Questionnaire for determining physicians' attitude change after Triage & Action minor emergency course

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Abstract

Background: The Triage & Action (T&A) minor emergency course was developed to improve clinical skills for minor emergent problems of Japanese non-specialists. Currently, the course quality is evaluated only by self-reported degree of satisfaction. This study aimed to describe a newly developed questionnaire to evaluate the change in attitude toward clinical practice after completing a T&A minor emergency course and to evaluate its validity and reliability.

Methods: The questionnaire was prepared, and the content and contextual validity of the aforementioned course were validated by a clinical sensibility test. Reliability was assessed by the interclass correlation coefficient after 2 weeks via a follow-up questionnaire. McNemar's test for categorical variables or the Wilcoxon signed-rank test for continuous variables was used for sensitivity analysis, with a statistical significance level of $p < 0.05$.

Results: Among 103 evaluators receiving the questionnaires, 44 (42.7%) responded to the questionnaire, 36 (40.8%) to the follow-up questionnaire, and 33 (32.0%) to both questionnaires; 28 (27.2%) participants took the clinical sensibility test. Seven questions on the reliability test showed fair agreement, and there were no significant differences in the answers to the sensibility test questions. In the clinical sensibility test, 82.1% of the physicians answered "Fair to large extent" to the question about perspicuity, whereas 92.8% answered "Normal to very likely" to the question "To elicit the participants' attitude."

Conclusion: The new questionnaire was shown to be contextually well validated and reliable.

Background

The concept of emergency medicine (EM) in Japan is different from that in western countries. In the 1960s, a legislation was passed in Japan that implemented the use if emergency medical services, and emergency hospitals were designated by the government. However, there were no EM specialists; therefore, surgeons/physicians without specialist training in EM provided care to emergency patients (1). The Japanese Association for Acute Medicine (JAAM) established a committee to promote the western-type model of EM in 2003. By 2007, more than 150 JAAM-affiliated hospitals had implemented this type of EM. However, because adequate emergency physicians are not available, non-emergency physicians are required to see patients with minor emergent problems in the emergency room. Furthermore, there have not been enough courses aimed at improving the skills of physicians who can treat minor emergent problems. This deficit has led to ambulances not being able to find hospitals with the appropriate resources to treat patients. Furthermore, hospital refusals to accept patients have been a major problem in Japan. One of the most frequent reason given for refusal is "without a specialist," often in the case of minor emergencies (2).

We developed a Triage & Action (T&A) minor emergency course (http://minoremergency.club/) in Japan and began offering it in 2015 because simulation training can improve clinical knowledge and skills and has been demonstrated to have clinical context validity in a growing number of studies (3– 5). The

courses have been held 21 times, and a total of 461 physicians have completed the course as of December 31, 2018. The course aims to improve the clinical knowledge and skills for treating minor emergencies. The training sessions comprises five minor emergencies (Epistaxis, Ear and nose foreign body, Sprain or fracture, Ocular surface foreign bodies, and Burns) as well as lecture- and simulation-based training that is conducted by dedicated multidisciplinary instructors. The simulation-based training uses real-case scenarios, and the participants decide how to treat each training patient with a minor emergency. The instructors describe patients with various disease and injury scenarios. Mannequins are used for “Epistaxis” and “Ear and nose foreign body”. For “Sprain or fracture,” an ankle sprain scenario described by the instructor is used, and the participants treat the patient with a splint. There are pictures of items (e.g., gauze, Vaseline®, and normal saline) in “Burns” and “Ocular surface foreign bodies.” The participants choose which items they will use for treatment and decide if the patients should consult a specialist. The instructors assess the participants’ decisions and skills. This course is a 1-day course (7 h), and two T&A minor emergency instructors supervise five attendants. The instructors for T&A minor emergency are selected by a T&A principal member after taking the course. More than 90% of previous participants have answered “Excellent” or “Good” concerning their level of satisfaction with the course. However, information about the physicians’ clinical practice in treating minor emergencies after taking the course has been limited.

We thought that it was important to improve the physician’s confidence and attitudes in treating minor emergencies. Previously, improvements in clinical skills have been usually evaluated by performing the same simulation task or in a real clinical situation > 3 weeks after the simulation (3, 6). However, T&A minor emergency course trainees from all over Japan have participated in this course, making it difficult to evaluate the change in a particular physician’s skill level. Therefore, we considered that information about a physician’s confidence level and total number of minor emergencies treated could be used in place of real clinical assessments because they could change the physician’s practice and reduce their refusals to treat minor emergencies.

