

Adherence of Ethiopian Anesthetists towards the Recommended Practices of Perioperative Anesthesia Care for Geriatric Patients: National Survey

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Article History:

Submitted: 04.06.2024

Accepted: 20.06.2024

Published: 27.06.2024

ABSTRACT

Background: The number of elderly requiring surgery is increasing due to the aging of the population worldwide, including Ethiopia. These patients are at increased risk of adverse perioperative events. Guidelines have been developed to reduce the incidence of adverse perioperative events in geriatric patients. To determine the level of adherence of Ethiopian anesthetist towards the recommended practices for perioperative anesthesia care in elderly patients in 2024.

Methods: An online national survey was conducted from March 10, 2024 to May 24, 2024.

Results: 440 anesthetists completed the survey, resulting in a response rate of 23%. Most study participants (95.5%) had provided perioperative care to geriatric patients in the last 12 months. Approximately 40.4% of the respondents 95% CI (35.9%, 45.1%) use multimodal analgesia in at least 90% of geriatric patients. Only 11.6% of participants 95% CI (8.9%, 14.9%) provided preoperative information about post-

operative cognitive changes in at least 90% of the time. Majority of respondents ($\geq 55\%$) used different preoperative geriatric screening tools or preoperative geriatric consultation in less than 10% of the time. The majority of respondents (38.2%) recommended the development of practice guidelines.

Conclusion: Most participants provided perioperative care to geriatric patients, but their adherence to most items of the perioperative recommendations for geriatric patients is less than 50% across. Most respondents recommend the development of national guidelines for the perioperative care of geriatric patients. We recommend that the Ethiopian association of anesthetist had to provide targeted training and establish clear protocols and guidelines towards perioperative care of geriatric patients.

Keywords: Geriatrics, Frailty, Perioperative care, Cognitive deficit

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INTRODUCTION

Globally, the number of elderly people is increasing in both developed and developing countries. The share of the elderly in developed countries is 20% and in developing countries 10% of the total population. The elderly is being operated on because of an aging population, improvements in anesthesia and surgery, and changing patient expectations of health care (Partridge J, *et al.*, 2018). In addition to the specific disease requiring surgery, older patients also have geriatric syndromes, multiple chronic diseases, and age-related physiological changes (Partridge J, *et al.*, 2018). Perioperative adverse outcomes are associated with age-related comorbidity or multi-morbidity observed in older patients (Lin HS, *et al.*, 2016; Hewitt J, *et al.*, 2019).

Over the past decade, national quality improvement initiatives aimed at standardizing perioperative care of the elderly have gained prominence because they are recognized as an underserved population (Hare S, *et al.*, 2021). To enhance patient care and lower unfavorable perioperative events, the Association of Anesthetists of Great Britain and Ireland (Griffiths R, *et al.*, 2014) has developed a guideline for the perioperative management of elderly patients. To make perioperative treatment more effective, a treatment manual for patients with dementia was developed (White S, *et al.*, 2019).

Studies conducted in the United States of America (USA) by Deiner S, *et al.*, 2020 and in Scotland by Clark C, *et al.*, 2022 have shown that the commitment of anesthesiologists to geriatric perioperative care varies. The reason we conduct this study includes; limited previous study in Ethiopia with this research problem. Furthermore, the study can enhance the perioperative

care of geriatric patients by identifying the gaps of perioperative care and facilitating perioperative care planning. The result of this study can also contribute to guide national anesthesia curriculum and can serve as an impute to policy makers. Therefore, the main objective of this study was to assess the level of adherence of Ethiopian anesthetist to recommended practices for perioperative care of geriatric patients. The level of adherence of Ethiopian anesthetist to recommended practices for perioperative management of geriatric patients was the major research question.

MATERIALS AND METHODS

Study design, area, period and population

A web based national survey was conducted in Ethiopia from March to May 2024. Ethiopia is the second most populous country in Africa with a total population of 112.1 million (Wamai RG, 2009). The study was conducted in public hospitals, medical schools and private hospitals located in different regions of Ethiopia. According to the international trade administration agency, there are 3643 public hospitals and 43 private hospitals in Ethiopia (International Trade Administration, 2024). Based on the information obtained from Ethiopian Association of anesthetist, approximately 2000 anesthetists are employed in public hospitals, medical schools, and private hospitals. Graduate anesthetists in Ethiopia were the source population of the study, while the study population was anesthetists employed in public hospitals, private hospitals and medical schools. Certified anesthetists who have at least 1 year minimum experience were included in this study. Anesthetists who did not provide anesthesia care for geriatric patients, anesthetists who were not available during data collection period, were excluded from the study.

