The Attitudes and Behaviors of Anaesthesiology and Reanimation Specialists in Anaesthesia Care Applications Outside the Operating Room in Turkey: A Survey Study

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Objective: We aimed to investigate the attitudes and behaviors of anaesthesiologists in “non-operating room anaesthesia” applications, which can be described as anaesthesia applications performed outside the operating room, and their reflection on practice all over Turkey.

Methods: Our study was conducted between November 5, 2012 and January 7, 2013 with the approval of the Research Ethics Board. Survey data were obtained through distributing printed questionnaires to be completed either by hand or via the web. The questionnaire consisted of 38 questions. The data obtained were analyzed with the Statistical Package for Social Sciences (SPSS) program.

Results: A total of 500 anaesthesiologists replied to our survey; 93% of anaesthesia specialists reported that there was a request that the anaesthesia and anaesthesia outside the operating room was given in their institution. Among anaesthesiologists, 56% reported that there were other sections that can provide sedation other than the anaesthesiology department in their institutions. Anaesthesia care team members; equipment; anaesthetic techniques; monitoring methods; and hypnotic, analgesic, and antagonist agents had statistically significant differences according to the participants' institutions. Equipment used in the anaesthesia practice outside the operating room, anaesthesia, and monitoring methods had statistically significant differences according to geographical distribution ($p<0.05$).

Conclusion: Outside the operating room, anaesthesia practices and security measures are compliant with the standards set by the guidelines, the key to the prevention of complications. In our study, the current status of anaesthetic procedures outside the operating room in our country have been analyzed.

Key Words: Anaesthesiology and reanimation specialist, anaesthesia outside the operating room, survey

Introduction

In the recent years, anaesthesiology and reanimation specialists have been increasingly administering anaesthesia during procedures performed for diagnosis and treatment outside of an operating room (1). Anaesthesia performed outside of an operating room must be consistent with all obligatory standards for anaesthesia delivered in an operating room (2, 3). There is limited data published about mortality and morbidity due to anaesthesia delivered outside the operating room (4). Robbertze et al. (5) conducted a study reviewing completed case files and stated that the majority of problems due to non-operating room anaesthesia (NORA) is associated with monitored anaesthesia care and marginal age of patients (new-borns and elderly). In addition, they emphasized that mortality increases with methods of anaesthesia administered outside the operating room. These authors also observed that anaesthesia-related care outside the operating room is below the standards and numerous complications can be prevented by better care (5).

In Turkey, Turkish Society of Anaesthesiology and Reanimation 2005 Guidelines on Anaesthesia Practices comprise also the Guideline on Anaesthesia Practices outside the Operating Room (6). However, attitudes of anaesthesiology and reanimation specialists during anaesthesia applications outside the operating room are influenced by many factors and show great variations in Turkey as well as in the other countries. Nevertheless, the literature review we performed unveiled that there is no data or comprehensive investigation on the practices, attitudes and behaviours of anaesthesiology and reanimation specialists working either in Turkey or in the world, about NORA (1, 6-9).

The aim of the present study is to investigate the reflections of attitudes, behaviours and practices of anaesthesiology and reanimation specialists working in Turkey concerning “non-operating room anaesthesia”, which refers to the anaesthesia administered outside the operating room.

Methods

The present study was carried out between 5 November 2012 and 7 January 2013 after obtaining approval from Dokuz Eylül University Non-interventional Researches Ethics Committee (Decision No: 2012/35-15, Date: 01.11.2012). Before starting the study, 15 subjects, who have not been included in the study, were made to read the questionnaire in terms of comprehensibility and a pretest was performed.

Data collection method: The data of survey was collected by distributing printed questionnaire forms and having them completed and by completion of web-based electronic data forms. Questionnaire forms were first distributed manually as direct printouts to the anaesthesiology specialists attended to 2012 Turkish Anaesthesiology and Reanimation Congress (TARC), which was held between 7-11 November 2012 in Turkish Republic of Northern Cyprus (TRNC) and included attendants from many provinces of Turkey, over the course of the congress. Moreover, the questionnaire forms were sent by electronic mail for three times at 10-day intervals to 2240 anaesthesiology and reanimation specialists, of whom e-mail addresses were available and a reminder was added for those completed the questionnaire at TARC 2012 not to complete again. Replies to the questionnaires were checked for potential repeated completion.

Questionnaire form: The questionnaire consisted of a total of 38 questions. Section A included five questions about demographic data, whereas Section B included 2 questions about information on institution, and Section C included 31 questions about data on anaesthesia outside the operating room practices. Questions and the questionnaire form are presented in Annex 1.

Statistical analysis

Statistical analysis of study data was done using Statistical Package for Social Sciences (SPSS) program. Mean, standard deviation, median, minimum and maximum values of continuous variables and subgroups, as well as frequency number and percentage of categorical variables, were presented. Considering the normality tests, Variance Analysis and Post Hoc (Bonferroni) tests were performed in the comparison of multiple independent groups. Independent paired group comparisons were done using “Independent Samples Test”. Variables that expressed frequency were presented as frequency and percentages in cross tables and the differences between distributions were analysed by chi-square test methods. The difference between the groups was considered significant in case of a *p* value smaller than 0.05.

Results

There were a total of 245 returns from the questionnaire forms distributed to the anaesthesiology and reanimation specialists at 2012 Turkish Anaesthesiology and Reanimation Congress (TARC), but 4 returns were excluded since they were from the specialists of TRNC and the study was limited to Turkey. In addition, 261 specialists among those who received the form by e-mail returned the questionnaire. Two questionnaires were excluded since they have been resent. In total, 500 specialists working in Turkey replied to the questionnaire over the course of the study (Table 1).

With regard to the provinces of participants, the highest returns were obtained from Istanbul (*n*: 124, 24.8%), whereas Ankara (*n*: 74, 14.8%) and Izmir (*n*: 54, 10.8%) were the provinces with the second and third highest rate of returns, respectively. Adıyaman, Afyonkarahisar, Ardahan, Bingöl, Çorum, Erzincan, Giresun, Gümüşhane, Kilis, Kırklareli, Kütahya, Mardin, Muş, Yalova, and Yozgat were the provinces with the lowest rate of returns (*n*=1, 0.2% for all) (Figure 1).

A total of 492 (98.4%) responses were obtained when the participants were inquired about the institutions where they have been still working at (Table 2). The participants were questioned whether they had practiced anaesthesia in diagnostic/therapeutic procedures (such as procedure, intervention, surgery etc.) performed outside the operating room over the course of their anaesthesiology training; whilst 483 (96.6%) participants responded “yes” and 13 (2.6%) participants responded “no”, 4 (0.8%) participants did not give a response to this question.