Questionnaires are widely used in medical research to collect information from both patients and health-care professionals (7, 8). Some simulation courses have used questionnaires to evaluate knowledge before and after the simulation course (9 – 11). To ensure that the questionnaire closely matched real-world experience and ability, we thought that the post-course questionnaire should be completed within a few months and should contain information about self-confidence and real clinical practice experience (e.g., the change in the total number of treatments without referrals to a specialist within the specific period). We hypothesized that checking the changes in confidence will provide us information regarding what should be done in T&A minor emergency course in the future.

To the best of our knowledge, no study has reported the use of questionnaires to assess improvement in a physicians’ attitude and self-confidence after participating in a simulation course after a few months. The present study aimed to describe a newly developed questionnaire to evaluate how participants’ attitudes toward clinical practice had changed after completing a T&A minor emergency course and to evaluate the validity and reliability of the new questionnaire.

Methods

Evaluation strategy

We conducted this study in accordance with the method proposed by Burns et al. (12). The survey used a questionnaire and a clinical sensibility test. We previously developed the questionnaire to evaluate the change in attitude toward clinical practice after taking a T&A minor emergency course. In the present study, we tested the reliability of the questionnaire and used a clinical sensibility test to validate the content.

Methods

The participants responded to the first questionnaire to validate the content by a clinical sensibility test, followed by responding to the follow-up questionnaire within 2 weeks after the test to evaluate reliability (test–retest exam). This survey was conducted in November and December 2018. Patients were not invited to comment on the study design and were not consulted to develop patient relevant outcomes or interpret the results. Furthermore, they were not invited to contribute to the writing or editing of this document for overall readability or accuracy.

Participants

The web-based questionnaire was evaluated by 103 physicians identified from a mailing list as having taken the T&A minor emergency course. There were two inclusion criteria: (1) To evaluate reliability, we included the responders who answered both the first and follow-up questionnaires. (2) To evaluate validity, we included physicians who answered the first questionnaire and took the clinical sensibility test.

Questionnaire

Two principal developers of the T&A minor emergency course and one physician-researcher created a new questionnaire to evaluate self-confidence in treating minor emergencies and real practice experience. The questionnaire for this study comprised 32 questions related to two major factors: the physicians' background and self-confidence in treating minor emergencies (Additional file 1). The responses were provided by checking boxes or by ranking responses.

In the first section, the data collected included age, sex, post-graduate year, specialty [we chose residents and 19 basic departments from the Japanese Society of Internal Medicine (13)], prefecture of workplace (total of 47 prefectures in Japan), and number of hospital beds ("Clinic," "20–49 beds," "50–99 beds," "100–199 beds," "200–299 beds," "300–499 beds," and "≥500 beds").

The second part of the questionnaire had questions about the physicians' experience and confidence in treating each type of minor emergency. We chose five minor emergencies (Epistaxis, Ear and nose foreign body, Sprain or fracture, Burn, and Ocular surface foreign bodies) that were presented via simulation-based training in the T&A minor emergency course. To evaluate the respondent's hospital for their ability to provide minor emergency professional treatment, we required that the hospital has a specialist for the

disease; the specialists for Epistaxis and Ear and nose foreign body were otolaryngologists (14, 15), those for Sprain or fracture were orthopedic physicians (16, 17), those for Burn were dermatologists and plastic surgeons (18, 19), and those for Ocular surface foreign bodies were ophthalmologists (20). We created the following questions: 1. “What was the total number of patients you treated for each specialty disease in a month?,” 2. “Was there a specialty department for each disease in the respondent’s hospital?,” 3. “What was the total number of each minor emergency treated within 6 months?,” 4. “How confident are you in your clinical skill for treating each minor emergency?,” 5. Have you treated patients with each minor emergency without a specialist’s support within the last 6 months?,” and 6. “What is the total number of patients treated for each minor emergency without a specialist’s support within the last 6 months?” The participating physicians were asked “Yes” or “No” in question 1. Question 5 had three categorical answers: “Yes,” “No,” and “I am a specialist.” If the participant answered, “I am a specialist,” they did not need to answer question 6. The answer was an integer number for questions 2, 3, and 6. The participants were asked to rate their confidence level from 0 to 5 (0 = No confidence and 5 = Fully confident) for question 4.