Data collection technique

This survey was web based design where we sent the questionnaire through email and Ethiopian anesthetist association telegram page. It included welcome page that can provide the participants with information to make the questionnaire transparent and clear. In addition to this, we included the research team, objective and purpose of the study, the items covered in the survey, considerations about informed consent, the approval received from the ethical committee, the way of reporting the results of the study. Since we intended to make the survey user friendly, we give clear instructions at the beginning of each section of the questionnaire. We also provided information about the possible response options; ensuring participants give accurate and relevant answers. In this study, 460 participants responded for at least three items. After removing duplicate entries (n=7), incomplete responses (n=13). The reasons for dropout from the study was impossible to examine owing to the anonymous nature of the survey. We are unable to determine the survey response rate as the exact reach of the survey could not be determined. However, considering an estimated target population of 2000 Ethiopian anesthetists employed in public and private hospitals as well as medical schools, we estimated the response rate approximately 23%. We adopted a tool, which was previously used by USA anesthesiologists in 2020; the questionnaire addressed focus of anesthesia care on older adults, adherence to recommended practices for older surgical patients, resource needs for improving care for older adults, and practice characteristics (Deiner S, *et al.*, 2020). Screening of preoperative frailty, comprehensive preoperative geriatric evaluation, use of multimodal analgesia, preoperative cognitive screening, postoperative delirium screening, and provision of preoperative information about the risks of delirium or cognitive disorder after surgery were included in the questionnaire. Adherence towards the recommended practices for perioperative care of geriatrics patients were evaluated by seven-point Likert scale. It ranges from (7=every time, around 90% of the time), (6=frequently approximately 70% of the time), (5=sometimes about 50% of the time), (4=occasionally around 30% of the time), (3=rarely, <10% of the time), (2=never), (1=unknown) (Ahluwalia P and Gupta B, 2021).

Data quality control

To assess the effectiveness of our survey and identify any potential issues, we conducted a pretest at two hospitals in Debre Berhan, North Shewa and Ethiopia. During the pretest, participants were asked to provide feedback on the questionnaire regarding the appropriateness, logical flow, and consistency of the questions. Their comments were invaluable in helping us improve and refine the final version of the questionnaire. To ensure the security and confidentiality of the filled questionnaires, we implemented measures such as using a unique password to protect the data and restricting access to only the data analyst. During the data analysis phase, we carefully examined the data for consistency and performed necessary cleaning and transformations of variables to ensure accurate results.

Data processing and analysis

We analyzed the data collected from the online survey using descriptive statistics. To conduct the data analysis, we imported the survey data into Stata version 17, a statistical software package. For categorical data, we summarized the information using frequencies and percentages. Num-

erical data were presented using either means with standard deviations for normally distributed data or medians with interquartile ranges for non-normally distributed data. Before analysis, we excluded incomplete surveys that had more than 20% missing data, as this could potentially introduce bias due to participant dropout. We also identified and removed duplicate responses. Additionally, we ensured that the data met the inclusion criteria set for the study.

Nasogastric (NG) tubes were retained in all patients postoperatively. The criteria for removing NG tubes were the same for both groups of patients (gastric content<100 ml/day and absence of significant abdominal distension) and oral feeding was resumed after the passing of flatus or defecation.

RESULTS

General characteristics of participants

In this study, 480 anesthetists responded to at least three items. After eliminating duplicate entries (n=7), incomplete responses (n=13) the adjusted sample size was 440 participants. The gender distribution among the participants was 15.8% females and 84.2% males. The study participants had a median age of 30 years, with Interquartile Range (IQR=28, 33) years. Moreover, the participants had a mean age of 10.2 years of professional experience, with a standard deviation of ± 4.1 . The majority of the participants (67%) are graduates of Master of Science (MSc) degrees. Most of the study participants (65.1%) were employed in public hospitals. Additionally, a significant proportion of the participants (95.5%) confirmed their involvement in providing perioperative care for geriatrics within the last 12 months (Table 1).

The perioperative geriatric case distribution for anesthetists working in Ethiopia is represented in Figure 1. Over the last 12 months, the majority of the study participants 191 (43.4%) reported that, about a few of their patients (10%) were geriatrics.

