

Public awareness about the specialty of anesthesiology and the role of anesthesiologists: a national survey

Jae Jun Lee¹, Nak Hun Lee¹, Chong Min Park², Sung Jin Hong², Myoung-Hoon Kong³,
Kook Hyun Lee⁴, Jun Heum Yon⁵, and Sun Ok Song⁶

Department of Anesthesiology and Pain Medicine, ¹Hallym University School of Medicine, Chuncheon, ²Catholic University College of Medicine, Seoul, ³Korea University College of Medicine, Seoul, ⁴Seoul National University College of Medicine, Seoul, ⁵Inje university College of Medicine, Busan, ⁶Yeungnam University College of Medicine, Daegu, Korea

Background: The aims of this national survey were to determine the views of Korean people regarding the specialty of anesthesiology and the role of anesthesiologists and to consider the ways in which individual anesthesiologists and the Korean Society of Anesthesiologists inform the public.

Methods: This off-line national survey was conducted by a professional research organization to obtain exact and reliable data. The questionnaire included structured questions to identify perceptions of the specialty of anesthesiology and the role of anesthesiologists inside and outside the operating room, people's desire for explanation of anesthesia by anesthesiologists, and their opinion about the best way to raise awareness about anesthesia and anesthesiologists.

Results: Of the respondents, 25.2% did not know that anesthesiologists are in charge of anesthesia during surgery. Furthermore, even respondents who knew that had very little knowledge of anesthesiologists' actual roles inside and outside the operating room. Respondents wanted their anesthesiologist to inform them about their anesthesia.

Conclusions: The public's awareness regarding the role of anesthesiologists seems to be inadequate. To improve this awareness, in hospitals, each anesthesiologist should provide patients with more exact and detailed information. Simultaneously, the National Society of Anesthesiology should provide systematic information reflecting the public's thoughts. (Korean J Anesthesiol 2014; 66: 12-17)

Key Words: Anesthesia, Physician's role, Public opinion.

Received: April 5, 2013. Revised: 1st, April 29, 2013; 2nd, May 27, 2013; 3rd, May 30, 2013. Accepted: June 3, 2013.

Corresponding author: Sun Ok Song, M.D., Ph.D., Department of Anesthesiology and Pain Medicine, Yeungnam University College of Medicine, 317-1, Daemyeong-dong, Nam-gu, Daegu 705-717, Korea. Tel: 82-53-620-3362, Fax: 82-53-626-5275, E-mail: sosong@med.yu.ac.kr

© This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

Following great progress and advances in the field of anesthesia, anesthesiologists now play key roles in the intensive care unit, on the code team, and in the pain clinic, as well as in the operating room. However, there is little public exposure regarding the role of anesthesiologists in the various areas of hospitals. Furthermore, patients' awareness of the roles of anesthesiologists even in the operating room is limited, as proven by several worldwide studies [1-8].

Recently in Korea, the Korean Society of Anesthesiologists (KSA) has attempted to inform the public of the role and importance of anesthesiologists. Additionally, the KSA planned the first national public survey to investigate general knowledge of this topic. This off-line survey was conducted by a professional research organization to obtain exact and reliable data.

The aims of this survey were to determine the views of Koreans on the specialty of anesthesiology and the role of anesthesiologists and to explore the ways in which individual anesthesiologists and the KSA inform the public. This study also evaluated the difference in awareness between people who had undergone surgery under anesthesia and those who had not experienced surgery.