We removed the physician’s background to reduce the effort needed to answer the follow-up questionnaire. The second part of the follow-up questionnaire was almost the same as that used in the first questionnaire.

To evaluate the reproducibility of the questionnaire, the participant’s name was used to match the first and follow-up questionnaires’ responses.

Clinical sensibility test

The goals of the clinical sensibility test were to assess the comprehensiveness, clarity, and contextual validity of the questionnaire’s content (Additional file 2). We used the clinical sensibility test, which contains seven questions (13). The following questions were used: 1. “To what extent are the questions directed at important issues pertaining to T&A minor emergency course’s participants?,” 2. “Were there any missing items?,” 3. “Was the questionnaire simple and easily understandable?,” 4. “Did the questionnaire provide information pertaining to the physician’s knowledge and experience?,” 5. Were any of the questions inappropriate or redundant?,” 6. “How likely is the questionnaire to elicit important issues in physician’s attitude toward minor emergencies in T&A minor emergency course’s participants?,” 7. How long did it take you to complete the questionnaire (min)?” The participants answered questions 1–4 and 6 by selecting a response from the Likert scale (e.g., very unlikely, unlikely, neutral, likely, and very likely). Questions 2, 4, 5, and 6 had a free-entry column about each question. We also made a free-entry column for the participants to provide ideas on how to improve the questionnaire.

Primary data analysis

We used STATA/MP 15.1 software (StataCorp LLC) for the data analyses and the interclass correlation coefficient (ICC) to assess reliability. We decided that the reliability coefficient could be qualitatively categorized as follows: $ICC < 0.4$ is poor, $0.4 \leq ICC < 0.6$ is fair, $0.6 \leq ICC < 0.75$ is good, and $0.75 \leq ICC \leq 1$

is excellent (21). McNemar's test for categorical variables or the Wilcoxon signed-rank test for continuous variables was used for sensibility analysis, with a statistical significance level of $p < 0.05$.

Results

Characteristics of the study participants

During the study period, 44 (42.7%) participants responded to the first questionnaire and 36 (40.8%) responded to the follow-up questionnaire. Thirty-three (32.0%) participants answered both questionnaires. Twenty-eight (27.2%) participants took the clinical sensibility test. No responders replied only to the clinical sensibility test. Table 1 presents the backgrounds of the physicians who answered both questionnaires.

Table 1

Characteristics of the participants who took the test–retest exam

Variable	First questionnaire (n = 33)
Age, y, median (IQR)	34 (31–39)
PGY, y, median (IQR)	8.0 (5–10)
Male gender, No. (%)	31 (93.9)
Prefecture[a], No. (%)	
Hiroshima	5 (15.2)
Kyoto	4 (12.1)
Yamaguchi	4 (12.1)
Aichi	3 (9.1)
Hyougo	2 (6.1)
Chiba	2 (6.1)
Okayama	2 (6.1)
Tokyo	2 (6.1)
Shiga	2 (6.1)
Fukui	2 (6.1)
Oosaka	1 (3.0)
Ehime	1 (3.0)
Kanagawa	1 (3.0)
Fukuoka	1 (3.0)
Shizuoka	1 (3.0)
Specialty, No. (%)	
Residents	3 (9.1)
Internal medicine	8 (24.2)
Surgery	0 (0.0)

[a]The total number of prefectures is 47; however, the prefectures from which no responses were obtained have not been included in the table.

Abbreviation: IQR, interquartile range

Variable	First questionnaire (n = 33)
General medicine	8 (24.2)
Pediatric	1 (3.0)
Plastic surgery	0 (0.0)
Emergency medicine	6 (18.2)
Pathology	0 (0.0)
Anesthesiology	0 (0.0)
Radiology	0 (0.0)
Neurosurgery	0 (0.0)
Urology	0 (0.0)
Otolaryngology	0 (0.0)
Ophthalmology	1 (3.0)
Gynecology	0 (0.0)
Orthopedic	5 (15.2)
Psychiatry	0 (0.0)
Dermatology	1 (3.0)
Rehabilitation	0 (0.0)
Clinical laboratory department	0 (0.0)
Others	0 (0.0)
Size of Hospital, No. (%)	
Clinic	4 (12.5)
20–49 beds	1 (3.1)
50–99 beds	2 (6.3)
100–199 beds	6 (18.8)
200–299 beds	1 (3.1)

[a]The total number of prefectures is 47; however, the prefectures from which no responses were obtained have not been included in the table.