Adherence to the recommended practice for perioperative care of geriatric patients

The level of adherence to the recommended practice for perioperative care of geriatrics patients was variable. In this particular study, only 8 (1.8%) of the participants reported that perioperative geriatric evaluation was completed usually (90% or higher) by a geriatrician or internist within their primary clinical setting. Only 5% of the study participants stated that they used a recognized Clinical Frailty Score (CFS) of about 90% or higher during the pre-anesthetic assessment of older adults. Moreover, 31 (7%) of the study participants demonstrated a 90% or higher level of adherence to comprehensive preoperative geriatric evaluation. The evaluation of dementia and delirium indicators during the preoperative assessment of geriatric patients was performed by 90% or higher by only 36 (8.2%) and 29 (6.6%) of the study participants respectively. On the other hand, the majority of the participants, specifically, 178 (40.4%) individuals demonstrated an adherence rate of 90% or higher regarding the utilization of multimodal analgesia within the first 24 hours after surgery. Furthermore, 51 (11.5%) of the study participants demonstrated a 90% or higher level of adherence to providing information to patients or their families regarding the potential risk of postoperative delirium (Table 2).

Table 1: Characteristics of study participants (n=440)

Variables	Summary statistics
Age (in years)	Median: 30.7 years; IQR: 28 with 33 years
Years of experience	Mean: 10.2 years and SD: ± 4.1
Category	n (%)

Gender	Female	73 (15.8)
	Male	388 (84.2)
Level of education	B.Sc	123 (26.7)
	M.Sc	309 (67)
	Assistant professor and above	29 (6.3)
Primary clinical setting	Government hospital	300 (65.1)
	Medical school	154 (33.4)
	Private hospital	7 (1.5)
Over the last 12 months, did you provide anesthesia for perioperative	Yes	440 (95.5)
	No	21 (4.5)

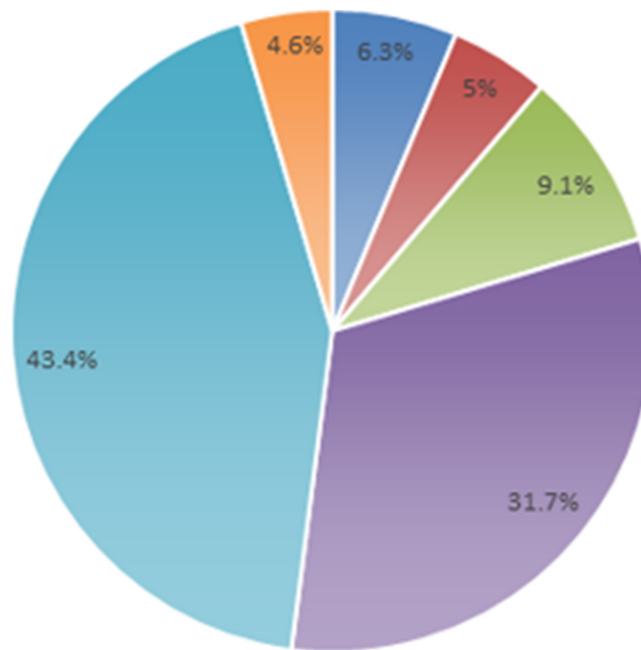


Figure 1: The proportion of older adult cases for anesthetists working in Ethiopia (n=440)

Note: (■): Total cases; (■): Most of the cases; (■): Half of the cases; (■): Some of the cases; (■): Few cases and (■): None of the cases

Table 2: Level of adherence to recommended practice for perioperative care of geriatric

Recommended practices	7, n (%)	6, n (%)	5, n (%)	4, n (%)	3, n (%)	2, n (%)	1, n (%)
In your hospital, how often is a perioperative geriatric evaluation performed by a geriatrician or internist	8 (1.8)	15 (3.4)	51 (11.6)	23 (5.2)	36 (8.2)	307 (69.8)	0
Evaluation of preoperative frailty using a formal measurement scale	22 (5)	29 (6.5)	52 (11.8)	59 (13.4)	105 (22.8)	152 (34.5)	21 (4.7)
Preoperative comprehensive geriatric evaluation	31 (7)	58 (12.7)	81 (18.4)	143 (32.5)	77 (17.5)	19 (4.3)	21 (4.7)
Multimodal analgesia is used in the 1 st 24 hours after surgery	178 (40.4)	117 (26.6)	78 (17.7)	36 (8.2)	23 (5.2)	8 (1.8)	0
Preoperative screening for dementia or cognitive impairment using a formal measurement scale	36 (8.2)	29 (6.6)	37 (8.4)	73 (16.9)	139 (31.6)	126 (28.6)	0
Postoperative delirium screening using a formal measurement scale	29 (6.6)	15 (3.4)	59 (13.4)	92 (20.9)	120 (27.2)	110 (25)	15 (3.4)
Reoperative provision of information to patient or family regarding the risk of developing delirium or other cognitive disorders after surgery	51 (11.5)	68 (15.4)	38 (8.6)	7 (1.5)	140 (31.8)	120 (27.2)	16 (3.6)