Table 1. Participants' Demographics

	Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
Age				
20 s	120 (24)	155 (30.9)	275 (27.5)	
30 s	152 (30.5)	159 (31.7)	311 (31.1)	
40 s	90 (18)	98 (19.6)	188 (18.8)	
50 s	95 (19)	62 (12.4)	157 (15.7)	
≥ 60 s	42 (8.4)	27 (5.4)	93 (9.3)	
Gender				
Female	304 (60.9)	278 (55.5)	582 (58.2)	
Male	195 (39.1)	223 (44.5)	418 (41.8)	
Education level				
Middle school	33 (6.6)	32 (6.4)	65 (6.5)	
High school	190 (38.1)	178 (35.5)	368 (36.8)	
University	257 (51.5)	273 (54.5)	530 (53)	
Higher	19 (3.8)	18 (3.6)	37 (3.7)	
Occupation				
Student	57 (11.4)	79 (15.8)	136 (13.6)	
Homemaker	97 (19.4)	68 (13.6)	165 (16.5)	
Employed	233 (46.7)	269 (53.7)	502 (50.2)	
Self-employed	62 (12.4)	42 (8.4)	104 (10.4)	
Others	50 (10)	43 (8.6)	93 (9.3)	

Data represent number of respondents (percentage). No significant differences were observed between the two groups.

Table 2. The Public's Awareness Regarding the Roles of Those Involved in Surgery with Anesthesia and the Roles in the Preoperative Period

	Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
A. Basic awareness				
1. In your opinion, who is in charge of anesthesia for surgery?		P < 0.001* [†]		
a. Technician		37 (7.4)	24 (4.8)	61 (6.1)
b. Surgeon		51 (10.2)	25 (5)	76 (7.6)
c. Doctor specialized in anesthesia		361 (72.3)	387 (77.2)	748 (74.8)
d. Nurse		22 (4.4)	13 (2.6)	35 (3.5)
e. Don't know		28 (5.6)	52 (10.4)	80 (8)
2. During an operation, what is the relationship between the surgeon and the anesthesiologist?		P = n.s.		
a. Under the surgeon's orders		206 (41.3)	177 (35.3)	383 (38.3)
b. Under the anesthetic doctor's orders		24 (4.8)	21 (4.2)	45 (4.5)
c. Each has different roles		230 (46.1)	242 (48.3)	472 (47.2)
d. Don't know		39 (7.8)	61 (12.2)	100 (10)
B. Roles during preoperative period				
1. Who determines whether the patient is fit for surgery (operability)?		P = n.s.		
a. Surgeon		432 (86.6)	433 (86.4)	865 (86.5)
b. Doctor specialized in anesthesia		55 (11)	54 (10.8)	109 (10.9)
c. Nurse		7 (1.4)	3 (0.6)	10 (1)
d. Don't know		5 (1)	11 (2.2)	16 (1.6)
2. Who decides if a patient can eat before surgery?		P = n.s.		
a. Surgeon		350 (70.1)	358 (71.5)	708 (70.8)
b. Doctor specialized in anesthesia		58 (11.6)	50 (10)	108 (10.8)
c. Nurse		84 (16.8)	81 (16.2)	165 (16.5)
d. Don't know		7 (1.4)	12 (2.4)	19 (1.9)

Data represent the number of respondents (percentage). P value is difference between group Y and group N. The questionnaire was written in Korean for participants and then translated into English for paper work. *Significant differences between group Y and group N. [†]This P value was analysed based on all variables.

Materials and Methods

The survey was designed by the Korean Society of Anesthesiologists (KSA), to determine the national public's awareness of the specialty of anesthesiology and the role of anesthesiologists. The questionnaire was generated from a review of the literature on a similar topic [1-10] and modified according to local perceptions in the country. The questionnaire collected data on participant characteristics (age, gender, education level, occupation, and history of previous anesthesia exposure) and on perceptions of the specialty of anesthesiology and the role of anesthesiologists inside and outside the operating room. It also explored participants' desire for explanation of anesthesia by anesthesiologists and their opinion about how to raise awareness about anesthesia and anesthesiologists.

The survey was administered to 1000 members of the general public who had no specific ties to anesthesia or surgery and who were selected proportionally from each province according to the national population. This off-line national survey was conducted by a professional research organization in Korea, the Marketing Research Korea Co., Seoul, Korea.

All analyses were performed using SPSS software (ver. 12; SPSS, Chicago, IL, USA), and statistical significance was set at $P < 0.05$. Statistical analyses were performed using Pearson's chi-squared test or Fisher's exact test.