Abbreviation: IQR, interquartile range

Variable	First questionnaire (n = 33)
300–499 beds	8 (25.0)
≥500 beds	10 (31.3)
[a]The total number of prefectures is 47; however, the prefectures from which no responses were obtained have not been included in the table.	
Abbreviation: IQR, interquartile range	

Test–retest exam

Table 2 presents the results of the test–retest exam. The mean period in which the two tests were completed was 35.4 days (SD = 12.1). We found that six questions regarding “The total number of epistaxis patients treated without an otolaryngologist within 6 months,” “The total number of ear and nose foreign body patients treated without an otolaryngologist within 6 months,” “The total number of dermatological disease patients treated within a month,” “The total number of burn patients treated within 6 months,” “The total number of burn patients treated without a dermatologist or plastic surgeon within 6 months,” and “The total number of ocular surface foreign bodies patients treated without an ophthalmologist within 6 months” gave an ICC that was fair ($0.4 \leq ICC < 0.6$).

Table 2

Results of interclass correlation coefficient and sensibility analysis in the test–retest exam

Variables	First questionnaire (n = 33)	Follow-up questionnaire	ICC	p value
Otolaryngologists				
Epistaxis				
1. Otolaryngology department, No. (%)	17 (51.5)	16 (48.5)	0.97	0.32
2. Total number of patients with otolaryngology disease treated within 1 month, median (IQR[a])	2.0 (1.0–5.0)	2.0 (1.0–5.0)	0.61	0.82
3. Total number of epistaxis patients treated within 1 month, median (IQR)	2.0 (1.0–3.0)	1.0 (0.0–2.0)	0.85	0.57
4. Confidence for “Epistaxis,” median (IQR)	3.0 (3.0–4.0)	4.0 (3.0–4.0)	0.84	0.34
5. “Epistaxis” treated without otolaryngologist within 6 months, No. (%)	21 (65.6)	18 (54.6)	0.86	0.13
6. Total number of “Epistaxis” patients treated without otolaryngologist within 6 months, median (IQR)	1.0 (0.0–3.0)	1.0 (0.0–3.0)	0.51	0.94
Ear and nose foreign body				
3. Total number of “ear and nose foreign body” patients treated within 6 months, median (IQR)	0.0 (0.0–1.0)	0.0 (0.0–1.0)	0.76	0.15
4. Confidence for “ear and nose foreign body,” median (IQR)	3.0 (2.0–3.0)	3.0 (2.0–3.0)	0.85	0.74
5. Treated without otolaryngologist within 6 months, No. (%)	14 (42.4)	8 (24.2)	0.65	0.03
6. Total number of “ear and nose foreign body” patients treated without otolaryngologist within 6 months, median (IQR)	0.0 (0.0–1.0)	0.0 (0.0–1.0)	0.59	0.93
Orthopedic				
Sprain or fracture				
1. Orthopedic department, No. (%)	26 (78.9)	25 (75.8)	0.96	1.00
2. Total number of orthopedic disease patients treated within a month, median (IQR)	10.0 (4.0–50.0)	10.0 (4.5–25.0)	0.99	0.11
3. Total number of “sprain or fracture” patients treated within 6 month, median (IQR)	10.0 (2.0–50.0)	5.0 (2.0–50.0)	0.99	0.15

