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〈Regular Article〉

Knowledge and Attitudes Toward Palliative Care: A Cross-Sectional Survey Among Medical Students

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ABSTRACT **Background**: As the population ages, the demand for palliative care is growing. At Kawasaki Medical School, 4th-year medical students receive lectures on palliative care; nonetheless, the educational effectiveness of these lectures is still uncertain. This study assesses the effect of these lectures on students' understanding and perceptions of palliative care, along with the role of demographic factors and experiences with bereavement.

Methods: A cross-sectional survey involved third-year medical students (pre-lecture group) and fourth-year medical students (post-lecture group). Knowledge was measured using Nakazawa's Palliative Care Knowledge Test (20 items), while attitudes were evaluated with the Frommelt Attitude Toward Care of the Dying Scale (FATCOD)-Form B-J (30 items). Associations with age, gender, and bereavement experiences were also explored.

Results: A total of 23 students attended pre-lecture sessions, while 17 attended post-lecture sessions. The post-lecture group showed a significant increase in knowledge test scores (mean = 11.9, Standard Error [SE] = 0.7) when compared to the pre-lecture group (mean = 6.4, SE = 0.6; $P < 0.0001$). However, no significant differences were found in the FATCOD-Form B-J scores between the two groups (pre-lecture: mean = 109, SE = 1.8; post-lecture: mean = 109, SE = 2.1; $P = 0.9$). Additionally, factors such as age, gender, and bereavement experiences did not have a significant impact on knowledge or understanding attitudes.

Conclusion: Lectures on palliative care enhanced understanding but did not notably affect attitudes towards it. Factors such as age, gender, and bereavement experiences showed no significant correlation with knowledge or attitudes.

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Key words：Palliative Care, Medical Education, Attitudes, Knowledge, Bereavement, FATCOD, Knowledge Test

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INTRODUCTION

Palliative care is a fundamental aspect of contemporary healthcare, particularly in aging populations where chronic and terminal conditions are more common. Its goal is to enhance the quality of life for patients and their families by addressing physical symptoms and emotional, social, and spiritual issues(1). Though vital, palliative care education in medical curricula exhibits substantial global gaps(2, 3).

At numerous medical schools, palliative care training often consists of brief lectures and lacks practical, hands-on experience. A review of U.S. medical institutions found a varied approach to end-of-life care education, with offerings ranging from just a handful of classroom hours to extensive hospice rotations(4). Additionally, misconceptions continue to exist, such as conflating palliative care exclusively with end-of-life care or assuming it accelerates death(5). These misunderstandings underscore the necessity for uniform and thorough training.

At Kawasaki Medical School in Japan, palliative care is taught through lectures aimed at 4th-year students. Although these sessions are designed to establish a foundational understanding, their effects on the students' learning and perspectives have yet to be studied. Additionally, experiences of personal loss may influence the students' views on palliative care. Research suggests that those with such backgrounds typically show increased empathy and assurance in end-of-life care(3, 6).

This study assessed how medical students' knowledge and attitudes shifted before and after a lecture on palliative care. It also explored the impact of demographic factors and personal bereavement experiences on these results.

METHODS

Study design and participants

This research is a single-center cross-sectional survey to assess the shifts in medical students' knowledge and attitudes towards palliative care before and after a lecture. The participants were third-year students (pre-lecture group) and fourth-year students (post-lecture group) from Kawasaki Medical School in Okayama, Japan. At Kawasaki Medical School, fourth-year students are required to attend two 60-minute lectures on palliative care between April and June.

The study targeted all third- and fourth-year medical students. An email outlining the research objectives and inviting participation was sent twice: once at the beginning and again during the study period. Additionally, a notice was posted at the entrance of the student lecture room, and printed materials were made available there to further inform students about the study.

Data collection took place over two weeks using Google Forms from November 11 to 24, 2024. All participants provided informed consent before completing the survey. Ethical approval for the study was granted by the Ethics Committee of Kawasaki Medical School (No. 6546-01).

Questionnaires

We employed two validated questionnaires to evaluate students' knowledge and attitudes. The first, Nakazawa's Palliative Care Knowledge Test, comprises 20 items organized into five domains: philosophy, pain/opioids, dyspnea, delirium, and gastrointestinal symptoms. Each item offers three response choices: "correct," "incorrect," and "don't know." Each correct answer earns 1 point. Total scores can range from 0 to 20(7).

The second questionnaire, the Frommelt Attitude Toward Care of the Dying Scale (FATCOD)-Form B-J, evaluates attitudes towards caring for terminally ill patients. It consists of 30 items rated using a 5-point Likert scale, where responses go from 1 (strongly disagree) to 5 (strongly agree). Among these, fifteen items are reverse-scored, resulting in total scores that range from 30 to 150[8].

Alongside the questionnaires, participants were requested to submit demographic details such as age, gender, and whether they had experienced bereavement within two degrees of separation.

Statistical analysis

All statistical analyses were conducted with JMP Pro software (version 17.0.0; SAS Institute, Inc., Cary, NC, USA). Scores from Nakazawa's Palliative Care Knowledge Test and FATCOD-Form B-J were treated as continuous variables. Comparisons of mean scores between subgroups for the total scores and individual items of Nakazawa's Palliative Care Knowledge Test and FATCOD-Form B-J were performed using analysis of variance (ANOVA). A P-value of less than 0.05 was regarded as statistically significant.