Ethics statement

Ethical approval for this study was not required as per Korean regulations.

Results

Of the 1000 survey participants, 499 (49.9%) reported that they had had previous anesthetic surgical experience (Group Y), and 501 (50.1%) reported no such prior experience (Group N). In group Y, 210 (42%), 105 (21%), 44 (9%), and 85 (17%) participants answered that they had received general anesthesia, spinal anesthesia, ambulatory sedative anesthesia, and other types, respectively. Fifty-five participants (11%) answered "I don't know."

Table 1 summarizes the demographic data of the two groups. Table 2, 3, and 4 show the results of the questionnaire about the

Table 3. The Public's Awareness Regarding the Roles in the Intraoperative Period

Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
1. Who controls vital signs such as blood pressure and heart rate during an operation?	P = n.s.		
a. Surgeon	243 (48.7)	219 (43.7)	462 (46.2)
b. Doctor specialized in anesthesia	97 (19.4)	93 (18.6)	188 (18.8)
c. Nurse	152 (30.5)	179 (35.7)	333 (33.3)
d. Don't know	7 (1.4)	10 (2.0)	17 (1.7)
2. Who administers the anesthetic drugs and fluids during an operation?	P = n.s.		
a. Surgeon	145 (29.1)	166 (33.1)	311 (31.1)
b. Doctor specialized in anesthesia	86 (17.2)	82 (16.4)	168 (16.8)
c. Nurse	260 (52.1)	237 (47.3)	497 (49.7)
d. Don't know	8 (1.6)	16 (3.2)	24 (2.4)
3. Who estimates blood loss during an operation?	P = n.s.		
a. Surgeon	335 (67.1)	316 (63.1)	651 (65.1)
b. Doctor specialized in anesthesia	41 (8.2)	41 (8.2)	82 (8.2)
c. Nurse	115 (23)	128 (25.5)	243 (24.3)
d. Don't know	8 (1.6)	16 (3.2)	24 (2.4)
4. Who transfuses blood when needed during an operation?	P = n.s.		
a. Surgeon	222 (44.5)	233 (46.5)	455 (45.5)
b. Doctor specialized in anesthesia	33 (6.6)	32 (6.4)	65 (6.5)
c. Nurse	218 (43.7)	209 (41.7)	427 (42.7)
d. Don't know	26 (5.2)	27 (5.4)	53 (5.3)
5. Who resuscitates the patient during an operation?	P = n.s.		
a. Surgeon	459 (92)	457 (91.2)	916 (91.6)
b. Doctor specialized in anesthesia	19 (3.8)	19 (3.8)	38 (3.8)
c. Nurse	9 (1.8)	10 (2)	19 (1.9)
d. Don't know	12 (2.4)	15 (3)	27 (2.7)

Data are number of respondents (percentage). P value is difference between group Y and group N. No significant differences were observed between the two groups. The questionnaire was written in Korean for participants and then translated into English for paper work.

Table 4. The Public's Awareness Regarding the Roles in the Postoperative Period

Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
1. Who makes sure the patient recovers smoothly after surgery?	P = 0.011*		
a. Surgeon	51 (10.2)	63 (12.6)	114 (11.4)
b. Doctor specialized in anesthesia	148 (29.7)	185 (36.9)	333 (33.3)
c. Nurse	279 (55.9)	227 (45.3)	506 (50.6)
d. Don't know	21 (4.2)	26 (5.2)	47 (4.7)
2. In the recovery room, who manages the postoperative pain?	P = 0.006*		
a. Surgeon	142 (28.5)	185 (36.9)	327 (32.7)
b. Doctor specialized in anesthesia	52 (10.4)	65 (13)	117 (11.7)
c. Nurse	283 (56.7)	230 (45.9)	513 (51.3)
d. Don't know	22 (4.4)	21 (4.2)	43 (4.3)
3. In the recovery room, who is responsible for the patient's safe recovery?	P = 0.009*		
a. Surgeon	143 (28.7)	158 (31.5)	301 (30.1)
b. Doctor specialized in anesthesia	29 (5.8)	18 (3.6)	47 (4.7)
c. Nurse	320 (64.1)	303 (60.5)	623 (62.3)
d. Don't know	7 (1.4)	22 (4.4)	29 (2.9)

Data represent the number of respondents (percentage). P value is difference between group Y and group N. *Significant differences between group Y and group N. The questionnaire was written in Korean for participants and then translated into English for paper work.