Abbreviations: IQR, interquartile range; ICC, interclass correlation coefficient

Variables	First questionnaire (n = 33)	Follow-up questionnaire	ICC	p value
4. Confidence for “sprain or fracture,” median (IQR)	3 (3.0 – 4.0)	4 (3.0–4.0)	0.94	0.30
5. Treated “sprain or fracture” without orthopedist within 6 months, No. (%)	17 (51.5)	17 (51.5)	0.93	0.51
6. Total number of “sprain or fracture” patients treated without orthopedist within 6 months, median (IQR)	2.5 (0.0–27.5)	3 (0.0–20.0)	0.69	0.22
Dermatology or plastic surgery				
Burn				
1. Dermatology or plastic surgery department, No. (%)	20 (60.6)	20 (60.6)	0.93	0.71
2. Total number of dermatological disease patients treated within a month, median (IQR)	8.0 (3.0–10.0)	5 (4.0–10.0)	0.53	0.71
3. Total number of “Burn” patients treated within 6 months, median (IQR)	1.0 (0.0–3.0)	1.0 (0.0–3.0)	0.49	1.00
4. Confidence for “Burn”, median (IQR)	3.0 (3.0–4.0)	3.0 (3.0–4.0)	0.92	1.00
5. Treated “Burn” patients without dermatologist or plastic surgeon within 6 months, No. (%)	19 (57.6)	16 (48.5)	0.83	0.18
6. Total number of “Burn” patients treated without dermatologist or plastic surgeon within 6 months, median (IQR)	1.0 (0.0–2.5)	0.5 (0.0–3.0)	0.42	0.57
Ophthalmology				
Ocular surface foreign body				
1. Ophthalmic department, No. (%)	19 (57.6)	19 (57.6)	0.94	1.00
2. Total number of ophthalmic disease patients treated within a month, median (IQR)	1.0 (1.0–5.0)	2.0 (0.0–5.0)	0.98	0.48
3. Total number of “cornea and conjunctival foreign body” patients treated within a month, median (IQR)	1.0 (0.0–2.0)	1.0 (0.0–2.0)	0.64	0.49
4. Confidence for “ocular surface foreign body,” median (IQR)	3.0 (2.0–4.0)	3.0 (3.0–4.0)	0.86	0.88
5. Treated “ocular surface foreign body” without ophthalmologist within 6 months, No. (%)	15 (45.5)	11 (33.3)	0.90	0.13

Abbreviations: IQR, interquartile range; ICC, interclass correlation coefficient

Variables	First questionnaire (n = 33)	Follow-up questionnaire	ICC	p value
6. Total number of “ocular surface foreign body” patients treated without ophthalmologist within 6 months, median (IQR)	0.0 (0.0–2.0)	0.0 (0.0–1.5)	0.48	0.70
Abbreviations: IQR, interquartile range; ICC, interclass correlation coefficient				

During sensibility analysis, there was a significant difference in the pre- and post-test answers to the question: “Have you treated patients with ear and nose foreign body without otolaryngologist’s support within the last 6 months?.”

Clinical sensibility test

Table 3 presents the results of the clinical sensibility test. For questions 1, 3, and 4, more than 80% of the respondents answered “Fair to large extent.” For question 2, 96.5% of the respondents chose “Minor to insignificant gaps.” For question 5, 92.9% of the respondents answered that no items were inappropriate or redundant in the questionnaire. For question 6, 92.6% of the respondents answered “Likely to very likely.” The median time to answer the questionnaire was 5 min (interquartile range (IQR): 5–10 min).

Table 3

Clinical sensibility test

Variables	Answer (n = 22)
1. To what extent are the questions directed at important issues pertaining to T&A minor emergency course's participants?	
Small Extent	0 (0%)
Limited Extent	2 (7.1%)
Fair Extent	12 (42.9%)
Moderate Extent	11 (39.3%)
Large Extent	3 (10.8%)
2. Are there important issues pertaining to your practice that should be included in the questionnaire but were omitted?	
Crucial Gaps	0 (0%)
Important Gaps	1 (3.6%)
Minor Gaps	4 (14.3%)
Minimal Gaps	15 (53.6%)
Insignificant Gaps	8 (28.6%)
3. To what extent are the response options provided simple and easily understood?	
Small Extent	0 (0%)
Limited Extent	5 (17.9%)
Fair Extent	12 (42.9%)
Moderate Extent	7 (25.0%)
Large Extent	4 (14.3%)

Abbreviation: T&A, triage and action

Variables	Answer (n = 22)
4. To what extent are questions likely to elicit information pertaining to your use of and experience in T&A minor emergency course's participants?	
Small Extent	0 (0%)
Limited Extent	2 (7.1%)
Fair Extent	10 (35.7%)
Moderate Extent	10 (35.7%)
Large Extent	6 (21.4%)
5. Are there any items inappropriate or redundant?	
Yes	2 (7.1%)
No	26 (92.9%)
6. How likely is the questionnaire to elicit important issues in physician's attitude for minor emergencies in T&A minor emergency course's participants?	
Small Extent	0 (0%)
Limited Extent	2 (7.1%)
Fair Extent	13 (46.4%)
Moderate Extent	5 (17.9%)
Large Extent	8 (28.6%)
7. How long did it take you to complete the questionnaire (min)?	5 (5–10)
Abbreviation: T&A, triage and action	

Discussion

The study results showed that the questionnaire about the T&A minor emergency course was valid and reliable.

