

Pre-operative Fasting in Elective Adult Surgical Patients at a Tertiary Care Hospital in Sri Lanka.

Minura Hapugoda^{1*}, Lakmini Perera¹, Ambalandoowa Kankanamge Darshika Nishadi¹

¹Teaching Hospital Anuradhapura

Introduction: Preoperative fasting which is defined as “abstinence from all foods and liquids for a specified period of time before induction of anaesthesia and/or commencement of surgery”, is a time-tested practice that is undertaken for the benefit of patients presenting for surgery globally. **Aim:** To assess the current practice of preoperative fasting (POF) and to investigate the complications associated with prolong fasting among adult patients scheduled for elective surgery at Teaching Hospital Anuradhapura. **Method:** This clinical audit was performed using an interviewer-administered questionnaire. 430 adult patients awaiting elective surgery were interviewed following informed consent. **Results:** 95.3% thought POF was important but 55.6% lacked knowledge on the reason for POF. 52.8% of patients received instructions on POF by nurses, but only 32.6% of them were educated on the correct standards of POF. 67.4% of respondents who were educated by nurses were not told of the standards of POF. On average respondents fasted for 12.85 hours for solids and 7.38 hours for fluids. 85.7% fasted for more than 2 hours for clear fluids and 94.1% fasted for more than 6 hours for solids. 55.8% of the respondents complained of thirst and 11.6% and 5.1% had features of dehydration and postoperative nausea and vomiting respectively. **Conclusions:** Most patients fasted for both food and fluid longer than the fasting time recommended by the European Society of Anaesthesiology guidelines. It underscores the importance of educating the healthcare staff and patients on the updated guidelines.

Keywords: Pre-operative, fasting, adult, elective-surgical

Introduction

Preoperative fasting (POF) is an established practice that benefits patients presenting for surgery globally. POF is defined as “abstinence from all foods and liquids for a specified time before induction of anaesthesia and/or commencement of surgery”.³ The patient’s type of diet, their condition, and the type of surgery (elective or emergency) determine the duration of POF.^{1,2,3,5} By reducing the incidence of vomiting, aspiration, and their associated complications

POF reduces the duration of hospital stays and related costs^{1,2,3}.

At the Teaching Hospital Anuradhapura as well as most of the other hospitals around the country, keeping nil-per-oral following the night meal from midnight onwards has become a common practice for patients awaiting elective surgery, but no scientific evidence supports this.^{1,2,3} Furthermore, prolonged fasting can have adverse effects on patients leading to irritability, headache, dehydration, and hypoglycaemia, especially in extremes of age.^{1,2,3,5} Recently updated guidelines¹ recommend for a shortened POF which is beneficial to the patient as it “increases postoperative comfort, improves insulin resistance, and reduces the stress responses”.⁴

Depending on the patient’s diet either liquid or solid, a standard duration of POF has been adopted globally.^{1,2,3} European Society of Anaesthesiology recommends that “all healthy elective adult patients should be allowed to drink water or other clear fluids until 2 hours before the

*Correspondence: Minura Hapugoda

E mail: minura1988@gmail.com



<https://orcid.org/0000-0001-6238-7827>

Received: 08/05/2021

Accepted: 24/03/2022

DOI: <http://doi.org/10.4038/slja.v30i1.8839>



induction of anaesthesia and all healthy elective adult patients should be allowed a light meal until 6 hours before the induction of anaesthesia".¹

The aim of this audit was to assess the current practice of preoperative fasting in adult patients awaiting elective surgery in Teaching Hospital Anuradhapura (THA), comparing it with the guidelines given by the European society of anesthesiologists and evaluate the complications associated with prolonged fasting.

Method

The ethical approval to conduct the study was obtained from Ethical Review Committee, Rajarata University, Sri Lanka. The institutional permission was granted from teaching hospital Anuradhapura.

The expected sample size was 385 with 95% confidence and a margin of error of 5% and a population proportion of 50%. All consecutive adult patients awaiting to undergo elective surgery under regional or general anaesthesia at the Teaching hospital Anuradhapura who were eligible for the study based on the inclusion-exclusion criteria were interviewed during the study period. Patients who were excluded from the study were: paediatric patients (patients aged less than 18 years of age), pregnant patients,

patients who underwent emergency surgery, and non-consenting patients.

