Awareness of Endoscopy Nurses About Anesthesia Management in the Pediatric Gastrointestinal Endoscopy Unit; A Survey Study

Pediatrik Gastrointestinal Endoskopi Ünitesinde Çalışan Endoskopi Hemşirelerinin Anestezi Yönetimi Konusundaki Farkındalığı; Bir Anket Çalışması

Feyza SEVER[1], Şamil HIZLI[2]

[1]Department of Anesthesiology and Reanimation, Ankara Bilkent City Hospital, Children Hospital, Ankara, Turkey
[2]Department of Pediatric Gastroenterology, Ankara Bilkent City Hospital, Children Hospital,Ankara, Turkey

ABSTRACT

Objective: We aimed to determine the awareness of endoscopy nurses working in pediatric gastrointestinal endoscopy units on anesthesia applications they encountered in clinical practice.

Material and Methods: Endoscopy nurses that work in pediatric gastrointestinal endoscopy units in Turkey were invited to this study. Among the 33 questions, seven were in the section questioning the endoscopy nurses' demographics and occupational working time (Section 1). In the other part, 16 questions were asked about what should be known during the anesthesia administration and recovery process (Section 2). The remaining 10 questions were statements that determined the level of awareness regarding anesthesia practices in pediatric gastrointestinal endoscopy units. (Section 3).

Results: The total of 80 participants' mean age was 40.3±9.1 years, and 91.3% were female. Seventy seven percent of the participants replied "yes" to the statement of "The endoscopy nurse should be able to evaluate possible complications by considering the American Society of Anesthesiology (ASA) classification of the patients." Thirty five percent of participants knew about the Modified Aldrete Scoring System. The mean age, total working time, and working time in the pediatric gastrointestinal endoscopy unit were found to be lower in those who agreed with the statement "Patients can be discharged with their parents/caregiver without any scoring or criteria evaluation two hours after the procedure".

Conclusion: In conclusion, although the pediatric endoscopy nurse is not responsible for anesthesia management practices, their awareness and knowledge about anesthesia management play a key role for the endoscopy and the anesthesia team in ensuring patient safety.

Key Words: Anesthesia, Children, Endoscopy, Nurse

ÖZ

Amaç: Bu çalışmada, endoskopi hemşirelerinin klinik uygulamada karşılaştıkları anestezi uygulamaları konusundaki farkındalık düzeylerini belirlemeyi amaçladık.

0000-0003-1425-336X : SEVER F
0000-0001-6732-493X : HIZLI Ş

Conflict of Interest / *Çıkar Çatışması*: On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethics Committee Approval / *Etik Kurul Onayı*: This study was conducted in accordance with the Helsinki Declaration Principles. The study was approved by the Second Ethics Committee of Ankara Bilkent City Hospital. (02.06.2021/E2-21-472).

Contribution of the Authors / Yazarların katkısı*: *SEVER F: Constructing the hypothesis or idea of research and/or article, Planning methodology to reach the Conclusions, Organizing, supervising the course of progress and taking the responsibility of the research/study, Taking responsibility in patient follow-up, collection of relevant biological materials, data management and reporting, execution of the experiments, Taking responsibility in logical interpretation and conclusion of the results, Taking responsibility in necessary literature review for the study, Taking responsibility in the writing of the whole or important parts of the study, Reviewing the article before submission scientifically besides spelling and grammar. Constructing the hypothesis or idea of research and/or article, Planning methodology to reach the Conclusions, Organizing, supervising the course of progress and taking the responsibility of the research/study, Taking responsibility in patient follow-up, collection of relevant biological materials, data management and reporting, execution of the experiments, Taking responsibility in logical interpretation and conclusion of the results, Taking responsibility in necessary literature review for the study, Taking responsibility in the writing of the whole or important parts of the study, Reviewing the article before submission scientifically besides spelling and grammar. ***HIZLI Ş:*** Organizing, supervising the course of progress and taking the responsibility of the research/study, Taking responsibility in patient follow-up, collection of relevant biological materials, data management and reporting, execution of the experiments, Taking responsibility in necessary literature review for the study, Reviewing the article before submission scientifically besides spelling and grammar.