Test–retest exam

In the test–retest examination, six questions about the total number of patients treated for various minor emergencies alone or with a specialist gave an ICC value of fair ($0.4 \leq ICC < 0.6$). Morita et al. reported that it was difficult to show reliable results involving human emotions or knowledge because of changes in the subjects' subjective conditions (22). To minimize this difference, the participants are usually assessed by having them answer the same questions typically with a 2–4-week period (13). Therefore, we chose an answering interval of 2 weeks. It is possible that this fair ICC may have been caused by random error or because the respondents saw different number of patients during the study periods. However, we did not observe a significant difference in the answers to these questions in the sensitivity analysis between test and retest. Therefore, we considered that the results of the sensibility test could compensate for the low reliability of the ICC results. Other questions showed moderate to excellent ICC. A significant difference was observed in the test–retest answers to question 5 "Do you have experience treating patients with an ear and nose foreign body without an otolaryngologist's support within 6 months?" in the sensibility test. However, the question's ICC was good ($0.6 \leq ICC < 0.75$). Consequently, we considered this questionnaire to have high reliability.

Clinical sensibility test

All of the answers to the questions in the clinical sensibility test were favorable, which we interpreted as a strong indication of the validity of the questionnaire's content and clinical context (13, 23). Regarding question 2, some responders mentioned that this survey did not include a question concerning the "Satisfaction rate." The lack of this question may cause less confidence in the questionnaire for some physicians. However, our course already collected information about the "Satisfaction rate" on a paper-based questionnaire without the physicians' names before we started our study. Because we thought that the participants' answers may be affected if the questionnaire was not anonymous (24), we thought that no name should be associated with the "Satisfaction rate" question. Therefore, we did not include a question about the "Satisfaction rate" in our web-based questionnaire.

Mirta et al. (25) reported in their web-based study that their online questionnaire's stated length (10, 20, and 30 min) was longer than the length and number of respondents in our study and that fewer respondents started and completed the questionnaire. Our study showed that the median time to answer the questionnaire was 5 min (IQR 5–10 min), which we considered to be very reasonable.

One of the participants commented in the free-entry column that "This questionnaire should contain questions about the availability of a specialist at night or when the primary one has a day off." Therefore, we added a question asking "Do you have a specialist's support at night or on holidays?" and the answers were "Any time as needed," "Sometimes," and "Not at all."

Limitations

This study had several limitations. The first concerns the external validity because we chose T&A minor emergency mailing list members to serve as participants; thereofre, the risk of selection bias should be considered. Furthermore, the limited sample size should be considered. The second limitation was that we used two questionnaires over a 2-week period. It is possible that the actual practice pattern may have changed during the 2 weeks. The third limitation concerns potential confounders. The possibility of confounding factors not included in this study should be considered. Fourth, the sample size was small and the response rate was low. The low response rate can be attributed to the fact that the respondents were volunteers.

Conclusion

The object of this newly developed questionnaire was to evaluate the change in attitude toward clinical practice after completing a T&A minor emergency course. In the future, we plan to send the pre–web-based questionnaire before the course and the post–web-based questionnaire 6 months after the course. The post–web-based questionnaire contains the same question as those in the pre-questionnaire except for the addtion of the question “Did you change your place of work after answering the pre-questionnaire?” to check for this possibility. Our study showed the validity and high reliability of the questionnaire. Future research should focus on administering the questionnaire to participants in the T&A minor emergency course. These results will give us information regarding how to improve the T&A minor emergency course.

Abbreviations

EM	Emergency medicine
JAAM	Japanese Association for Acute Medicine
T&A	Triage & Action

Declarations

Ethics approval and consent to participate

This study was approved by the Ethics Committee of the Tokyo Bay Urayasu/Ichikawa Hospital (approval number: 385).

Consent for publication

The participants consented to participate by filling in the electronic consent form on the first page of the online questionnaire.