When the participants were questioned whether they were receiving requests to perform anaesthesia during anaesthesia-requiring procedures, interventions or surgeries outside the operating room and whether non-operating room anaesthesia is performed at the institutions they have been still working, 465 (93%) specialists responded as “there are requests and non-operating room anaesthesia is performed” and 12 (2.4%) specialists responded as “there are requests but non-operating room anaesthesia is not performed”, whereas 18 (3.6%) specialists responded as “there is no request”. Five (1%) specialists did not respond to this question. When the anaesthesiology and reanimation specialists were asked for how long non-operating room anaesthesia is being performed in their institutions, it was observed that the replies ranged from 1 year to 50 years, and the mean duration was 9.71 ± 7.67 years.

When the specialists participated in the survey were questioned whether there was a department other than Anaesthesiology and Reanimation Clinic that performs sedation in the institution they have been working, 265 (56%) of 475 responders reported that there is (are) department(s) other than Anaesthesiology and Reanimation Clinic that performs sedation (Figure 2). Among the departments other than An-

Table 1. Demographic Data of Anaesthesiology and Reanimation Specialists Enrolled in the Study (n=500)

Gender (Female/Male)	282/216*
Mean age (years)	41.76±7.66
Mean time working as a physician (years)	17.40±7.79
Mean time working as an anaesthesiology and reanimation specialists (years)	10.33±7.91
*2 participants have not specified their gender	

Table 2. Distribution of Anaesthesiology and Reanimation Specialists among Institutions (n=492)

Institution	Number	Percentage (%)
University Hospital	156	31.7
State Hospital	121	24.6
Training and Research Hospital	108	22
Private Hospital	107	21.7

Table 3. Time for preoperative evaluation of the patients by Anaesthesiology and Reanimation Specialists

Time for preoperative evaluation of the patients	Number (%)
Just prior to the procedure	180 (38.6)
Within the same day	124 (26.6)
2-7 days before the elective procedure	174 (37.3)
The day before the elective procedure	128 (27.5)
I do not perform routine patient evaluation for non-operating room anaesthesia	14 (3)
Any time before the procedure	8 (1.7)

anaesthesiology and Reanimation Clinic that were reported to perform sedation, Gastroenterology ($p=0.012$), Cardiology ($p=0.001$) and Paediatrics ($p=0.0001$) departments were determined to perform sedation at higher rates than the others, particularly in university hospitals.

The question asked to the participants “in which departments do you perform non-operating room anaesthesia practices most” was responded by 465 specialists (Figure 3). It was determined that the rate of performing NORA was higher in Paediatrics ($p<0.001$), Interventional Radiology ($p<0.001$), Cardiology ($p<0.001$), Radiation Oncology ($p<0.001$) and Urology ($p<0.001$) departments particularly in the university hospitals, whereas it was higher in Obstetrics and Gynaecology departments particularly in private hospitals ($p<0.001$).

The question whether the patients that would undergo NORA were scheduled by including them in the surgery list was replied by 468 participants. Of the participants, 59% reported that the patients, who would undergo surgery, were scheduled by being included in the operation list, whereas 41% reported

Figure 1. Distribution of provinces, where anaesthesiology and reanimation specialists that responded to the survey have been working, by regions

Figure 2. The departments other than anaesthesiology department that sedation is performed according to the anaesthesiology and reanimation specialists

that they did not schedule the patients (Figure 4). Asking the participants when they perform preoperative evaluation for the patients that would undergo anaesthesia outside the operating room for elective procedures, 466 responses were obtained (Table 3).

When the participants were asked in which ASA risk class of patients they perform anaesthesia, 469 participants responded (Figure 5).

The question whether the participants have informed consent forms at the institutions they have been working and whether they obtain written informed consent from the patients that would undergo NORA or from their legal representatives was responded by 471 specialists. Of the responders, 422 (89.6%) stated that they had written informed consent forms and they routinely obtained consents, 32 (6.8%) stated that they had written informed consent forms but do not obtain consent from every patient, 4 (0.8%) stated that they neither had written informed consent nor obtained consent, and 13 (2.8%) stated that they did not have written informed consent forms but obtain consent only from patients they considered risky by making them to write and sign “I am informed about the risks of anaesthesia”. The question for how many hours the participants ask for preoperative fasting for solid foods in adult patients that would undergo NORA for elective procedures was responded by 470 participants (Figure 6).

Figure 3. The departments that non-operating room anaesthesia is performed by the anaesthesiology and reanimation specialists

Figure 4. The rate of non-operating room anaesthesia scheduling in the institutions

*It was observed that there was a statistically significant difference between the institutions concerning the rate of pre-planning of non-operating room anaesthesia; it is pre-planned at a rate of 74.7% in University Hospitals, 61% in private Hospitals, 53.9% in Training and Research Hospitals, and 37.1% in State Hospitals (Figure 6).

When the participants were inquired whether they stipulated condition of having company for ambulatory patients that would undergo anaesthesia outside the operating room, 465 specialists responded. Of the responders, 286 (61.5%) reported that they stipulated condition of having company for all patients, 55 (11.8%) reported that they stipulated condition of having company for only paediatric patients and disabled adults, 91 (19.6%) reported that they decided according to the situation of patients when necessary, and 33 (7.1%) reported that they did not stipulate condition to have company.

The question whether there is a lower age limit, which the participants avoid performing anaesthesia, in paediatric age group that would undergo NORA was responded by 438 participants (Figure 7). The specialists that participated in the study were questioned whether they perform NORA in geriatric age group and whether there is an upper age limit, and 452 specialists responded to this question (Figure 8).

Figure 5. Distribution of patients undergoing non-operating room anaesthesia according to ASA risk classes

Figure 6. The approach of Anaesthesiology and Reanimation Specialists to preoperative fasting period in adult patients

Figure 7. The approach of Anaesthesiology and Reanimation Specialists to paediatric age group concerning non-operating room anaesthesia

When the anaesthesiology and reanimation specialists that participated the survey, were questioned about the members of the anaesthesia team for NORA practices in the institutions they have been still working, response was obtained from 466 of them. There was a statistically significant difference between the institutions when the presence of anaesthesiology and reanimation specialists, anaesthesia technicians, and anaesthesiology and reanimation assistants and nurses in the anaesthesia team for non-operating room anaesthesia practices was evaluated according to institutions ($p < 0.05$) (Table 4).