How to cite / *Atıf yazım şekli* : Sever F and Hızlı Ş. Awareness of Endoscopy Nurses About Anesthesia Management in the Pediatric Gastrointestinal Endoscopy Unit; A Survey Study. Turkish J Pediatr Dis 2023;17:412-417.

Additional information / *Ek bilgi*: We would like to express our gratitude to Fatma Kartal, the responsible nurse of our hospital's pediatric GI endoscopy unit, for her valuable contributions to this study.

Correspondence Address / Yazışma Adresi:

Feyza SEVER
Department of Anesthesiology and Reanimation,
Ankara Bilkent City Hospital, Children Hospital, Ankara, Turkey
E-posta: feyza.altay@hotmail.com

Received / Geliş tarihi : 17.08.2023
Accepted / Kabul tarihi : 18.09.2023
Online published : 19.09.2023
Elektronik yayın tarihi
DOI: 10.12956/tchd.1344595

Gereç ve Yöntemler: Bu çalışmaya Türkiye'deki pediatrik gastrointestinal endoskopi ünitelerinde çalışan endoskopi hemşireleri davet edildi. Toplam 33 sorudan oluşan anketin yedi sorusu, endoskopi hemşirelerinin demografik bilgilerini ve mesleki çalışma sürelerini sorgulayan bölümde yer aldı (Bölüm 1). Diğer bölümde, anestezi uygulaması ve postoperatif derlenme süreci sırasında bilinmesi gereken konularla ilgili 16 soru soruldu (Bölüm 2). Kalan on soru, pediatrik gastrointestinal endoskopi ünitelerinde anestezi uygulamaları konusundaki farkındalık düzeyini belirleyen ifadelerdi (Bölüm 3).

Bulgular: Toplam 80 katılımcının yaş ortalaması 40.3±9.1 yıl olup %91.3'ü kadındı. Katılımcıların %77'si, "Endoskopi hemşiresi, hastaların Amerikan Anestezi Topluluğu (ASA) sınıflamasını dikkate alarak olası komplikasyonları değerlendirebilmelidir" ifadesine "evet" yanıtını verdi. Katılımcıların %35'i Modifiye Aldrete Skoru Sistemi hakkında bilgi sahibiydi. Ortalama yaş, toplam çalışma süresi ve pediatrik gastrointestinal endoskopi ünitesindeki çalışma süresi, "Hastalar endoskopi ünitesindeki işleminden iki saat sonra ebeveyn/yardımcılarıyla herhangi bir skor veya kriter değerlendirmesi olmaksızın taburcu edilebilir" ifadesine katılanlarda daha düşük bulundu.

Sonuç: Pediatrik endoskopi hemşiresi anestezi yönetimi uygulamalarından sorumlu olmasa da, anestezi yönetimi hakkındaki edineceği bilgi ve farkındalık ile hastanın güvenliğini sağlamak adına endoskopi ve anestezi ekibi için kilit bir rol oynayacaktır.

Anahtar Sözcükler: Anestezi, Çocuk, Endoskopi, Hemşire

INTRODUCTION

Pediatric gastrointestinal (GI) endoscopy is a common procedure increasingly used to investigate and diagnose gastrointestinal disorders in children (1,2). Adequate sedation for all types of endoscopy procedures is a necessity in pediatric patients for diagnostic and therapeutic procedures (3,4).

The awareness of the endoscopy nurses working in pediatric endoscopy units about the application of anesthesia is important in terms of nursing service. The Society of Gastroenterology Nurses and Associates (SGNA) recommends that a registered nurse (RN) be present to assist the endoscopy team during the administration of anesthesia to increase patient safety (5). It has been stated that having an RN in the room with the anesthesiologist increases patient safety (6). Few studies on the clinical experiences and awareness levels of nurses collaborating with anesthesia teams in pediatric endoscopy units have been published.