Table 5. In the Hospital, What is the Role of a Doctor Specialized in Anesthesia (Multiple Choices)?

Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
	P value		
1. Anesthesia for surgery in the operating room	483 (96.8)	495 (98.8)	978 (97.8)
2. Emergency patient care in the emergency room	102 (20.4)	99 (19.8)	201 (20.1)
3. Patients' care in the intensive care unit	108 (21.6)	94 (18.8)	202 (20.2)
4. Local anesthesia for simple surgery in the OPD	258 (51.7)	243 (48.5)	501 (50.1)
5. Resuscitation anywhere in the hospital	31 (6.2)	33 (6.6)	64 (6.4)
6. Pain management in the pain clinic	152 (30.5)	135 (26.9)	287 (28.7)

Data are number of respondents (percentage). P value is difference between group Y and group N. No significant differences were observed between the two groups. The questionnaire was written in Korean for participants and then translated into English for paper work.

Table 6. Public Requests for Pre-surgical Information About Anesthesia Provided by a Doctor Specialized in Anesthesia

Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
1. If you are to undergo an operation, do you want to receive an explanation of anesthesia by a doctor specialized in anesthesia?	P = n.s.		
a. Yes. I want detailed information	337 (67.5)	309 (61.7)	646 (64.6)
b. Yes, but less detailed information due to anxiety	123 (24.6)	141 (28.1)	264 (26.4)
c. No.	15 (3)	16 (3.2)	31 (3.1)
d. I don't know	24 (4.8)	35 (7)	59 (5.9)

Data are number of respondents (percentage). P value is difference between group Y and group N. No significant differences were observed between the two groups. The questionnaire was written in Korean for participants and then translated into English for paper work.

public's awareness regarding the preoperative, intraoperative, and postoperative specific roles of those involved in surgery with anesthesia, respectively. Table 5 shows the results to the question about the roles of doctors specialized in anesthesia (i.e., anesthesiologists) in the hospital (multiple choices). Table 6 shows the results of the public's request for information about anesthesia

given by an anesthesiologist. Finally, Table 7 shows the public's perception of mass media presentations of the role of a doctor specialized in anesthesia during surgery, and their opinions on the best way to raise awareness about doctors specializing in anesthesia (multiple choice).

Table 7. The Public's Experience of the Role of a Doctor Specialized in Anesthesia during Surgery in the Mass Media, and Their Opinion about How to Raise Awareness about Doctors Specialized in Anesthesia (Multiple Choice)

Number of the public	Group Y (n = 499)	Group N (n = 501)	Total (n = 1000)
1. Have you experienced media portrayals of the role of a doctor specialized in anesthesia during surgery?	P = n.s.		
a. Yes → go to # 1-1	208 (41.7)	179 (35.7)	387 (38.7)
b. No → go to # 2	291 (58.3)	322 (64.3)	613 (61.3)
1-1. If you answered yes to #1, answer the following question. What kind of mass media have you experienced? (multiple choice)	n = 208	n = 179	n = 387
	P value		
a. Internet	54 (26)	0.039*	30 (16.8)
b. Television	159 (76.4)	n.s.	149 (83.2)
c. Newspaper	20 (9.6)	n.s.	21 (11.7)
d. Informational brochure	36 (17.3)	n.s.	19 (10.6)
e. Others	12 (5.8)	n.s.	7 (3.9)
2. In your opinion, what are good methods to raise awareness about doctors specialized in anesthesia? (multiple choice)	n = 499	n = 501	n = 1000
	P value		
a. Television program	359 (71.9)	<0.001*	410 (81.8)
b. Informational brochure in the hospital	231 (46.3)	0.007*	189 (37.7)
c. Information via internet	214 (42.9)	n.s.	219 (43.7)
d. Seminar by a doctor specialized in anesthesia	159 (31.9)	n.s.	138 (27.5)
e. Information from the society of anesthesiologists	112 (22.4)	n.s.	91 (18.2)