Resource needed to improve perioperative care of geriatric patients

The provided bar graph in Figure 2 represents different categories to improve perioperative care for geriatric patients. The categories include education, website development, benefits development, increased funding, feedback provision, and training. The majority of the study participants (38.2%) reported the development of formal practice guidelines to improve the perioperative care of geriatric patients.

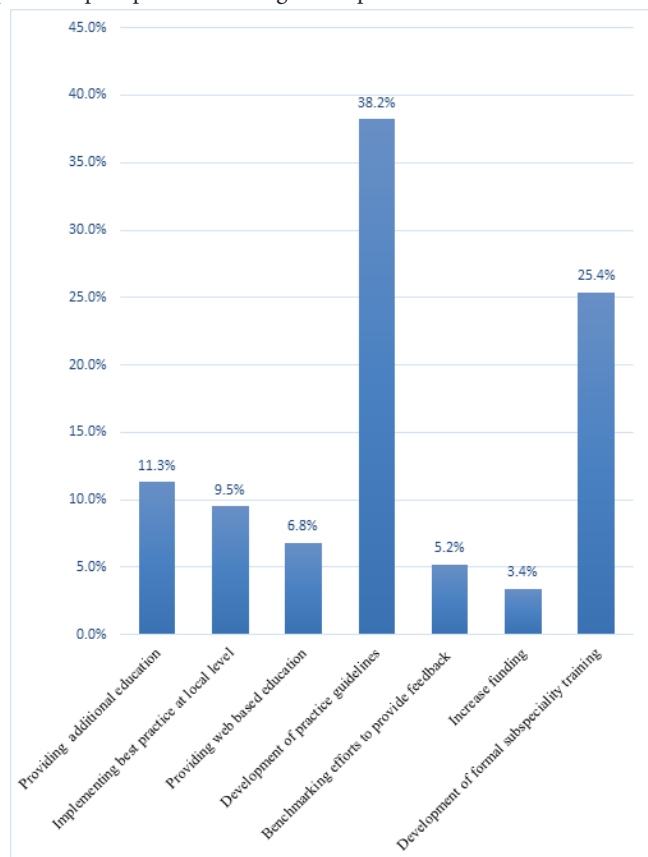


Figure 2: Anesthetist's suggestion to improve perioperative care of geriatric patients in Ethiopia (n=440)

DISCUSSION

This study was conducted to determine anesthetist's adherence towards the recommended practice of perioperative care of geriatric patients in Ethiopia. Majority of the study participant stated that their level of adherence to recommended practice for perioperative care of geriatric patients is less than 50% for all items. Similar to other studies conducted in the USA (Deiner S, *et al.*, 2020) and Scotland (Clark C, *et al.*, 2022), this study showed that participants have variable levels of adherence towards each item of the recommended practice for perioperative care of geriatric patients. From all recommended items, respondents indicated the regular implementation of multimodal analgesia for older surgical patients. On the other hand, their adherence to other recommended practices was found to be less prevalent (Deiner S, *et al.*, 2020). A majority of the participants, 373 (84.8%), demonstrated an adherence rate of 50% or higher regarding the utilization of multimodal analgesia within the 1st 24 hours after surgery at 95% Confidence Interval (CI) (81%-87%). The finding of this study is in line with a similar study conducted in the USA in which 81.3% of the respondents reported at least 50% adherence to providing multimodal analgesia for geriatric patients (Deiner S, *et al.*, 2020). In our study only 5% of the study participant used preoperative fragility scoring in at least 90%

of the geriatric patients. The result of this study demonstrate lower level of adherence compared to a study conducted in India, which reported that 48.7% of the study participants were adherent to preoperative frailty scoring (Ahluwalia P and Gupta B, 2021). Regarding adherence to preoperative frailty, the result of this study is in line with a similar study conducted in USA (Deiner S, *et al.*, 2020). Conversely, a study conducted in Scotland reported that 60% of the participants mentioned utilizing a formal measurement scale to assess frailty during the preoperative evaluation of elderly patients, which is higher than our study (Clark C, *et al.*, 2022).