In this survey study, we aimed to determine the awareness of endoscopy nurses working in pediatric endoscopy units on anesthesia applications they encountered in clinical practice.

MATERIALS and METHODS

Following approval of Ankara Bilkent City Hospital Second Ethical committee (02.06.2021/E2-21-472), this survey study was conducted in the Pediatric Gastroenterology, Hepatology and Nutrition Clinic of Ankara Bilkent City Hospital between 1-30 June 2021. The study included endoscopy nurses working in pediatric GI endoscopy units in Turkey, and contact was made with the endoscopy units of fifty hospitals in Turkey that perform pediatric GI endoscopic procedures for this survey study. Pediatric endoscopy nurses who were not working in the pediatric GI endoscopy units and those who were unwilling to participate in the survey were excluded from the study. The questionnaires were delivered to the voluntarily participating nurses via hospital visits or electronic media. The questionnaire consisted of 33 items evaluating demographic data and nursing practice of pediatric endoscopy nurses about sedation in their units. Among the 33 questions, seven were in the section questioning the endoscopy nurses' demographics and occupational working time (Section 1). In the other part, even if the endoscopy nurse is not a practitioner, 16 questions were asked about what should be known during the anesthesia administration and recovery process (Section 2). The remaining ten questions were statements that determined the level of awareness regarding anesthesia practices in pediatric GI endoscopy units. (Section 3). This study was registered with ClinicalTrials.gov (ref. NCT 05032443).

Statistical analysis

Data were analyzed using the IBM SPSS 25.0 (Armonk, NY, IBM Corp.) statistical software package. In addition to descriptive statistical methods (frequency, percentage, mean, standard deviation, median, minimum and maximum), the Pearson Chi-square or Fisher's exact test was used to compare qualitative variables. When differences among more than two groups were determined, pairwise comparisons were made to identify the source of the difference. Conformity of data with normal distribution was evaluated with the Kolmogorov-Smirnow test, skewness-kurtosis, and graphical methods (histogram, Q-Q Plot, Stem and Leaf, and Boxplot). The One-Way ANOVA test evaluated the quantitative variables with a normal distribution. When a difference was determined, the posthoc Tukey HSD test was used to identify the source of the difference. The level of statistical significance was considered $p<0.050$. The power of the study was determined using the G*Power 3.1.9.7 statistical software package. The study's power was 89% when n=80, groups=3, $\alpha=0.05$, and effect size (f) was 0.4.

RESULTS

Eighty volunteers from forty endoscopy units that met our study's criteria replied to our questionnaire, covering over 85% of Turkey in general. Medical centers performing endoscopies in the operating room and not in a separate endoscopy unit were excluded from the study.

Table I: Demographic Characteristics of Participants

	Mean ± SD (n=80)
Age (Years)*	40.3 ± 8.1
Gender†	
Female	73 (91.25)
Male	7 (8.75)
The Institution Employed†	
City Hospital	27 (33.75)
University Hospital	26 (32.5)
Training and Research Hospital	18 (22.5)
Private Hospital	9 (11.25)
TotalEmployment Duration (months)*	209.2 ± 111
3-12 Months†	3 (3.75)
>12 Months†	77 (96.25)
Duration of Employment in the pediatric GI endoscopy unit (months)*	79.6 ± 74.1
3-12 Months†	16 (20)
>12 Months†	64 (80)
Is the pediatric GI endoscopy unit Located as a Separate Unit in Your Current Institution?†	
Yes	48 (60)
No	32 (40)

***:** *Mean ± SD,* **†:** *n (%),* ***GI:** Gastrointestinal*

Table II: Comparison of demographic characteristics of participants in question about time of discharge