Data represent number of respondents (percentage). P value is difference between group Y and group N. *Significant differences between group Y and group N. The questionnaire was written in Korean for participants and then translated into English for paper work.

Discussion

To our knowledge, this is the first national survey exploring general public awareness about the specialty of anesthesiology and the role of anesthesiologists. Although several surveys of this nature have been performed worldwide, most were performed in only one or a few hospitals [1-10], representing only patients' awareness in a limited area. In contrast, the results of our nationwide survey more accurately indicate general awareness. Furthermore, all previous surveys included patients awaiting elective surgery [1-10], with the result that the participants may have had an increased interest in anesthesia or surgery. However, the present survey targeted members of the general public who were not linked with anesthesia and were not awaiting surgery, likely yielding more objective results.

In the present study, 25.2% of respondents did not know that a doctor specialized in anesthesia who is the Korean expression for an anesthesiologists is in charge of anesthesia for surgery. Moreover, according to the detailed results, even respondents who knew that had very little knowledge of the actual roles and responsibilities of this doctor during anesthesia, and this level of knowledge was lower than that found by other surveys [1-10]. Regarding to the preoperative role of anesthesiologists, 86.5% and 70.8% of those surveyed thought that the surgeon decides the operability and NPO time, respectively. During surgery, 46.2% of them answered that the surgeon is in charge of moni-

toring vital signs, despite the fact that this is actually one of most important roles of anesthesiologists. Strikingly, even the nurse was more likely to be selected as responsible for this role (33.3%), and only 18.8% of people chose the anesthesiologist, considerably lower than in other surveys [1-10]. They also thought that estimation of blood loss and administration of transfusions were performed by the surgeon (65.1% and 45.5%), followed by the nurse (24.3% and 42.7%). Only 8.2% and 9.5% of people chose the anesthesiologist for these roles. Also, the majority of participants (91.6%) believed that the surgeon performed resuscitation during surgery. Although many of those surveyed believed that the anesthesiologist performed anesthesia for surgery, most of them seemed to have very little understanding of the province of anesthesia itself. Regarding the roles outside the operating room, 6–28.7% of those surveyed were aware of anesthesiologists' other roles outside the operating room. On the other hand, 50.1% thought that the anesthesiologist performed local anesthesia for a simple surgery in the OPD, indicating that the public has little understanding of the actual roles of an anesthesiologist.

In this survey, interestingly, those with prior anesthetic experience were more likely to believe that the surgeon takes responsibility for some intraoperative management and that nurses are in charge of recovery from anesthesia and managing the postoperative pain than were those who had no such prior experience. These results may be due to the fact that the surgeons explain the surgery for the patients before the opera-

tion and visit them postoperatively, leading them to believe that the surgeon plays a key role in most areas of surgery, including anesthesia. Moreover, most patients directly contact the nurses if any problems arise in the immediate recovery. In contrast, most anesthesiologists visit the patients only one time preoperatively, although some studies have discussed that patient orientation in the pre-anesthetic visit is a way of publicizing the image of the professional and achieving patient recognition [2,8,11]. In this survey, 91% of respondents indicated a desire for information about their anesthesia from an anesthesiologist. Dedicated personal care including postoperative visits has been shown to be one of the most important factors affecting perception of the anesthesiologist. One study reported that perception of the anesthesiologist and satisfaction were significantly increased by a single postoperative visit by the anesthesiologist [12].

