overall, people's attitudes towards pre-operative fasting are largely positive and they understand the importance of adhering to the instructions given by their doctor.

6. Conclusions

There was a lack of knowledge among the general public regarding the importance of fasting before the surgery. However, better knowledge was seen more frequently among older females living in the Northern Region who previously received general anesthesia during their previous surgical operation. There is a need to address the gaps in the knowledge specifically among men. Better information dissemination among patients who are scheduled for operation is vital to achieving better understanding and compliance in preoperative fasting wherein healthcare providers will have a significant role to accomplish this goal. This study provides insights into the understanding of the community toward fasting prior to surgical intervention. Due to the limited studies done in Saudi Arabia, further research needs to be carried out to establish the level of knowledge among the general population.

Research should be conducted to better understand the effects of POF on patient outcomes. This could include studying the effects of POF on patient safety, length of hospital stay, complications, and overall satisfaction. The current trend need to develop evidence-based POF guidelines based on the current evidence and research findings. These guidelines should be tailored to the specific surgeries and patient populations. It is suggested to evaluate current POF practices to identify areas where improvements can be made. This could include assessing the effectiveness of preoperative education and training, as well as the accuracy of POF assessment tools. Moreover, there is need to explore alternatives to POF, such as preoperative carbohydrate loading, to reduce the length of fasting time and improve patient outcomes. Additionally, there is need to implement quality improvement initiatives to improve POF practices and outcomes. This could include developing educational materials for patients, physicians, and nurses, as well as developing protocols and metrics for assessing POF practices.

7. Recommendations

• Knowledge and awareness of community regarding pre-operative fasting should be raised.

• Special programs and seminars should be done to the community to raise their awareness regarding the reasons behind pre-operative fasting.

• Health workers should educate their patients well and educate them about the complications that can take place if the pre-operative fasting is done correctly.

• Social media should have bigger roles in raising the awareness and knowledge regarding pre-operative fasting.

• More studies should be conducted on this topic to help assess the situation better and raise the awareness about pre-operative fasting.

AVAILABILITY OF DATA AND MATERIALS

The data presented in this study are available on reasonable request from the corresponding author.

AUTHOR CONTRIBUTIONS

KSA and AKA—Conceptualization, supervision. RME—methodology, visualization. AKA—software, resources. WFA—validation, formal analysis, writing original draft preparation. KSA and WFA—investigation. RME and RFA—data curation. RFA—writing-review and editing. KSA, RME and RFA—project administration. All authors have read and agreed to the published version of the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

We are delighted to report that the College of Medicine's Committee of Scientific Research and Conferences at the University of Ha'il (H-2022-360) has thoroughly evaluated the research protocol and granted ethical approval for the study titled "Community's Knowledge and Attitude of Pre-Operative Fasting in the Kingdom of Saudi Arabia, 2022". The participants have been provided with a clear understanding of the research objectives and are voluntarily consenting to participate in the study.

ACKNOWLEDGMENT

The author acknowledges the Deanship of Scientific Research, Ha'il University for providing support for the publication of this research project.

FUNDING

This research received no external funding.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

REFERENCES

[1] Salman OH, Asida SM, Ali HS. Current knowledge, practice and attitude of preoperative fasting: a limited survey among upper Egypt anesthetists. Egyptian Journal of Anaesthesia. 2013; 29: 125–130.

[2] Falconer R, Skouras C, Carter T, Greenway L, Paisley AM. Preoperative fasting: current practice and areas for improvement. Updates in Surgery. 2014; 66: 31–39.

[3] Tosun B, Yava A, Açıkel C. Evaluating the effects of preoperative fasting and fluid limitation. International Journal of Nursing Practice. 2015; 21: 156–165.

[4] Lambert E, Carey S. Practice guideline recommendation on perioperative fasting: a systematic review. Journal of Parenteral and Enteral Nutrition. 2016; 40: 1158–1165.

[5] Gul A, Isik IA, Ozkaya B. Preoperative fasting and patients' discomfort. Indian Journal of Surgery. 2017; 80: 549–553.

[6] Njoroge G, Kivuti-Bitok L, Kimani S. Preoperative fasting among adult patients for elective surgery in a Kenyan referral hospital. International Scholarly Research Notices. 2017; 2017: 2159606.

[7] Ludwig RB, Paluda J, Fernandes D, Scherer F. Lesser time of preoperative fasting and early postoperative feeding are safe. Brazilian Archives of Digestive Surger. 2013; 26: 54–58.