Data collection was done over 2 months, from 1st of July 2020 to 30th of August 2020 using an interviewer administered structured questionnaire. It was filled before the induction of anaesthesia, at the patient receiving area of the operating theatre by the anaesthetist involved in the care to the patient, following informed written consent. The questionnaire, which was developed by the researchers, was validated following a pilot study. The questionnaire collected data on demographic characteristics (age, sex and highest educational level) patient’s reason for POF and their perceived importance of POF, complaints about POF, source of POF instructions, whether they clearly understood the instruction, opinion on POF instructions, duration of preoperative fasting, premedication practices, and outcome of prolonged fasting with associated complications.

Results

During the period of 1st of July 2020 to 30th of August 2020, a total of 430 eligible adult patients awaiting elective surgery at Teaching hospital Anuradhapura participated in the study. Demographic data are presented in Table 1.

Table 1. Demographic data of the patients awaiting elective surgery

		Number of patients (n)	Percentage (%)
Gender	Male	244	56.7
	Female	186	43.3
Age (years)	18-29	43	10
	30-49	172	40
	50-65	159	37
	>65	56	13
Highest educational status	Primary	145	33.7
	O/L	199	46.3
	A/L	71	16.5
	Higher education	15	3.5

*Primary- Up to grade 5 education, O/L-Ordinary level examination(Upto grade 11), A/L-Advanced level examination (up to grade 13)

Commonest mode of anaesthesia was general anaesthesia. ($n=219, 50.9\%$) with inguinal hernia repair being the most frequently performed surgery ($n=55, 12.8\%$).

As noted by Table 2, 95.3% thought preoperative fasting was important and only 40.3% of the patients knew a correct or partially correct reason for the need for pre-operative fasting, which was 'to reduce nausea and vomiting and to prevent aspiration'. Of the 67 patients who stated 'to prevent aspiration' as the reason for fasting had received information from the anaesthetist (94%). More than half (55.6%) did not know the reason for fasting before surgery. The surgical ward-nursing officers educated 227 (52.8%) patients of that 67.4% were not told of the current standards of POF, and of those educated on the current standards of POF, 70% had understood it and were clear about the instructions. The anaesthetist

was the source of information on POF for 187 (43.5%) patients of whom 84.5% were informed of the up-to-date standards of POF. [Table 3] A statistically significant negative correlation between the duration of fasting and patients being educated on the up-to-date standards of POF ($r_s = -0.36, p < .01$) and a negative correlation between their clear understanding of the standards of POF and the duration of POF ($r_s = -0.28, p = < .01$) was found in the survey.

It was noted that all patients with comorbidities on routine oral medications were allowed to take their medication with a sip of water preoperatively when it had been advised to continue the medications by the anaesthetist during preoperative assessment. (53 patients were advised to withhold their morning dose of regular medications).

Table 2. Patient's knowledge on the importance of POF & perceived reason for POF.

	Number	Percentage (%)
Is preoperative fasting (POF) important?		
Yes	410	95.3
No	20	4.7
Patient's perceived reason for pre-operative fasting (POF)		
To reduce nausea and vomiting	106	24.7
To prevent aspiration	67	15.6
To empty bowel	17	4
To reduce bleeding	1	0.2
Don't know	239	55.6

Table 3. Patient education on POF and their understanding

Source of information	Number of patients educated	Told of standards of preoperative fasting		Patient clearly understood the instructions of POF	
		Yes	No	Yes	No
Nursing officer	227 (52.8)	74 (32.6)	153 (67.4)	53 (71.6%)	21 (28.4%)
Anaesthesia MO	187 (43.5)	158 (84.5)	29 (15.5)	138 (87.3%)	20 (12.7%)
Surgical SHO	16 (3.7)	10 (62.5)	6 (37.5)	9 (90.0%)	1 (10.0%)

*Number of patients (percentage). SHO – Senior House Officer, MO- Medical Officer

339 patients awaiting elective surgery had solid or semisolid as their last meal before surgery. The minimum, maximum, and mean fasting hours for solid or semisolid were 6, 27 and 12.85 hours respectively. Only 20 (5.9%) patients were fasted for 6 hours before surgery for solid or semisolids while 64% were fasted for 12 hours or more for food before surgery [Table 4].