With regard to the question asked about the facilities and equipment in the places where non-operating room anaesthe-

Table 4. The rates of non-operating room anaesthesia team members according to institutions

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
Academician	0	10/151 (6.6)	0	0	-
Specialist	98/101 (97)	129/151 (85.4)	101/104 (97.1)	97/104 (93.3)	0.001*
Assistant	4/101(4)	56/151 (37.1)	19/104 (18.3)	1/104(1)	<0.001**
Technician	98/101 (97)	126/151 (83.4)	97/104 (93.3)	96/104 (92.3)	0.002***
Nurse	9/101 (8.9)	20/151 (13.2)	3/104 (2.9)	20/104 (19.2)	0.002****
Health officer	0	1/151 (0.7)	0	6/104 (5.8)	-
Emergency medicine technician	0	0	0	1/104(1)	-
Student technician	1/101 (1)	0	0	0	-

*p<0.05, it is seen that the number of Anaesthesiology and Reanimation Specialists in anaesthesia team is the highest at Training and Research Hospitals and that there is a statistically significant difference between the institutions.
**p<0.05, it is seen that the number of anaesthesia assistants in anaesthesia team is the highest at University Hospitals and that there is a statistically significant difference between the institutions.
***p<0.05, it is seen that the number of anaesthesia technicians in anaesthesia team is the highest at State Hospitals and that there is a statistically significant difference between the institutions.
****p<0.05, it is seen that the number of nurses in anaesthesia team is the highest at Private Hospitals and that there is a statistically significant difference between the institutions

Table 5. The availability rate of some equipment in facilities where for non-operating room anaesthesia is performed according to institutions

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
Oxygen source	101/102 (99)	151/151 (100)	103/104 (99)	105/105 (100)	-
Aspirator	95/102 (93.1)	148/151 (98)	104/104 (100)	103/105 (98.1)	-
Anaesthesia device	28/102 (12.2)	101/151 (66.9)	65/104 (62.5)	36/105 (34.3)	<0.001*
Defibrillator	32/102 (31.4)	72/151 (47.7)	47/104 (45.2)	47/105 (44.8)	N/S
Monitor	91/102 (89.2)	145/151 (96)	101/104 (97.1)	95/105 (90.5)	0.037**
Perfusor	6/102 (5.9)	58/151 (38.4)	29/104 (27.9)	25/105 (23.8)	<0.001***
Crash trolley	72/102 (70.6)	121/151 (80.1)	83/104 (79.8)	84/105 (80)	N/S
Appropriate area	50/102 (49)	70/151 (46.4)	38/104 (36.5)	65/105 (61.9)	0.003****

N/S: Non-specific
*p<0.05, it is seen that anaesthesia device for non-operating room anaesthesia is most frequently present in University Hospitals and that there is a statistically significant difference between the institutions.
**p<0.05, it is seen that monitor for non-operating room anaesthesia is most frequently present in Training and Research Hospitals and that there is a statistically significant difference between the institutions.
***p<0.05, it is seen that perfusor for non-operating room anaesthesia is most frequently present in University Hospitals and that there is a statistically significant difference between the institutions.
****p<0.05, it is seen that appropriate area for non-operating room anaesthesia is most frequently present in Private Hospitals and that there is a statistically significant difference between the institutions

sia practices were performed, 468 responses were obtained. Significant institutional and geographic regional differences were determined in the distribution of anaesthesia device, monitor, perfusor and appropriate area among the places where non-operating room anaesthesia is performed (Tables 5, 6).

A total of 468 specialists responded the question whether the participants use a check list for necessary equipment before NORA. Of the responders, 59.4% reported that they used a check list, whereas 40.6% did not.

The question whether the participants had an emergency bag or not to use during NORA, was responded by 466 specialists (Figures 9, 10).

A total of 471 participants responded to the question about the preferred methods of anaesthesia in adult patients in NORA (Figure 11). When the anaesthesia methods preferred by anaesthesiology and reanimation specialists during NORA were compared according to the institutions the participants have been working at, significant difference was observed

Table 6. The rate of availability of some equipment in facilities where non-operating room anaesthesia is performed according to geographical regions

	Marmara Region n (%)	Aegean Region n (%)	Mediterranean Region n (%)	Black Sea Region n (%)	Central Anatolia Region	Eastern Anatolia Region	South-Eastern Anatolia Region, n (%)	p
Oxygen source	158/159 (99.4)	82/82 (100)	47/48 (97.9)	35/35 (100)	99/99 (100)	21/21 (100)	21/21 (100)	-
Aspirator	155/159 (97.5)	78/82 (95.1)	46/48 (95.8)	35/35 (100)	98/99 (99)	20/21 (95.2)	20/21 (95.2)	-
Anaesthesia device	91/159 (57.2)	33/82 (40.2)	18/48 (37.5)	10/35 (28.6)	65/99 (65.7)	6/21 (28.6)	6/21 (28.6)	<0.001*
Defibrillator	78/159 (49.1)	39/82 (47.4)	12/48 (25)	11/35 (31.4)	46/99 (46.5)	5/21 (23.8)	7/21 (33.3)	0.015**
Monitor	155/159 (97.5)	75/82 (91.5)	43/48 (89.6)	33/35 (94.3)	93/99 (93.9)	18/21 (85.7)	17/21 (81)	-
Perfusor	43/159 (27)	25/82 (30.5)	5/48 (10.4)	10/35 (28.6)	31/99 (31.3)	1/21 (4.8)	2/21 (9.5)	0.011***
Crash trolley	133/159 (83.6)	63/82 (76.8)	34/48 (70.8)	27/35 (77.1)	72/99 (72.7)	14/21 (66.7)	19/21 (90.5)	-
Appropriate area	81/159 (50.9)	35/82 (42.7)	25/48 (52.1)	16/35 (45.7)	41/99 (41.4)	11/21 (52.4)	16/21 (76.2)	N/S

N/S: Non-specific
 *p<0.05, it is seen that anaesthesia device for non-operating room anaesthesia is most frequently available in the Central Anatolia region and that there is a statistically significant difference between the regions.
 **p<0.05, it is seen that defibrillator for non-operating room anaesthesia is most frequently available in the Marmara Region and that there is a statistically significant difference between the regions.
 ***p<0.05, it is seen that perfusor for non-operating room anaesthesia is most frequently available in the Central Anatolia region and that there is a statistically significant difference between the regions

Table 7. Usage rates of anaesthesia methods performed by anaesthesiology specialists during non-operating room anaesthesia according to institutions

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
Conscious sedation	80/105 (76.2)	130/151 (86.1)	89/105 (84.8)	56/104 (53.8)	<0.001*
Deep sedation	78/105 (74.3)	119/151 (78.8)	80/105 (76.2)	100/104 (96.2)	<0.001**
Neuraxial blocks	4/105 (3.8)	31/151 (20.5)	10/105 (9.5)	10/104 (9.6)	<0.001***
Peripheral nerve blocks	2/105 (1.9)	12/151 (7.9)	7/105 (6.7)	5/104 (4.8)	N/S
General anaesthesia	14/105 (13.3)	83/151 (55)	39/105 (37.1)	43/104 (41.3)	<0.001****

N/S: Non-specific
 *p<0.05, The rate of performing conscious sedation significantly differed between the institutions; the rate is the highest in University Hospitals.
 **p<0.05, The rate of performing deep sedation significantly differed between the institutions; the rate is the highest in Private Hospitals.
 ***p<0.05, The rate of performing neuraxial blocks significantly differed between the institutions; the rate is the highest in University Hospitals.
 ****p<0.05, The rate of performing general anaesthesia significantly differed between the institutions; the rate is the highest in University Hospitals

Figure 8. The approach of Anaesthesiology and Reanimation Specialists to geriatric age group concerning non-operating room anaesthesia

between the institutions in terms of the rates of conscious sedation, deep sedation, neuraxial block and general anaesthesia applications. However, no significant difference was determined between the institutions in terms of the rates of peripheral nerve block applications (Table 7).