	The patients can be discharged accompanied by their parents/patient caregiver two hours after the procedure without any scoring or criteria assessment in pediatric GI endoscopy units performing sedation."			p*
	I agree (n=29)	I am indecisive (n=33)	I disagree (n=18)	
Age (years)†	36.1 ± 8.8	42.6 ± 6.8	42.9 ± 6.3	0.001 *
Gender‡				
Female§	25 (86.2)	30 (90.9)	18 (100)	0.248 **
Male§	4 (13.79)	3 (9.1)	-	
The Institution Employed§				
University Hospital	8 (27.58)	15 (45.45)	3 (16.66)	0.279 ***
Research and Training Hospital	8 (27.58)	5 (15.15)	5 (27.77)	
City Hospital	11 (37.93)	10 (30.3)	6 (33.33)	
Private Hospital	2 (6.89)	3 (9.1)	4 (22.22)	
Total Employment Duration‡†	156.8 ± 104.8	251.1 ± 100.5	216.7 ± 109.4	0.003 *
3-12 (months)§	2 (6.89)	1 (3)	--	0.296 **
>12 (months)§	27 (93.11)	32 (97)	18 (100)	
Duration of Employment in the Present Institution†	53.0 ± 50.9	91.7 ± 81.2	100.3 ± 83.3	0.047 *
3-12 (months)§	7 (24.14)	8 (24.24)	1 (5.5)	0.220 ***
>12 (months)§	22 (75.86)	25 (75.76)	17 (94.45)	
Is the pediatric GI endoscopy unit located as a separate unit in your current institution?				
Yes§	16 (55.17)	22 (66.7)	10 (55.6)	0.594 ***

:** *One-Way Anova Test (Mean ± SD),* **†:** *Mean ± SD,* **‡:** *The comparison was made by combining the groups "I am indecisive" and "I disagree",* **§:** *n (%),:** *Fisher's exact test (n (%)),* ***:** *Pearson Chi-Square Test (n (%)),* ***GI:** Gastrointestinal*

Section 1: Questions involving demographic characteristics

The participants' mean age was 40.3±9.1 years, and 91.3% were female. The education level of most of them (81.2%) was bachelor's degree or higher. Almost 34% of them worked in a City Hospital, 32.5% in a University Hospital, 22.5%in a Training and Research Hospital, and 11.3%in a Private Hospital. Twenty percent of the nurses worked in a pediatric GI endoscopy unit for less than 12 months. Sixty percent of the nurses noted their pediatric GI endoscopy unit was located as separate units from the operating room. The remaining participants expressed that pediatric endoscopic procedures had been performed in the adult endoscopy unit. Demographic data are outlined in Table I.

Section 2: Questions about knowledge of pediatric endoscopy nurses for anesthesia management and recovery process

In this section, for the question "Does the endoscopy nurse have an obligation to inform the patient and parents that the procedure will be performed under anesthesia?", Forty seven percent of the participants expressed that such an obligation was not present. The ratio of participants stating that checking and recording the patient's preprocedural vital signs is unnecessary was 41.3%. The rate of those who did not think that it was necessary to inform the patient/parent and stated that the patient's vital signs did not need to be taken before the procedure was found to be statistically significantly higher in those with a working time of > 12 months in the pediatric GI endoscopy unit (p=0.044, and p=0.027, respectively). Seventy seven percent of the participants replied "yes" to the statement of "The endoscopy nurse should be able to evaluate possible complications by considering the American Society of Anesthesiologists (ASA) classification of the patients." Thirty five percent of participants knew about the Modified Aldrete Scoring system; 75% of these nurses stated that the patients' sedation scores were evaluated and recorded in the recovery room. In the recovery room, 61.3% of the participants expressed that they evaluated their patients with a sedation scoring system and recorded the postprocedural results. Regarding the question of "Had you received training for pre and post-anesthesia nursing services before you started working in the pediatric GI endoscopy unit?" only 38.8% of the participants answered as "yes." This study found that a higher ratio of the participants who answered "yes" to this question was knowledgeable of and used the Modified Aldrete Scoring System (7). Also, these participants recorded the results, evaluated probable complications and considering the patients' ASA classification (p=0.014, 0.046, and p=0.002, respectively).