Our results showed that 38.7% of those surveyed experienced the roles of anesthesiologists via the mass media, and the results were similarly ordered in both groups (television > internet > informational brochure). Those surveyed differed in their opinion about the best way to raise awareness about anesthesia and the anesthesiologist depending in part on whether they had prior experience with anesthesia. The experienced public chose television program > information brochure > internet, but none of the experienced public chose television program > internet > information brochure. This difference may reflect the effects of information about anesthesia and the anesthesiologist given by brochure during admission for surgery. Recently, the KSA produced a simple but informative cartoon brochure that was distributed

to hospitals nationwide, and both the patients' and anesthesiologists' response was very positive. Considering that the most frequent source of media awareness about anesthesiologists is television program, the public seems to prefer to be informed by methods already present in their daily lives. To provide information most effectively, the National Society of Anesthesiology of each country should consider its publics' thoughts and preferences, and periodic surveys every 5–10 years may be helpful to gather feedback from the public on this topic.

In conclusion, the Korean public has inadequate knowledge regarding the specialty of anesthesiology and the role of anesthesiologists inside and outside the operating room. To improve this awareness, in hospitals, each anesthesiologist should provide patients with more exact and detailed information and explain their anesthetic protocol by a postoperative visit as well as a pre-anesthetic visit. Simultaneously, the National Society of Anesthesiology should provide systematic information reflecting the public's thoughts and preferences.

Acknowledgments

The authors gratefully acknowledged the Korean Society of Anesthesiologists for helping with this survey.

Declaration of Interest

This study was sponsored by The Korean Society of Anesthesiologists. The KJA is the official journal of the Society.

References

- Braun AR, Leslie K, Morgan C, Bugler S. Patients' knowledge of the qualifications and roles of anaesthetists. *Anaesth Intensive Care* 2007; 35: 570-4.
- Hariharan S, Merritt-Charles L, Chen D. Patient perception of the role of anesthesiologists: a perspective from the Caribbean. *J Clin Anesth* 2006; 18: 504-9.
- Baaj J, Takroui MS, Hussein BM, Al Ayyaf H. Saudi patients' knowledge and attitude toward anesthesia and anesthesiologists--A prospective cross-sectional interview questionnaire. *Middle East J Anesthesiol* 2006; 18: 679-91.
- Irwin MG, Fung SK, Tivey S. Patients' knowledge of and attitudes towards anaesthesia and anaesthetists in Hong Kong. *Hong Kong Med J* 1998; 4: 16-22.
- Swinhoe CF, Groves ER. Patients' knowledge of anaesthetic practice and the rôle of anaesthetists. *Anaesthesia* 1994; 49: 165-6.
- Tohmo H, Pälve H, Illman H. The work, duties and prestige of Finnish anesthesiologists: patients' view. *Acta Anaesthesiol Scand* 2003; 47: 664-6.
- de Oliveira KF, Clivatti J, Munechika M, Falcão LE. What do patients know about the work of anesthesiologists? *Rev Bras Anesthesiol* 2011; 61: 720-7.
- Calman LM, Mihalache A, Evron S, Ezri T. Current Understanding of the patient's attitude toward the anesthetist's role and practice in Israel: effect of the patient's experience. *J Clin Anesth* 2003; 15: 451-4.
- Huang Y, Yang K, Ren H, Luo A. A survey of elective surgical patients' attitudes toward anesthesia in PUMC hospital. *Chin Med Sci J* 2002; 17: 77-80.
- Chew ST, Tan T, Tan SS, Ip-Yam PC. A survey of patients' knowledge of anaesthesia and perioperative care. *Singapore Med J* 1998; 39: 399-402.
- van Wijk MG, Smalhout B. A postoperative analysis of the patient's view of anaesthesia in a Netherlands' teaching hospital. *Anaesthesia* 1990; 45: 679-82.
- Saal D, Heidegger T, Nuebling M, Germann R. Does a postoperative visit increase patient satisfaction with anaesthesia care? *Br J Anaesth* 2011; 107: 703-9.