Approximately 23.1% depicted 95% CI (19.4%, 27.3%) exhibited an adherence rate of 50% or higher in terms of the preoperative screening for dementia or other pre-existing cognitive disorder. On the other hand 35.7% participants achieved an adherence rate of 50% denoted 95% CI (31.3%, 40.3%) or higher in providing preoperative information to patients or their families about the risk of developing delirium or other cognitive disorders after surgery. The finding of this study is lower than a similar study conducted in the USA in which 58.3% of the respondents reported at least 50% adherence to the recommended practice for perioperative care of geriatric patients. It is noteworthy that a majority of the study participants, specifically individuals (87.5%), exhibited an adherence rate of less than 50% when it came to comprehensive preoperative geriatric assessment. Furthermore, study participants suggested different areas to enhance the quality of geriatric anesthesia care. Among them, majority of the study participants (38.2%) suggested the development of formal practice guidelines. Other suggestions include establishment of formal subspecialty training, development of website, additional education, benchmarking efforts for feedback and increasing funding. A similar study conducted in the USA reported that 79.5% of respondents highlighted the need for the development of practice guidelines in relevant areas, 67.5% mentioned web-based educational resources, and 50.3% emphasized the importance of assistance with implementing best practices at the local level through quality improvement efforts or novel practice models like the perioperative surgical home (Deiner S, *et al.*, 2020).

Strength of the study

This is the 1st national survey in Ethiopia. In addition to this, our study focused on vulnerable group of patients who have different age related physiologic, pharmacologic and multiple chronic diseases.

CONCLUSION

Based on the findings of this study we conclude that majority of the study participants provide anesthesia care for geriatric patients; however, the level of adherence to most items of the perioperative care of geriatric patients is under 50%.

LIMITATIONS

This study has the following limitations. Primarily, since was limited internet access in the Northern region of the country, anesthetists working in this region were not participated. Next, the study participants may not honestly report their adherence to the recommended practice for perioperative care of geriatrics; further, there may be a recall bias. Additionally, this study has low response rate, as a result the sample may not be representative. Ultimately, non-responders may have different levels of adherence to the recommended practice for perioperative care of geriatrics with different suggestions to improve the perioperative care of geriatric patients.

STUDY RECOMMENDATION

The result of this study showed that several areas in geriatric care require improvement. Since the study showed low level of adherence to the recommended practices for perioperative care of geriatric patients, it is crucial to tackle this issue to safeguard the safety and well-being of these patients. Therefore, we recommend that higher education institutions in Ethiopia

provide targeted training and education specifically in geriatric anesthesia, focusing on areas such as perioperative evaluation, pain management, frailty assessment and cognitive impairment screening of geriatric patients. We also recommend the Ethiopian Association of Anesthetists establish clear protocols and guidelines for the perioperative care of geriatric patients. Furthermore, we recommend regular studies and evaluations regarding the adherence of Ethiopian anesthetists towards the perioperative care of geriatric patients. Finally, we also recommend the Ethiopian association of anesthetists to provide accessible resources such as updated guidelines, research findings, and educational materials tailored to geriatric anesthesia to enhance adherence to recommended practices.

ETHICAL APPROVAL AND CONSENT TO PARTICIPATE

This study was approved by the Ethical Review Committee of Asrat Woldeyes Health Science Campus and Debre Berhan University (Reference No: AWHSC/SM/06/02/3021/2016) was obtained, ensuring that the research study adhered to ethical guidelines. Participants provided written informed consent, which included the assurance of their right to decline participation and maintain confidentiality.

AUTHORS' CONTRIBUTIONS

M.A.T has conceptualized the study and set the objectives, developed the proposal. A.A.A, E.S.W and M.D.A has criticized the proposal. All authors have participated in data management and statistical analysis. F.S, A.A.A, D.O.W and M.B.F have prepared the manuscript. All authors approved the final manuscript.

ACKNOWLEDGMENTS

We would like to thank Ethiopian anesthetists who participated in this study.

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