Section 3: Questions to evaluate participants' awareness

The third section of the survey involved ten statements to evaluate participants' awareness, which were replied as "I agree," "I am indecisive," and "I disagree." Eighty two percent of the participants expressed that they agreed with the statement "Anesthesia should be administered in all patients in pediatric GI endoscopy units." The ratio of participants thinking that an anesthesiologist should perform anesthesia applications in these units was 96.3%. The mean age, total working time, and working time in the pediatric GI endoscopy unit were found to be lower in those who agreed with the statement "Patients can be discharged with their parents/caregiver without any scoring or criteria evaluation two hours after the procedure" compared to those who answered "I am indecisive" and "I disagree" and this result was statistically significant. (p=0.001, p=0.003, and p=0.047, respectively-the mean age, total working time, and working time in the pediatric GI endoscopy unit) (Table II).

No statistically significant differences were observed among participants' responses to the questions in this section pertaining to educational status, employing institution, and durations of employment (p>0.050).

DISCUSSIONS

Pediatric endoscopic gastrointestinal procedures are performed in pediatric GI endoscopy units with deep sedation or general anesthesia (8). In our pediatric GI endoscopy unit approximately 2200 procedures are performed annually. Due to the substantial volume of procedures involved, we believe that endoscopy nurses should possess awareness regarding anesthetic procedures and management. Enhanced knowledge among endoscopy nurses could contribute to an improved patient safety monitoring process. The endoscopy nurses participating in this study are not included in the anesthesia team, but the procedure is performed by anesthesia to every pediatric patient they encounter. The duties and responsibilities of the endoscopy nurse include maintenance and cleaning of endoscopic accessories, documenting/labeling of pathology samples, assisting the endoscopist, etc (9,10). Furthermore, alongside these duties, we posit that the endoscopy nurses working in the pediatric GI endoscopy units have critical role in preoperatively reviewing documentation before the procedure (eg, signed consent), informing the patient and the parent that the procedure will be performed under anesthesia, monitoring the vital signs of the patients in the postanesthetic period, along with using a sedation scale to guide practice, understand potential postoperative complications, and ensuring that patients are discharged according to discharge criteria. In a survey study conducted with responses from 65 endoscopy units, it was stated that endoscopy nurses had additional responsibilities such as checking consents before the procedures and completing discharge instructions after discussing with the endoscopist (6). Endoscopy nurse should make sure the physician (endoscopist, surgeon, anesthesia provider) did the right thing during the consent process (ie, the patient knows who is doing the procedure, what the procedure is, its risks and benefits, etc).

Invasive gastrointestinal endoscopic procedures should be performed under anesthesia in pediatric patients. Preoperative evaluation and consent forms should be obtained, documented, and placed into the patient's chart to determine the pre-anesthesia risk classification in patients undergoing sedation and for preoperative review by the physicians and the endoscopy nurse (11). In our research, approximately fifty percent of the participants held the perspective that endoscopic procedures should not be conducted in the absence of anesthesia consent, while the remaining fifty percent exhibited uncertainty or indicated that the procedure could proceed without explicit anesthesia consent. This situation indicates a significant deficiency in the legal requirements and oversight pertaining to anesthesia consent and the registration system. Moreover, a slightly lesser percentage, just under 50%, of endoscopy nurses have expressed that there is no necessity

to inform or educate patients or their family members about the endoscopic procedure that is to be performed under anesthesia. In recent a study, it was reported that patients who gave informed consent for endoscopy were better informed by nurses about the procedure (12). Informing the patients and parents also with the endoscopy nurse is very valuable and alleviates the workload of the whole team.