The participants were asked whether they use regional anaesthesia techniques while performing NORA and 469 responses were obtained. Among responders, 114 (24.3%) reported that they used and 355 (75.7%) reported that they did not use regional anaesthesia techniques during NORA. Distribution of the techniques and the case-groups in which the techniques are used are illustrated in Figures 12 and 13. No statistically significant difference was determined when the use of regional anaesthesia techniques during NORA was compared between the institutions that the participants have been working at (Figure 14).

When the participants were questioned about the monitoring methods that they use during NORA, 472 participants responded (Table 8). With regard to the methods of monitoring, central venous pressure monitoring, Near Infra-Red Spectroscopy (NIRS), Activated Clotting Time (ACT) mea-

Figure 9. The preferences of Anaesthesiology and Reanimation Specialists on using or not using emergency bags during non-operating room anaesthesia

Figure 12. Distribution of regional anaesthesia techniques used by Anaesthesiology and Reanimation specialists during non-operating room anaesthesia

Figure 10. Preferences of Anaesthesiology and Reanimation Specialists to use emergency bags during non-operating room anaesthesia among institutions
*The rates of anaesthesiology and reanimation specialists using emergency bags during non-operating room anaesthesia significantly differed among institutions ($p=0.000$), (Figure 23).

Figure 13. Distribution of conditions in which regional anaesthesia is used during non-operating room anaesthesia

Figure 11. Distribution of anaesthesia methods preferred by Anaesthesiology and Reanimation Specialists in non-operating room anaesthesia

Figure 14. The preferences of the Anaesthesiology and Reanimation specialists to use regional anaesthesia during non-operating room anaesthesia according to institutions
* $p<0.05$ The highest rate of regional anaesthesia use was in university hospitals and there was a significant difference between the institutions in terms of regional anaesthesia use

surement, and body temperature measurement were reported in the "Other" option. Significant differences were observed in the frequency of the methods of monitoring between the institutions (Table 9).

Table 10 illustrates the hypnotic agents reported by anaesthesiology and reanimation specialists to be used for sedoanalgesia in adult and paediatric patients during non-operating room anaesthesia practice. Comparing the institutions that the specialists have been working in terms of hypnotic agents, statistically significant difference was found between the institutions in terms of midazolam and ketamine use in adults

and propofol and ketamine use in paediatric patients (Tables 11, 12).

When the participants of the survey were questioned about analgesic agents that they preferred for sedoanalgesia during NORA, 459 participants responded (Table 13). Comparing

Table 8. Monitoring methods used by Anaesthesiology and Reanimation Specialists for non-operating room anaesthesia

Methods of Monitoring	Number	(%)
Peripheral oxygen saturation via pulse oximetry	465	98.5
Non-invasive blood pressure	413	87.5
Electrocardiography (ECG)	403	85.4
End-Tidal Carbon dioxide monitoring (ETCO ₂)	115	24.4
Invasive arterial monitoring	85	18
Arterial blood gas (ABG) analysis	68	14.4
Bispectral Index (BIS) monitoring	20	4.2
Cerebrospinal fluid (CSF) pressure monitoring	9	1.9
“Train of Four” (TOF) monitoring	5	1.0
Others	5	1.0

Table 9. Distribution of monitoring methods used by Anaesthesiology and Reanimation Specialists for non-operating room anaesthesia among institutions where the specialists have been working

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
ECG	78/105 (74.3)	141/151 (93.4)	96/105 (91.4)	84/105 (80)	<0.001*
Non-invasive blood pressure	89/105 (84.8)	139/151 (92.1)	93/105 (88.6)	88/105 (83.8)	N/S
Invasive arterial monitoring	3/105 (2.9)	49/151 (32.5)	17/105 (16.2)	15/105 (14.3)	<0.001**
Peripheral oxygen saturation	103/105 (98.1)	148/151 (98)	104/105 (99)	104/105 (99)	-
ETCO ₂	10/105 (9.5)	62/151 (41.1)	28/105 (26.7)	15/105 (14.3)	<0.001***
CSF pressure	0	8/151 (5.3)	1/105 (1)	0	-
TOF	0	3/151 (2)	1/105 (1)	1/105 (1)	-
ABG analysis	2/105 (1.9)	38/151 (25.2)	15/105 (14.3)	13/105 (12.4)	<0.001****
BIS	1/105 (1)	6/151 (4)	10/105 (9.5)	2/105 (1.9)	-
Central venous pressure	0	1/151 (0.7)	0	0	-
NIRS	0	0	0	1/105 (1)	-
ACT	0	1/151 (0.7)	0	0	-
Body temperature	0	1/151 (0.7)	0	0	-
N/S: Non-specific					
*p<0.05, Rate of using ECG monitoring differ significantly between the institutions; it is the highest in University Hospitals					
**p<0.05, Rate of using invasive artery monitoring differ significantly between the institutions; it is the highest in University Hospitals					
***p<0.05, Rate of using ETCO ₂ monitoring differ significantly between the institutions; it is the highest in University Hospitals					
****p<0.05, Rate of using ABG monitoring differ significantly between the institutions; it is the highest in University Hospitals					

these analgesic agents used by anaesthesiology and reanimation specialists for sedoanalgesia between the institutions, statistically significant difference was determined between the institutions in terms of remifentanyl and ketamine use ($p<0.05$) (Table 14).

The question about the use of routine antagonization during NORA was responded by 471 participants. Statistically significant difference was found between the institutions in terms of antagonization practices of anaesthesiology and reanimation specialists (Table 15). Figure 15 illustrates the antagonist drugs used by anaesthesiology and reanimation specialists, who perform antagonization ($n=333$) and the dis-

tribution of antagonist drugs. Comparing the drugs used by anaesthesiology and reanimation specialists for antagonization during NORA between the institutions that the specialists have been working at, it was determined that neostigmine and sugammadex use was significantly different between the institutions (Table 16).

When the participants were questioned “where” they provide recovery for ambulatory patients that underwent anaesthesia performed outside the operating room, 464 participants responded (Figures 16, 17).