Table 4: Fasting time for solid and semisolid meal

Fasting time (Hrs.)	Number of patients	Percentage
6	20	5.9
7-8	32	9.4
9-10	54	15.9
11-12	52	15.3
>12	181	53.4

The minimum, maximum, and mean fasting hours for clear fluids were 2, 19, and 7.38 hours respectively. More than 85.7 % of the patients fasted from clear fluid longer than 2 hours [Table 5].

Table 5: Fasting time for clear fluids

Fasting time (Hrs.)	Number of patients	Percentage
2	13	14.3
3-4	20	22.0
5-6	16	17.6
7-8	8	8.8
>8	34	37.4

An H₂ receptor blocker (95.1%) and a pro-kinetic (95.3%) were prescribed to patients awaiting elective surgery.

58.8% of the surveyed patients complained of the fasting status and many patients (55.8%) experienced thirst due to prolonged fasting. 3 patients developed hypoglycaemic episodes, 22 patients had postoperative nausea and vomiting, 50 patients (11.6%) exhibited clinical signs of dehydration and 171 patients (44.4%) complained of hunger.

Statistically significant positive correlations were found between the duration of preoperative

fasting and complaints regarding fasting ($r_s = 0.73, p = <.01$), thirst ($r_s = 0.74, p = <.01$), hunger ($r_s = 0.75, p = <.01$), dehydration ($r_s = 0.30, p = <.01$), headache ($r_s = 0.12, p = <.05$) and post-operative nausea and vomiting (PONV), ($r_s = 0.20, p = <.01$).

Discussion

POF is aimed at reducing the risk of aspiration, regurgitation, vomiting, and the complications of the aforesaid, during anaesthesia or surgery.^{1,2,3,4,5} European Society of Anaesthesiology recommends that all healthy elective adult patients should be allowed to drink water or other clear fluids until 2 h before the induction of anaesthesia and all healthy elective adult patients should be allowed a light meal until 6 h before the induction of anaesthesia¹. Adult patients interviewed in our study at Teaching hospital Anuradhapura awaiting elective surgeries were found to be over fasted for clear fluids, with only 14.7% fasted for 2 hours and an average fasting time of 7.38 hours while only 5.9% of patients fasted 6 hours before surgery for solid/semisolids with an average fasting time of 12.85 hours. A study conducted in the National hospital of Sri Lanka also found that patients fasted for clear fluids for an average of 12.86 hours and 13.86 hours for a solid meal.⁸

Patients lacked knowledge on the reasons for POF with only 40.3% knowing the correct reasons while 43.7% were not educated about the standards for POF, which is a major obstacle to surgical and anaesthetic care. The knowledge deficit and poor attitude of patients have been noted as reasons for nonadherence to protocols and failure in implementing fasting guidelines compromising surgical and anaesthetic care.¹⁰ Patients were not aware of the adverse consequences of prolonged fasting such as irritability, headache, dehydration, and hypoglycaemia, especially in extremes of age, delayed recovery following anaesthesia, PONV, thirst, and hunger^{1,2,3,5}. We found that the duration of preoperative fasting positively correlated with thirst, hunger, dehydration, headache, and PONV. This finding was in line with findings of other studies^{6,7} where

preoperative fasting was longer than the recommended time. Patients being educated on the standards of POF had lower fasting hours as evidenced by the negative correlation found between the two variables.

More than half (52.8%) of the patients received instruction regarding POF from the surgical in-ward nursing officers, who frequently interact with patients and encounters opportunities for patient education.¹¹ Most in-ward nursing officers had not informed patients of the standards of POF but followed the now outdated overnight fasting, where a patient is kept fasting overnight before the surgery date, but recent studies found no scientific support for this practice.^{1,2,3} Such practices are probably due to the shortage of nursing staff and their considerable caseload. This should be replaced with individualized patient instructions and the caregivers must be updated on the revised guidelines.

The POF instructions were not clearly understood by 17.3% of the informed patients and a correlation between patient's clear understanding of the POF standards and the shorter duration of pre-operative fasting was found in the audit. The findings were consistent with reports that showed patients who did not clearly understand POF instructions fasted for a longer duration before surgery.^{6,12} Thus, investing more in preoperatively educating patients leads to increased compliance with POF recommendations.