Most of our patients in our clinic are ASA 1 or 2, although patients with ASA 3 or 4 could be having a band ligation due to esophageal varices or a percutaneous endoscopic gastrostomy. The risk of a development of a postoperative complication is higher in patients with ASA 3 or 4 (13-16). Potential complication developments should be kept in mind during the procedure as well as during recovery and nursing applications should be planned. Patients and family members should be informed about potential complications such as nausea and vomiting, hypo-hypertension, desaturation, respiratory failure, respiratory arrest, cardiac arrest, etc. that may occur in the recovery department after anesthesia, and the patients should be monitored and followed closely. Our investigation has unveiled that just under 50% of endoscopy nurses held the perspective that their patients were not susceptible to risks during this specific period. While it is true that the anesthesia team assumes responsibility for the postoperative recovery room in our nation, it remains of paramount importance for pediatric endoscopy nurses to possess an acute awareness of potential complication development during this critical juncture, directly correlating with the assurance of patient safety. The Standards of Practice Committee of the American Society for Gastrointestinal Endoscopy (ASGE) suggests at least one nurse is necessary to monitor patients in the post-anesthetic recovery room until the patient is stabilized, to provide adequate space for privacy, and to evaluate side effects related to endoscopic procedures (17). Unlike the operating room environment, there is not always a fixed nurse in the recovery room in endoscopy units. In this case, the endoscopy nurse can undertake the task of patient follow-up. We think that the endoscopy nurse should be trained with this awareness.

Scoring systems should be included in quality standarts to maintain patient safety in the post-anesthesia recovery unit such as the Modified Aldrete Scoring System (7). Modified Aldrete Scoring System is routinely used for patient follow-up in the post-anesthesia period in our hospital. In this study, the ratio of participants who thought that sedation scoring and hospital discharge criteria should be applied in the postop period in patients who underwent anesthesia was 81.3%. Sixty five percent of the participants stated they were unaware of the Modified Aldrete Scoring system but only 61.3% of the participants expressed that a sedation scoring system was used and documented in the post-anesthesia recovery room of the pediatric GI endoscopy unit where they worked. In summary, the majority of pediatric endoscopy nurses stated that a scoring system was necessary to determine the sedation level of patients in the recovery room, yet there was a knowledge deficit. On the other hand, their knowledge deficiency related to the scoring system used and its content was determined.

Discharge criteria should also be assessed prior to patient release. In this survey, 36% of participants indicated that an anesthetized patient could be discharged from the recovery unit after two hours, regardless of whether they met any scoring criteria. This finding is unsurprising given that fewer than 40% of pediatric endoscopy nurses reported receiving training upon initial employment. Establishing guidelines for competent and standardized nursing practices within pediatric GI endoscopy units is imperative.

Limitation

According to the current laws in our country, sedation and/or general anesthesia applications are only performed by an anesthesiologist. At least one endoscopy nurse assists the gastroenterologist during the procedure. The endoscopy nurses in our study group had never applied sedation and were in the position of external observers in this regard. Therefore, there was no similar survey study conducted with endoscopy nurses in the same situation in the literature, and we had difficulty in making comparison of findings.

CONCLUSION

The endoscopy nurse is a valuable staff member. The endoscopy nurses' knowledge and expertise can be utilized in more important ways both for the endoscopy and the anesthesia team for ensuring patient safety. In conclusion, our study results emphasizes that; although the pediatric endoscopy nurse is not responsible for anesthesia management practices, they should be aware of anesthesia management before, during, and after the procedure. In addition each institution needs to create it's own internal policies and procedures based on guidelines.