The specialists participated in the survey reported desaturation (70.8%) as the leading complication encountered during

Table 10. Hypnotic agents used by Anaesthesiology and Reanimation Specialists in paediatric and adult patients during non-operating room anaesthesia

Hypnotic Agents	Adult Patients (n=473) (%)	Paediatric Patients (n=442) (%)
Midazolam	424 (89.6)	377 (85.3)
Propofol	431 (91.1)	223 (50.5)
Ketamine	185 (39.1)	331 (74.9)
Etomidate	16 (3.4)	2 (0.5)
Thiopental	28 (5.9)	39 (8.8)
Fentanyl	14 (3)	2 (0.5)
Remifentanyl	4 (0.8)	2 (0.5)
Dexmedetomidine	3 (0.6)	1 (0.2)
Others	3 (0.6)	2 (0.4)

Table 11. Distribution of hypnotic agents used by Anaesthesiology and Reanimation Specialists for sedoanalgesia in adult patients during non-operating room anaesthesia among institutions

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
Midazolam	97/108 (89.8)	135/150 (90)	102/105 (97.1)	87/105 (82.9)	0.008*
Propofol	93/108 (86.1)	140/150 (93.3)	96/105 (91.4)	98/105 (93.3)	N/S
Ketamine	32/108 (29.6)	83/150 (55.3)	41/105 (39)	28/105 (26.7)	<0.001**
Etomidate	4/108 (3.7)	8/150 (5.3)	1/150 (1)	3/105 (2.9)	-
Thiopental	5/108 (4.6)	10/150 (6.7)	7/105 (6.7)	5/105 (4.8)	N/S

N/S: Non-specific

*p<0.05, There is a statistically significant difference between the institutions in terms of midazolam use in adult patients; midazolam use in adult patients is the highest in Training and Research Hospitals

**p<0.05, There is a statistically significant difference between the institutions in terms of ketamine use in adult patients; ketamine use in adult patients is the highest in University Hospitals

Table 12. Distribution of hypnotic agents used by Anaesthesiology and Reanimation Specialists in paediatric patients during non-operating room anaesthesia among institutions

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
Midazolam	75/94 (79.8)	128/146 (87.7)	89/101 (88.1)	83/97 (85.6)	N/S
Propofol	30/94 (31.9)	93/146 (63.7)	47/101 (46.5)	51/97 (52.6)	<0.001*
Ketamine	66/94 (70.2)	125/146 (85.6)	80/101 (79.2)	59/97 (60.8)	<0.001**
Etomidate	0	2/146 (1.4)	0	0	-
Thiopental	9/94 (9.6)	7/146 (4.8)	11/101 (10.9)	11/97 (11.3)	N/S

N/S: Non-specific

*p<0.05, There is a statistically significant difference between the institutions in terms of propofol use in paediatric patients; rate of propofol use in paediatric patients is the highest in University Hospitals

**p<0.05, There is a statistically significant difference between the institutions in terms of ketamine use in paediatric patients; rate of ketamine use in paediatric patients is the highest in University Hospitals

non-operating room anaesthesia practices (Figure 18). Of the participants, 91.1% reported that they have never encountered a complication resulting in mortality. The reported complications are demonstrated in Table 17. Comparing the anaesthesiology and reanimation specialists that encountered complications that resulted in mortality during NORA in terms of

age, the duration of working as a physician and as a specialist, no statistically significant difference was determined (p>0.05).

Discussion

American Society of Anaesthesiologists (ASA) and TSAR Guidelines highlight the minimal precautions necessary to

Table 13. The names and usage rates of analgesic agents used by Anaesthesiology and Reanimation Specialists during non-operating room anaesthesia

Analgesic Agents	Number	(%)
Fentanyl	348	75.8
Ketamine	195	42.5
Remifentanyl	141	30.7
Alfentanil	46	10
Meperidine	7	1.5
Morphine	3	0.7
Tramadol	2	0.4

Figure 15. Drugs that are preferred to be used by Anaesthesiology and Reanimation specialists to antagonize neuromuscular block in non-operating room anaesthesia

Table 14. Distribution of analgesic agents used by Anaesthesiology and Reanimation Specialists for sedoanalgesia during non-operating room anaesthesia procedure among institutions

	State Hospital n (%)	University Hospital n (%)	Training and Research Hospital n (%)	Private Hospital n (%)	p
Fentanyl	81/103 (78.6)	108/150 (72)	72/101 (71.3)	83/101 (82.2)	N/S
Alfentanil	8/103 (7.8)	10/150 (6.7)	12/101 (11.9)	16/101 (15.8)	N/S
Remifentanyl	19/103 (18.4)	54/150 (36)	34/101 (33.7)	32/101 (31.7)	0.021*
Ketamine	31/103 (30.1)	83/150 (55.3)	50/101 (49.5)	31/101 (30.7)	<0.001**

N/S: Non-specific

*p<0.05, There is a statistically significant difference between the institutions in terms of remifentanyl use; rate of using remifentanyl is the highest in University Hospitals.

**p<0.05, There is a statistically significant difference between the institutions in terms of ketamine use; rate of ketamine use is the highest in University Hospitals

Table 15. The rate of antagonization use by the anaesthesiology and reanimation specialists during non-operating room anaesthesia according to the institutions they have been working at

	I perform antagonization in every patient n (%)	I perform antagonization when necessary n (%)	I do not perform antagonization as drugs are not available n (%)	I do not perform antagonization n (%)
State Hospital	4/108 (3.7)	56/108 (51.9)	9/108 (8.3)	39/108 (36.1)
University Hospital	12/150 (8)	114/150 (76)	7/150 (4.7)	17/150 (11.3)
Training and Research hospital	13/105 (12.4)	63/105 (60)	6/105 (5.7)	23/105 (21.9)
Private Hospital	6/103 (5.8)	62/103 (60.2)	5/103 (4.9)	30/103 (29.1)

Table 16. Distribution of drugs used by anaesthesiology and reanimation specialists for antagonization according to the institutions they have been working at

	State Hospital n (%)	University Hospital n (%)	Training and Research hospital n (%)	Private Hospital n (%)	p
Naloxone	29/53 (54.7)	56/113 (49.6)	30/62 (48.4)	32/56 (57.1)	N/S
Flumazenil	39/53 (73.6)	76/113 (67.3)	44/62 (71)	40/56 (71.4)	N/S
Neostigmine	9/53 (17)	47/113 (41.6)	26/62 (41.9)	17/56 (30.4)	0.009*
Sugammadex	2/53 (3.8)	24/113 (21.2)	17/62 (27.4)	12/56 (21.4)	0.011**

N/S: Non-specific

*p<0.05, It is seen that the rate of using neostigmine is the highest in Training and Research Hospitals and in University Hospitals, and there is a statistically significant difference between the institutions.

**p<0.05, It is seen that the rate of using sugammadex is the highest in Training and Research Hospitals and there is a statistically significant difference between the institutions

Figure 16. Recovery areas of patients undergoing non-operating room anaesthesia

Figure 17. The recovery areas used for patients that underwent non-operating room anaesthesia according to institutions

Figure 18. Complications that anaesthesiologists encounter during non-operating room anaesthesia applications

be taken for anaesthesia practices outside the operating room and emphasize the necessity of creating basic conditions for patient safety (6).

Although the literature review in PubMed revealed the presence of publications concerning various anaesthesia practices performed outside the operating room by anaesthesiology and reanimation specialists in Turkey and in the World, no publication investigating the attitudes and behaviours of anaesthesiology and reanimation specialists as a whole in non-operating room anaesthesia practices was encountered.