Availability of data and materials

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

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Authors' contributions

K.N. takes assumes responsibility for the paper as a whole. K.N. designed the study and wrote the initial draft of the manuscript. K.N. and D.K. contributed to analysis and interpretation of data and assisted in the preparation of the manuscript. K.N., D.K. and T.M. contributed to make the questionnaire and clinical sensibility test. K.N., T.M., Y.O., K.K., and M.S have contributed to data collection and interpretation, and critically reviewed the manuscript. All authors approved the final version of the manuscript and agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Tables

Table 1. Characteristics of the participants who took the test–retest exam

Variable	First questionnaire (n = 33)
Age, y, median (IQR)	34 (31–39)
PGY, y, median (IQR)	8.0 (5–10)
Male gender, No. (%)	31 (93.9)
Prefecture[a], No. (%)	
Hiroshima	5 (15.2)
Kyoto	4 (12.1)
Yamaguchi	4 (12.1)
Aichi	3 (9.1)
Hyougo	2 (6.1)
Chiba	2 (6.1)
Okayama	2 (6.1)
Tokyo	2 (6.1)
Shiga	2 (6.1)
Fukui	2 (6.1)
Oosaka	1 (3.0)
Ehime	1 (3.0)
Kanagawa	1 (3.0)
Fukuoka	1 (3.0)
Shizuoka	1 (3.0)
Specialty, No. (%)	
Residents	3 (9.1)

Internal medicine	8 (24.2)
Surgery	0 (0.0)
General medicine	8 (24.2)
Pediatric	1 (3.0)
Plastic surgery	0 (0.0)
Emergency medicine	6 (18.2)
Pathology	0 (0.0)
Anesthesiology	0 (0.0)
Radiology	0 (0.0)
Neurosurgery	0 (0.0)
Urology	0 (0.0)
Otolaryngology	0 (0.0)
Ophthalmology	1 (3.0)
Gynecology	0 (0.0)
Orthopedic	5 (15.2)
Psychiatry	0 (0.0)
Dermatology	1 (3.0)
Rehabilitation	0 (0.0)
Clinical laboratory department	0 (0.0)
Others	0 (0.0)
Size of Hospital, No. (%)	
Clinic	4 (12.5)
20–49 beds	1 (3.1)

50–99 beds	2 (6.3)
100–199 beds	6 (18.8)
200–299 beds	1 (3.1)
300–499 beds	8 (25.0)
≥500 beds	10 (31.3)

[a]The total number of prefectures is 47; however, the prefectures from which no responses were obtained have not been included in the table.

Abbreviation: IQR, interquartile range

Table 2. Results of interclass correlation coefficient and sensibility analysis in the test–retest exam

Variables	First questionnaire (n = 33)	Follow-up questionnaire	ICC	p value
Otolaryngologists				
Epistaxis				
1. Otolaryngology department, No. (%)	17 (51.5)	16 (48.5)	0.97	0.32
2. Total number of patients with otolaryngology disease treated within 1 month, median (IQR[a])	2.0 (1.0–5.0)	2.0 (1.0–5.0)	0.61	0.82
3. Total number of epistaxis patients treated within 1 month, median (IQR)	2.0 (1.0–3.0)	1.0 (0.0–2.0)	0.85	0.57
4. Confidence for “Epistaxis,” median (IQR)	3.0 (3.0–4.0)	4.0 (3.0–4.0)	0.84	0.34
5. “Epistaxis” treated without otolaryngologist within 6 months, No. (%)	21 (65.6)	18 (54.6)	0.86	0.13
6. Total number of “Epistaxis” patients treated without otolaryngologist within 6 months, median (IQR)	1.0 (0.0–3.0)	1.0 (0.0–3.0)	0.51	0.94
Ear and nose foreign body				
3. Total number of “ear and nose foreign body” patients treated within 6 months, median (IQR)	0.0 (0.0–1.0)	0.0 (0.0–1.0)	0.76	0.15
4. Confidence for “ear and nose foreign body,” median (IQR)	3.0 (2.0–3.0)	3.0 (2.0–3.0)	0.85	0.74
5. Treated without otolaryngologist within 6 months, No. (%)	14 (42.4)	8 (24.2)	0.65	0.03
6. Total number of “ear and nose foreign body” patients treated without otolaryngologist within 6 months, median (IQR)	0.0 (0.0–1.0)	0.0 (0.0–1.0)	0.59	0.93
Orthopedic				
Sprain or fracture				
1. Orthopedic department, No. (%)	26 (78.9)	25 (75.8)	0.96	1.00
2. Total number of orthopedic disease patients treated within a month, median (IQR)	10.0 (4.0–50.0)	10.0 (4.5–25.0)	0.99	0.11
3. Total number of “sprain or fracture” patients treated within 6 month, median (IQR)	10.0 (2.0–50.0)	5.0 (2.0–50.0)	0.99	0.15