REFERENCES

1. Park SY, Lee JK, Kim JW, Lee TH, Park CH, Jang JY, eT al. A Nationwide Survey on the Facilities and Personnel for Endoscopic Sedation: Results from 50 Qualified Endoscopy Units of Teaching Hospitals Accredited by the Korean Society of Gastrointestinal Endoscopy (KSGE). Clin Endosc 2021;54:843-50.
2. Wai Yan Wan J , Griffiths E, Rabone R, Zuhair Z, Londt Z, Rawat D, et al. Measuring patient and carer experience related to paediatric gastrointestinal endoscopy: multicentre questionnaire study. Frontline Gastroenterology 2020;11:448–53.
3. Broekaert I, Tzivinikos C, Narula P, Antunes H, Dias JA, van der Doef H, et al. European Society for Paediatric Gastroenterology, Hepatology and Nutrition Position Paper on Training in Paediatric Endoscopy. JPGN 2020;70: 127–40.
4. Taskforce AEUQI, Day LW, Cohen J, Greenwald D, Petersen BT, Schlossberg NS, et al. Quality indicators for gastrointestinal endoscopy units. VideoGIE 2017;2:119-40.

5. Society of Gastroenterology Nurses and Associates. Minimum Registered Nurse Staffing for Patient Care in the Gastrointestinal Endoscopy Unit. Gastroenterol Nurs. 2006;29:316-7.
6. Agrawal D, Jain R. Staffing at Ambulatory Endoscopy Centers in the United States: Practice, Trends, and Rationale. Gastroenterol Res Pract 2018;1-5.
7. Aldrete JA, Kroulik DA. Postanesthetic recovery score. Anesth Analg 1970; 49: 924.
8. Lightdale JR, Walsh CM, Oliva S, Jacobson K, Huynh HQ, Homan M, et al. Pediatric Endoscopy Quality Improvement Network Quality Standards and Indicators for Pediatric Endoscopic Procedures: A Joint NASPGHAN/ESPGHAN Guideline. JPGN 2022;74:30–43.
9. Rizk MK, Sawhney MS, Cohen J, Pike IM, Adler DG, Dominitz JA, et al. Quality indicators common to all GI endoscopic procedures. Gastrointest Endosc 2015;81:3-16.
10. Kramer RE, Walsh CM, Lerner DG, Fishman DS. Quality Improvement in Pediatric Endoscopy: A Clinical Report From the NASPGHAN Endoscopy Committee. J Pediatr Gastroenterol Nutr 2017;65:125-31.
11. ASGE Standards of Practice Committee; Early DS, Lightdale JR, Vargo JJ, Acosta RD, Chandrasekhara V, Chathadi KV, et al. Guidelines for sedation and anesthesia in GI endoscopy. Gastrointest Endosc 2018;87:327-37.
12. Siao D, Sewell JL, and Day LW. Assessment of delivery methods used in the informed consent process at a safetynet hospital. Gastrointestinal Endoscopy 2014;80:61-8.
13. Dietrich DS, Hocke M, Braden B, Carrara S, Gottschalk U and Dietrich CF. Pediatric Endoscopy, Update 2020. Appl Sci 2019;9:5036.
14. Gotoda T, Akamatsu T, Abe S, Shimatani M, Nakai Y, Hatta W, Hosoe N, Miura Y et al. Guidelines for sedation in gastroenterological endoscopy (second edition). Digestive Endoscopy 2021; 33: 21–53.
15. Morgan GE Jr, Mikhail MS, Murray MJ. Post-anesthetic Care. Clinical Anesthesiology. 6th ed. New York: McGraw-Hill; 2018;1257-75.
16. Özmen H, Aydınlı B, Ttiz L, Derici D. Comparing the Prevalence of Postoperative Complications in Groups of Patients Followed Up in the Recovery Room with and without the Use of the Modified Aldrete's Scoring System (MASS): A Retrospective Study. JARSS 2020;28:188-93
17. ASGE Standards of Practice Committee, Jain R, Ikenberry SO, Anderson MA, Appalaneni V, Ben-Menachem T, Decker GA, et al. Minimum staffing requirements for the performance of GI endoscopy. Gastrointest Endosc 2010;72:469-470.