Table 17. Complications reported by the Anaesthesiology and Reanimation Specialists as the cause of mortality

Complications reported as the cause of mortality	Number
Hypoxia	8
Procedure-related bleeding or embolus	6
Pulmonary aspiration	3
Heart failure	3
Cardiac arrest	3
Myocardial infarction	3
Hypotension	3
Anaphylaxis	2
Surgery-related complications in cases with TAVI	2
Surgery-related complications in cardiovascular interventions	2
Atherosclerotic heart disease	1
Procedure-related pneumothorax	1
Herniation due to increased intracranial pressure	1
Total	38

TAVI: transcatheter aortic valve implantation

Cohen et al. (7) sent a questionnaire consisted of 22 questions by electronic mail to 5000 members of American Gastroenterology College to obtain data on endoscopic sedation and monitoring in the United States and obtained responses from a total of 1353 (27.1%) members. Riphaut et al. (8) conducted a survey by delivering a questionnaire consisting of 21 questions about sedation and monitoring in gastrointestinal endoscopy to the 3802 members of *German Society of Digestive and Metabolic Diseases* (DGVS) to investigate the use of sedation for gastrointestinal endoscopy and obtained responses from 1061 (28%) subjects. In the present study, the response rate was 11.5% for anaesthesiology and reanimation specialists that received the questionnaire by electronic mail, whereas it was 32.6% for the attendants of TARC 2012, to whom the questionnaire was delivered directly, and overall response rate was calculated to be 17%. Thereby, the response rate was higher in the present study than that statistically targeted.

Return of the questionnaire was obtained from 59 (72.8%) of 81 provinces that was present in Turkey in the period when the present study was conducted. Participation from metropolitans was higher. The highest response rates in decreasing order were obtained from Istanbul (24.8%), Ankara (14.8%) and Izmir (10.8%). This result arises from the higher number of anaesthesiology and reanimation specialists working in these provinces.

Lower response rates obtained from electronic mails in the present study as compared to the surveys conducted by Co-

hen et al. (7) and Riphaut et al. (8) results from limited number of surveys performed in electronic media in Turkey, as well as from the fact that anaesthesiology and reanimation specialists also work other than non-operating room anaesthesia practices.

When the anaesthesiology and reanimation specialists participated in the survey were questioned whether they received requests to perform anaesthesia during examinations and interventions that require non-operating room anaesthesia practice in the institutions they have been still working and whether non-operating room anaesthesia practice is performed, 93% of the participants responded that there were requests and anaesthesia was performed.

Methods of anaesthesia used during NORA include conscious or deep sedation, general anaesthesia and regional anaesthesia (9). İyilikci et al. (9) analysed the records of 1622 cases that underwent NORA at Dokuz Eylül University Faculty of Medicine and reported that sedation was performed in 1526 interventions, regional anaesthesia was performed in 60 interventions and general anaesthesia was performed in 36 interventions. Froehlich et al. (10) (EPAGE Study Group) conducted a study comprising 6004 patients that underwent colonoscopy at 22 centres from 11 countries, and reported that conscious sedation was performed in 53% and deep sedation was performed in 30%, whereas no sedation was performed in 17% of the patients. In the present study, when the participants were inquired about the method of anaesthesia they perform, they reported deep sedation (80.9%) as the most commonly preferred method followed by conscious sedation (76.2%) and general anaesthesia (38.9%). Comparing the participants according to the institutions they have been working at, statistically significant difference was found between the institutions in terms of rates of conscious sedation, deep sedation, neuraxial blocks and general anaesthesia practices. Whilst, the use of conscious sedation, general anaesthesia and neuraxial blocks was most frequently reported by the specialists from university hospitals, the use of deep sedation was most frequently reported by the specialists working at private hospitals. This difference might have resulted from the wide range of patients in the university hospitals.

In the present study, the rate of using regional anaesthesia during NORA was reported to be 24.3%. The participants reported that they performed regional anaesthesia methods most frequently for endovascular interventions (34.6%) followed by painless delivery. Ruppert et al. (11) compared various anaesthesia techniques in 5557 patients, who had been treated by endovascular aortic repair (EVAR) between 1997 and 2004 at 164 centres for infrarenal aortic aneurysms. General anaesthesia, local anaesthesia and regional anaesthesia methods were compared in high-risk and low-risk patient groups, and it was found that regional anaesthesia and local anaesthesia were superior to general anaesthesia in terms of duration of hospital stay, morbidity and mortality rates.

When the participants' performing regional anaesthesia was evaluated according to the institutions they have been working at, it was determined that regional anaesthesia is most frequently performed in university hospitals (34.4%) and least frequently performed in state hospitals (8.6%). A significant difference was determined between the institutions.

Monitoring methods vary according to the intervention, patient characteristics and method of anaesthesia used. In their study conducted with patients that underwent colonoscopy, Froehlich et al. (10) (EPAGE Study Group) reported that pulse oximetry monitoring was used in 77%, blood pressure monitoring was used in 34% and electrocardiography monitoring was used in 24% of the patients. In the present study, the most frequently used monitoring methods in descending order were pulse oximetry (98.5%), non-invasive blood pressure (87.5%) and electrocardiography (85.4%). In a randomized controlled trial comprising 132 patients that underwent emergency interventions, Deitch et al. (12) investigated whether the use of capnography in reducing the incidence of hypoxic events during propofol sedation is more effective than standard monitoring. Whilst hypoxia was observed in 17 (25%) of 68 cases, in which capnography was used, it was observed in 27 (42%) of 64 cases, in which capnography was not used. In the present study, the rate of capnography use was 24.4% among the participants. The present study determined that the use of ETCO_2 monitoring, ABG analysis, ECG, and invasive arterial monitoring was more prevalent in university hospitals with a statistically significant difference between the institutions. This difference may be explained by the fact that more invasive and complicated cases are admitted to university hospitals.

Complications such as respiratory depression and hypoxemia may be encountered during moderate or deep sedation. Guidelines suggest that administering oxygen during procedures might reduce the incidence of such complications (6). In the present study, the rate of oxygen use during sedation was 99.6%.

The drugs more frequently used for sedation during NORA include propofol, ketamine, midazolam, opioids, thiopental, ketofol and chloral hydrate. In a survey conducted in Germany that investigated sedation for gastrointestinal endoscopy, Riphaut et al. (8) observed that the most frequently used sedative agents were midazolam in 82% of cases and propofol in 74% of cases and reported that endoscopist's satisfaction was higher in those who received propofol as compared to those who received benzodiazepine. In the present study, the most frequently used two hypnotic drugs reported by the participants were midazolam (89.6%) and propofol (91.1%) in adult patients, and midazolam (85.3%) and ketamine (74.9%) in paediatric patients. In the present study, midazolam and ketamine use in adult patients differed significantly between the institutions; while midazolam is being used more frequently in training and research hospitals

(97.1%), ketamine use was found to be higher in university hospitals (55.3%). The present study revealed a significant difference between the institutions also in terms of propofol and ketamine use in paediatric patients; it was observed that these two agents are most frequently used in university hospitals. The rate of propofol and ketamine use in university hospitals was 63.7% and 85.6%, respectively. The significantly higher rate of ketamine use in paediatric patients in university hospitals might have resulted from higher number of interventions and ketamine's providing a more stable hemodynamic monitoring and causing less respiratory depression.