4. Confidence for “sprain or fracture,” median (IQR)	3 (3.0 –4.0)	4 (3.0–4.0)	0.94	0.30
5. Treated “sprain or fracture” without orthopedist within 6 months, No. (%)	17 (51.5)	17 (51.5)	0.93	0.51
6. Total number of “sprain or fracture” patients treated without orthopedist within 6 months, median (IQR)	2.5 (0.0–27.5)	3 (0.0–20.0)	0.69	0.22
Dermatology or plastic surgery				
Burn				
1. Dermatology or plastic surgery department, No. (%)	20 (60.6)	20 (60.6)	0.93	0.71
2. Total number of dermatological disease patients treated within a month, median (IQR)	8.0 (3.0–10.0)	5 (4.0–10.0)	0.53	0.71
3. Total number of “Burn” patients treated within 6 months, median (IQR)	1.0 (0.0–3.0)	1.0 (0.0–3.0)	0.49	1.00
4. Confidence for “Burn”, median (IQR)	3.0 (3.0–4.0)	3.0 (3.0–4.0)	0.92	1.00
5. Treated “Burn” patients without dermatologist or plastic surgeon within 6 months, No. (%)	19 (57.6)	16 (48.5)	0.83	0.18
6. Total number of “Burn” patients treated without dermatologist or plastic surgeon within 6 months, median (IQR)	1.0 (0.0–2.5)	0.5 (0.0–3.0)	0.42	0.57
Ophthalmology				
Ocular surface foreign body				
1. Ophthalmic department, No. (%)	19 (57.6)	19 (57.6)	0.94	1.00
2. Total number of ophthalmic disease patients treated within a month, median (IQR)	1.0 (1.0–5.0)	2.0 (0.0–5.0)	0.98	0.48
3. Total number of “cornea and conjunctival foreign body” patients treated within a month, median (IQR)	1.0 (0.0–2.0)	1.0 (0.0–2.0)	0.64	0.49
4. Confidence for “ocular surface foreign body,” median (IQR)	3.0 (2.0–4.0)	3.0 (3.0–4.0)	0.86	0.88
5. Treated “ocular surface foreign body” without ophthalmologist within 6 months, No. (%)	15 (45.5)	11 (33.3)	0.90	0.13

6. Total number of “ocular surface foreign body” patients treated without ophthalmologist within 6 months, median (IQR)	0.0 (0.0–2.0)	0.0 (0.0–1.5)	0.48	0.70

Abbreviations: IQR, interquartile range; ICC, interclass correlation coefficient

Table 3. Clinical sensibility test

Variables	Answer (n = 22)
1. To what extent are the questions directed at important issues pertaining to T&A minor emergency course's participants?	
Small Extent	0 (0%)
Limited Extent	2 (7.1%)
Fair Extent	12 (42.9%)
Moderate Extent	11 (39.3%)
Large Extent	3 (10.8%)
2. Are there important issues pertaining to your practice that should be included in the questionnaire but were omitted?	
Crucial Gaps	0 (0%)
Important Gaps	1 (3.6%)
Minor Gaps	4 (14.3%)
Minimal Gaps	15 (53.6%)
Insignificant Gaps	8 (28.6%)
3. To what extent are the response options provided simple and easily understood?	
Small Extent	0 (0%)
Limited Extent	5 (17.9%)
Fair Extent	12 (42.9%)
Moderate Extent	7 (25.0%)
Large Extent	4 (14.3%)
4. To what extent are questions likely to elicit information pertaining to your use of and experience in T&A minor emergency course's participants?	
Small Extent	0 (0%)

Limited Extent	2 (7.1%)
Fair Extent	10 (35.7%)
Moderate Extent	10 (35.7%)
Large Extent	6 (21.4%)
5. Are there any items inappropriate or redundant?	
Yes	2 (7.1%)
No	26 (92.9%)
6. How likely is the questionnaire to elicit important issues in physician's attitude for minor emergencies in T&A minor emergency course's participants?	
Small Extent	0 (0%)
Limited Extent	2 (7.1%)
Fair Extent	13 (46.4%)
Moderate Extent	5 (17.9%)
Large Extent	8 (28.6%)
7. How long did it take you to complete the questionnaire (min)?	5 (5–10)

Abbreviation: T&A, triage and action

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Supplement1.pdf
- Supplement2.pdf

- OriginalJapanesequestionnaire.pdf
- OriginalJapaneseClinicalsensiiblitytest.pdf