[8] Fawcett WJ, Thomas M. Pre-operative fasting in adults and children: clinical practice and guidelines. Anaesthesia. 2019; 74: 83–88.

[9] Lim H, Lee H, Ti L. An audit of preoperative fasting compliance at a major tertiary referral hospital in Singapore. Singapore Medical Journal. 2014; 55: 18–23.

[10] Kramer FM. Patient perceptions of the importance of maintaining preoperative NPO status. AANA Journal. 2000; 68: 321–328.

[11] Yimer AH, Haddis L, Abrar M, Seid AM. Adherence to pre-operative fasting guidelines and associated factors among pediatric surgical patients in selected public referral hospitals, Addis Ababa, Ethiopia: cross sectional study. Annals of Medicine and Surgery. 2022; 21:103813.

[12] Hapugoda M, Perera L, Nishadi AK. Pre-operative fasting in elective adult surgical patients at a tertiary care hospital in Sri Lanka. Sri Lankan Journal of Anaesthesiology. 2022; 30: 70–75.

[13] Rawlani SS, Dave NM, Karnik PP. The preoperative fasting conundrum: an audit of practice in a tertiary care children's hospital. Turkish Journal of Anaesthesiology and Reanimation. 2022; 50: 207–211.

[14] Zhu Q, Li Y, Deng Y, Chen J, Zhao S, Bao K, *et al*. Preoperative fasting guidelines: where are we now? Findings from current practices in a tertiary hospital. Journal of PeriAnesthesia Nursing. 2021; 36: 388–392.

[15] Jeong O, Kim HG. Implementation of enhanced recovery after surgery (ERAS) program in perioperative management of gastric cancer surgery: a nationwide survey in Korea. Journal of Gastric Cancer. 2019; 19: 72–82.

[16] Zhang Z, Wang RK, Duan B, Cheng ZG, Wang E, Guo QL, *et al*. Effects of a preoperative carbohydrate-rich drink before ambulatory surgery: a randomized controlled, double-blinded study. Medical Science Monitor: International Medical Journal of Experimental and Clinical Research. 2020; 26: e922837.

[17] Okabe T, Terashima H, Sakamoto A. Determinants of liquid gastric emptying: comparisons between milk and isocalorically adjusted clear fluids. British Journal of Anaesthesia. 2015; 114: 77–82.

[18] Khan MU, Aqil M, Hussain A, Zahrani TA, Hillis M. Comparison of the effect of pre-operative single oral dose of tramadol and famotidine on gastric secretions pH and volume in patients scheduled for laparoscopic cholecystectomy. Journal of the College of Physicians and Surgeons—Pakistan. 2015; 25: 320–323.

[19] Abebe WA, Rukewe A, Bekele NA, Stoffel M, Dichabeng MN , Shifa JZ. Preoperative fasting times in elective surgical patients at a referral hospital in Botswana. The Pan African Medical Journal. 2016; 23: 102.

[20] Doyle DJ, Goyal A, Bansal P, Garmon EH. American society of anesthesiologists classification. StatPearls: Treasure Island. 2020.

[21] Walker H, Thorn C, Omundsen M. Patients' understanding of pre-operative fasting. Anaesthesia and Intensive Care. 2006; 34: 358–361.

[22] Fekede MS, Abebe BA, Awol MA. Assessment of adherence to preoperative fasting guidelines and associated patient discomfort in adult

elective surgical patients in public hospitals of Addis Ababa, Ethiopia: a multicenter cross-sectional study. IJS Short Reports. 2022; 7: e60.

[23] Abdullah Al Maqbali M. Preoperative fasting for elective surgery in a regional hospital in Oman. British Journal of Nursing. 2016; 25: 798–802.

[24] Gunawardhana AI. Knowledge, attitudes and practice of preoperative fasting guidelines in the national hospital of Sri Lanka. Sri Lankan Journal of Anaesthesiology. 2012; 20: 92–95.

[25] Aguilar-Nascimento JED. Reducing preoperative fasting time: a trend based on evidence. World Journal of Gastrointestinal Surgery. 2010; 2: 57–60.

How to cite this article: Kareemah Salem Alshurta, Ruba Mustafa Elsaid, Abdulaziz Khalid Alabdulaali, Wjood Fahad Alanazi, Raghad Fahad Alruwaili. Community's knowledge and attitude of pre-operative fasting in kingdom of Saudi Arabia, 2022. Signa Vitae. 2023; 19(6): 127-136. doi: 10.22514/sv.2023.106.