With regard to antagonist drug use, 7.6% of the participants reported that they administer antagonist drug in each patient, whereas 63.1% reported that they perform antagonization when necessary.

Cohen et al. (7) conducted a survey on endoscopic sedation and monitoring in 5000 physicians, who are the members of American Gastroenterology College, and reported that the majority (>98%) of esophagogastroduodenoscopies and colonoscopies was performed under sedation. In the present survey, the rate of performing sedation outside the anaesthesiology department in the institutions that the participants have been working was reported to be 56%. It was determined that sedation was most frequently performed by gastroenterology specialists (67.9%).

In the present study, it was reported that preoperative evaluation of the patients that would undergo NORA were performed just before the procedure by 38% of anaesthesiology and reanimation specialists and that 41% the procedures were not scheduled by including in the surgery list. It is observed that scheduling was most commonly performed in university hospitals at a rate of 74.7% and least commonly in the state hospitals at a rate of 37.1%, with a significant difference between the institutions. This difference might have resulted from the differences between the administrative structures of institutions.

Although ASA class I-II patients are accepted for NORA, today many centres perform anaesthesia outside the operating room also in ASA class III and IV patients that are medically stable. İyilikci et al. (9) reviewed the records of 1622 cases that underwent NORA in terms of ASA classes and determined that 1500 (92.4%) were ASA class I, 90 (5.6%) were ASA class II and 32(2%) were ASA class III; there was no ASA class IV patient. In the present study, the rate of responders reporting that they perform NORA only in ASA class I patients was 2%, in ASA class I and II patients was 29%, and in ASA class I-II-III was 30%; the rate of responders reporting that they perform NORA for all class of patients was reported to be 39%. In the period between these studies, it is observed that anaesthesia under non-operating room conditions has begun to be performed in also much more risky patients (ASA class IV). This difference might result from the advanced technological facilities' allowing invasive interventions in more risky

patients, as well as from the increased number of requests to perform such interventions and enhanced experiences of anaesthesiology and reanimation specialists concerning non-operating room anaesthesia practices.

According to the American Society of Anaesthesiologists "*guidelines for preoperative fasting*", preoperative fasting period for elective surgery patients is recommended to be 6 hours for light meals and 8 hours for the other solid or fatty meals (13). In the present study, it was observed that 9.4% of the participants ask for at least 4 hours, 57% ask for at least 6 hours, 31.5% ask for at least 8 hours, and 1.5% ask for at least 12 hours fasting period for solid foods in elective patients and that 0.6% of the participants do not inquire fasting period.

In the present study, complications that are most frequently encountered during non-operating room anaesthesia practices of the participants included primarily desaturation at a rate of 70.8%, followed by nausea-vomiting at a rate of 11.4% and hypotension at a rate of 10.5%. Moreover, 8.9% of anaesthesiology and reanimation specialists reported that they encountered complications that resulted in mortality. İyilikci et al. (9) conveyed their experiences on non-operating room anaesthesia in a retrospective analysis and reported that serious complications were encountered in 6 of 1622 cases including heart attack during MRI, intracranial haemorrhage during cerebral embolization procedure, puncture needle break during bone marrow biopsy, and artery perforation during hepatic hydatid cyst aspiration.

The main factors that limit the present study were considered to be the facts that anaesthesiology and reanimation specialists also work on other things other than non-operating room anaesthesia practices, lack of similar studies on non-operating room anaesthesia practices in the literature, and absence of an official electronic mail recording system that enable contact with anaesthesiology and reanimation specialists in Turkey. In addition, the study unveiled that there is no official recording system that would facilitate contact with anaesthesiology and reanimation specialists in this country. National data bases can be established on this subject, thereby the number of similar studies can be increased and accelerated information sharing among anaesthesiology and reanimation specialists might be provided.

Conclusion

In conclusion, compliance with the standards and safety precautions specified by the guidelines is the key for the prevention of complications in non-operating room anaesthesia practices. The present study analysed the current status of anaesthesia practices performed outside the operating room in Turkey. Comprehensive analysis of the data concerning the attitudes, behaviours and practices of anaesthesiology and reanimation specialists working in Turkey on non-operating room anaesthesia and monitoring facilities as well might be

a guide for precautions that are necessary to be taken for safe NORA. As the consequence of the present study, we are in the opinion that organization on non-operating room anaesthesia practice remains inadequate in Turkey, different practices are being performed by physicians other than anaesthesiology and reanimation specialists and monitoring methods recommended by ASA are not frequently used during these procedures, recording systems are not eligible, some hospitals have no anaesthesia practice outside the operating room, and assistant training on this subject is inadequate.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Dokuz Eylül University.

Informed Consent: “Patients” did not inclusion of in our study, so “patient consent” is not available.

Peer-review: Externally peer-reviewed.

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Annex-1. "Survey that Investigates the Attitudes and Behaviours of Anaesthesiology Specialists concerning Anaesthesia applications performed outside the Operating Room in Turkey"

Dear Anaesthesiology Specialist, with this questionnaire we aimed to ask the questions we prepared about non-operating room anaesthesia to all anaesthesia specialists in Turkey. Consequently, data on the experiences and preferences of anaesthesiologists concerning non-operating room anaesthesia in Turkey will be obtained.

Thank you for your interest to our questionnaire, which takes about 10 minutes."

A. DEMOGRAPHIC DATA

1. Age:
2. Sex: Female..... Male.....
3. The time you have been working as a doctor:
4. The time you have been working as an anaesthesiology specialist:
5. The province you have been working in:

B. INSTITUTION INFORMATION

6. Which one of the following institutions matches best the facility you are still working at?
 - a) State Hospital
 - b) University Hospital
 - c) Training and Research Hospital
 - d) Private Hospital
 - e) Other (.....)
7. Number of beds in the institution:

C. DATA ON NON-OPERATING ROOM ANAESTHESIA

8. Have you ever been present in *anaesthesia applications outside the operating room* in cases that underwent procedures, interventions or surgeries performed for diagnostic and/or treatment purposes over the course of your anaesthesiology training?
 - a) Yes
 - b) No
9. Are you requested to administer *anaesthesia* for procedures, interventions or surgeries that require anaesthesia outside the operating room and is non-operating room anaesthesia being performed in the institution you have been working as a specialist?
 - a) There is request and non-operating room anaesthesia is being performed
 - b) There is request but non-operating room anaesthesia cannot be performed
 - c) There is no request
10. If the answer to the question 9 is yes, for how many years non-operating room anaesthesia is being performed in your institution? If you know, please answer (.....)
11. Is there any department(s) other than anaesthesiology that perform sedation in the institution you have been working?
 - a) No
 - b) I have no idea
 - c) Yes Please specify
12. In which departments do you administer anaesthesia outside the operating room most frequently?
 - a) Paediatrics
 - b) Interventional radiology
 - c) Cardiology
 - d) Radiation oncology
 - e) Obstetrics and Gynaecology
 - f) Gastroenterology
 - g) Urology
 - h) Other (.....)
13. Do the patients that would undergo non-operating room anaesthesia are scheduled by being included on the *surgery list*?
 - a) Yes
 - b) No
14. At what time do you perform preoperative evaluation in patients that would undergo non-operating room anaesthesia for elective procedures? *Please mark one or more options.*
 - a) Just prior to the procedure
 - b) Within the same day

- c) 2-7 days before the elective procedure
 - d) The day before the elective procedure
 - e) I do not perform routine preoperative evaluation for the patients that would undergo non-operating room anaesthesia
 - f) Other (.....)
15. To which ASA risk groups do you administer non-operating room anaesthesia?
- a) To only ASA I patients
 - b) To ASA I and II patients
 - c) To ASA I-II-III patients
 - d) To all patient groups
16. Do you obtain written consent from adult patients that would undergo non-operating room anaesthesia or from the legal representatives for paediatric patients or for the patients that are unable to give consent and do you have written informed consent form?
- a) We have written informed consent form and I routinely obtain consent
 - b) We have written informed consent form, but I do not obtain consent from every patient
 - c) We neither have written informed consent form nor obtain consent
 - d) We do not have written informed consent form, I obtain signature only from patients I consider risky by making them to write down that they have been informed about the risks of anaesthesia
17. How many hours of fasting period do you ask for solid foods in adult patients that would undergo non-operating room anaesthesia for elective procedures?
- a) I do not question the fasting period
 - b) I ask for at least 4 hours of fasting period
 - c) I ask for at least 6 hours of fasting period
 - d) I ask for at least 8 hours of fasting period
 - e) I ask for at least 12 hours of fasting period
18. Do you stipulate condition of company for ambulatory patients that would undergo non-operating room anaesthesia procedure?
- a) I stipulate condition of company for all patients regardless of age group
 - b) I stipulate condition of company for only paediatric patients and disabled adults
 - c) I decide based on the patient's situation if I consider it necessary
 - d) No, I do not stipulate condition of company
19. Do you have a lower age limit that you do not perform non-operating room anaesthesia in paediatric age group?
- a) I perform non-operating room anaesthesia in all age groups
 - b) I do not perform non-operating room anaesthesia under the age of 1 year
 - c) I do not perform non-operating room anaesthesia under the age of 2 years
 - d) Other (.....)
20. Do you have an upper age limit in geriatric age group that you do not perform non-operating room anaesthesia?
- a) I perform non-operating room anaesthesia in all age groups
 - b) I do not perform non-operating room anaesthesia over the age of 65 years
 - c) I do not perform non-operating room anaesthesia over the age of 70 years
 - d) Other (.....)
21. Of whom does the *anaesthesia team* for non-operating room anaesthesia procedures consist of in the institution you have been still working?
- Please mark one or more options.
- a) Anaesthesia specialist
 - b) Anaesthesia technician
 - c) Nurse
 - d) Health officer
 - e) Other (.....)
22. Which facilities and equipment are available in the places you perform non-operating room anaesthesia?
- a) Oxygen source
 - b) Aspirator
 - c) Anaesthesia device

- d) Defibrillator
 - e) Monitor
 - f) Perfusor
 - g) Crash Cart
 - h) Appropriate area that is large enough
23. Do you use a check list for necessary equipment before non-operating room anaesthesia application?
- a) Yes
 - b) No
24. Do you have an extra emergency bag including medications and equipment prepared for non-operating room anaesthesia procedures?
- a) Yes
 - b) No, I request it from the operating room
 - c) No, I use the equipment of the department where the procedure is performed
25. Which method or methods of anaesthesia do you prefer in adult patients for non-operating room anaesthesia? Please mark one or more options.
- a) Conscious sedation
 - b) Deep sedation
 - c) Neuraxial blocks
 - d) Peripheral nerve blocks
 - e) General anaesthesia
26. Do you use regional anaesthesia techniques for non-operating room anaesthesia procedures?
- a) Yes
 - b) No
27. In which case(s) do you prefer regional anaesthesia techniques during non-operating room anaesthesia?
(.....)
28. Which regional anaesthesia techniques do you use during non-operating room anaesthesia procedure?
- a) Spinal anaesthesia
 - b) Epidural anaesthesia
 - c) Combined spinal-epidural anaesthesia
 - d) Peripheral nerve blocks
 - e) Other (.....)
29. Which methods of monitoring do you use for non-operating room anaesthesia procedure?
Please mark one or more options.
- a) Electrocardiography
 - b) Non-invasive blood pressure
 - c) Invasive arterial monitoring
 - d) Peripheral oxygen saturation via pulse
 - e) ETCO₂
 - f) CSF pressure monitoring
 - g) TOF monitoring
 - h) Arterial blood gas analysis
 - i) BIS monitoring
 - j) Other (.....)
30. Which one(s) of the following hypnotic agents do you prefer most for sedoanalgesia in *adult patients* during non-operating room anaesthesia procedure?
- a) Midazolam
 - b) Propofol
 - c) Ketamine
 - d) Etomidate
 - e) Thiopental
 - f) Other (.....)

31. Which one(s) of the following hypnotic agents do you prefer most for sedoanalgesia in *paediatric patients* during non-operating room anaesthesia procedure?
- Midazolam
 - Propofol
 - Ketamine
 - Etomidate
 - Thiopental
 - Other (.....)
32. Which one(s) of the following analgesic agents do you prefer most for sedoanalgesia during non-operating room anaesthesia procedure?
- Fentanyl
 - Alfentanil
 - Remifentanyl
 - Ketamine
 - Other (.....)
33. Do you routinely perform antagonization?
- Do you routinely perform antagonization?
 - When necessary
 - No, the drug is unavailable
 - No
34. Which of the following drug(s) do you use for antagonization? (You can mark more than one option.)
- Naloxone
 - Flumazenil
 - Neostigmine
 - Sugammadex
35. In where do you provide recovery for ambulatory patients that have undergone anaesthesia outside the operating room?
- Where the procedure was performed
 - In the clinic of the relevant department
 - In waiting room
 - In recovery unit
 - Other (.....)
36. What are the complications you have encountered most during your non-operating room anaesthesia practices?
- Desaturation
 - Hypotension
 - Bradycardias
 - Nausea-vomiting
 - Urine retention
 - Other (.....)
37. Have you ever encountered any complication that resulted in mortality during anaesthesia procedure outside the operating room?
- Yes
 - No
38. If "yes" to the question 37, what were the causes of mortality?
(.....)

THANK YOU