It was noted that an H₂ receptor blocker was prescribed in 95.1% and a pro-kinetic prescribed in 95.3% of patients. H₂ receptor antagonist agents (e.g., cimetidine, famotidine, or ranitidine) was found to reduce gastric acidity and volume during the perioperative period and their routine use in patients who have no apparent risk for pulmonary aspiration was not recommended^{1,9}. Pro-kinetics (e.g., metoclopramide) are found to reduce gastric volumes during the perioperative fasting period, but its routine use in patients with no apparent risk of pulmonary aspiration was not also recommended.^{1,9} Furthermore, healthcare staff should be educated about the aims of premedication and when to administer them for effective action.

Conclusion

Most patients fasted for both food and fluid longer than the fasting time recommended by the European Society of Anaesthesiology guidelines. Patient education concerning POF should be strengthened with verbal instructions as well as patient-friendly information leaflets. Healthcare workers should all be updated on the recent POF guidelines and those should be implemented. Monitoring and clinical audits of fasting practices need to be implemented and enforced to improve and maintain patient care.

References

1. Ian Smith, Peter Kranke, Isabelle Murat, et al. Peri operative fasting in adults and children: guidelines from the European Society of Anaesthesiology. *European Journal of Anaesthesiology*. 2011;**28**(8):556–69. <https://doi.org/10.1097/eja.0b013e3283495ba1>
2. Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures An Updated Report by the American Society of Anesthesiologists Task Force on Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: *Anesthesiology* 2017; **126**: 376-93. <https://doi.org/10.1097/ALN.0000000000001452>
3. 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;**12**:2159606. <https://doi.org/10.1155/2017/2159606>
4. Xu D, Zhu X, Xu Y, Zhang L. Shortened preoperative fasting for prevention of complications associated with laparoscopic cholecystectomy: a meta-analysis. *Journal of International Medical Research*. 2017;**45**(1):22-37. <https://doi.org/10.1177/0300060516676411>
5. Smith AF, Vallance H, Slater RM: Shorter preoperative fluid fasts reduce postoperative emesis. *British Medical Journal*. 1997;**314**:1486.

<https://doi.org/10.1136/bmj.314.7092.1486a>

6. Crenshaw TJ, Winslow HE. Preoperative fasting duration and medication instruction: are we improving? *AORN Journal*. 2008; **88**(6): 963–76. <https://doi.org/10.1016/j.aorn.2008.07.017>

7. [7] Shime N, Ono A, Chihara E, Tanaka Y. Current practice of preoperative fasting: a nationwide survey in Japanese anesthesia teaching hospitals. *Journal of Anesthesiology*. 2005;**19**:187–92. <https://doi.org/10.1007/s00540-005-0319-z>

8. Gunawardhana, A.I. Knowledge, attitudes and practice of preoperative fasting guidelines in the National Hospital of Sri Lanka. *Sri Lankan Journal of Anaesthesiology*. 2012; **20**(2): 92–5. <http://doi.org/10.4038/slja.v20i2.4259>

9. Practice Guidelines for Preoperative Fasting and the Use of Pharmacologic Agents to Reduce the Risk of Pulmonary Aspiration: Application to Healthy Patients Undergoing Elective Procedures: A Report by the American Society of Anesthesiologists Task Force on Preoperative Fasting. *Anesthesiology*. 1999; **90**:896–905. <https://doi.org/10.1097/00000542-199903000-00034>

10. J. T. Crenshaw and E. H. Winslow, “CE credit: original research: preoperative fasting: old habits die hard” *The American Journal of Nursing*. 2002;**102** (5): 36–45. <https://doi.org/10.1097/00000446-200205000-00033>

11. A. Lorch, “Implementation of fasting guidelines through nursing leadership,” *Nursing Times* 2007;**103**(18): 30–31. <https://www.nursingtimes.net/archive/implementation-of-fasting-guidelines-through-nursing-leadership-01-05-2007/>

12. N. O’Callaghan, “Pre-operative fasting.” *Nursing Standard (through 2013)*. 2002;**16**(36): 33. <https://search.proquest.com/openview/f1b02cb1eb09ead7c85f9a11bbb0d729/1?pq-origsite=gscholar&cbl=30130>