RESULTS

Study participants

A total of 40 students took part, comprising 23 from the pre-lecture group and 17 from the post-lecture group. Most participants were under 23 (pre-lecture: 70%, post-lecture: 53%) and female (57% pre-lecture and 47% post-lecture). Bereavement experiences were noted by 70% of the pre-lecture group and 71% of the post-lecture group (Table 1).

Knowledge scores (Nakazawa's test)

The average knowledge score showed a marked increase in the post-lecture group (mean = 11.9, SE = 0.7) when compared to the pre-lecture group (mean = 6.4, SE = 0.6; $P < .0001$, Fig. 1A). Notable improvements were observed across several domains, including "Philosophy" ($P < 0.0001$) and "Dyspnea" ($P = 0.005$, Table 2). Additionally, no significant relationships were found between age, gender, or bereavement experiences and the overall scores for Nakazawa's Test ($P > 0.05$ for all comparisons, Fig. 1A).

Table 1. Characteristics.

Characteristics		Group, no (%)	
		pre-lecture group (n = 23)	post-lecture group (n = 17)
Age	> 23	7 (30%)	8 (47%)
	< 23	16 (70%)	9 (53%)
Gender	Female	13 (57%)	8 (47%)
	Male	10 (43%)	9 (53%)
Bereavement experiences	Yes	16 (70%)	12 (71%)
	No	7 (30%)	5 (29%)

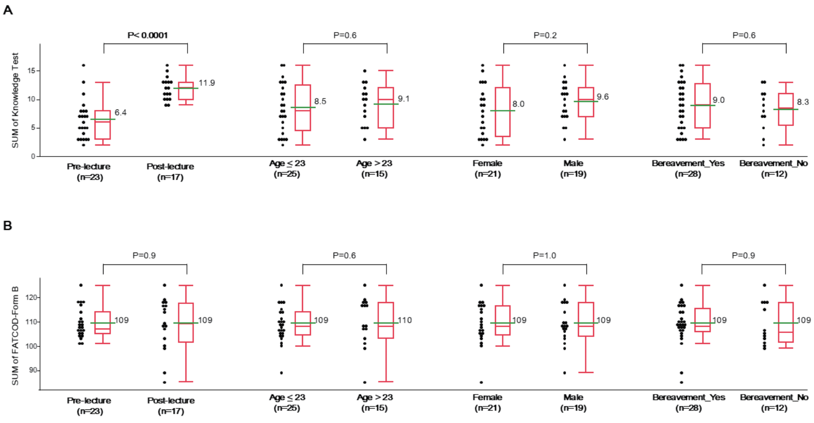

Fig. 1. Nakazawa's Palliative Care Knowledge Test (A) and FATCOD-Form B-J (B) mean score. The horizontal line within each red box represents the median; the limits of each box are the interquartile ranges; the whiskers are the maximum and minimum values; and the green horizontal bar within each box depicts the mean value. The numbers over the green horizontal bar denote the mean score. All P values were calculated by ANOVA.

Table 2. Results of Nakazawa’s Palliative Care Knowledge Test.

	Correct	Incorrect	Don’t know	Pre-lecture group, n = 23 Mean (SE)	Post-lecture group, n = 17 Mean (SE)	P-value
【Philosophy】						
1. Palliative care is only intended for patients without curative treatment options.	1	***2***	3	0.39 (0.61)	1.0 (0.09)	**<0.0001**
2. Palliative care is not provided alongside cancer treatment.	1	***2***	3	0.74 (0.08)	0.94 (0.09)	0.1
【Pain/Opioids】						
3. One goal of pain management is to ensure patients can sleep well at night.	***1***	2	3	0.65 (0.09)	0.88 (0.10)	0.1
4. For mild cancer pain, pentazocine (Pentagin®, Sosegon®) should be actively used instead of medical opioids.	1	***2***	3	0.09 (0.08)	0.41 (0.10)	**0.01**
5. When medical opioids are prescribed, NSAIDs (nonsteroidal anti-inflammatory drugs) are not used concurrently.	1	***2***	3	0.17 (0.09)	0.71 (0.10)	**0.0004**
6. Administering pentazocine (Pentagin®, Sosegon®) or buprenorphine (Repetan®) during medical opioid use can reduce the effectiveness of the opioids.	***1***	2	3	0.13 (0.09)	0.35 (0.10)	0.1
7. Prolonged use of medical opioids often leads to drug addiction.	1	***2***	3	0.09 (0.06)	0.06 (0.07)	0.75
8. The use of medical opioids does not affect the patient’s life expectancy.	***1***	2	3	0.13 (0.09)	0.35 (0.10)	0.1
【Dyspnea】						
9. Morphine can alleviate dyspnea in cancer patients.	***1***	2	3	0.39 (0.10)	0.82 (0.11)	**0.005**
10. When medical opioids are used regularly for pain relief, adding opioids to relieve dyspnea increases the risk of respiratory depression.	1	***2***	3	0 (0.05)	0.18 (0.06)	**0.04**
11. The severity of a patient’s breathlessness is proportional to oxygen saturation levels.	1	***2***	3	0.57 (0.10)	0.76 (0.12)	0.2
12. Anticholinergic drugs (e.g., Scopolamine hydrobromide [Hyoscine®], Butylscopolamine bromide [Buscopan®]) are effective for relieving death rattle sounds during the terminal phase (all responses are treated as correct).	***1***	***2***	***3***	1 (0)	1 (0)	1
【Delirium】						
13. During the terminal phase, correcting electrolyte imbalances or dehydration can sometimes increase discomfort.	***1***	2	3	0.13 (0.09)	0.35 (0.10)	0.1
14. Antipsychotics are often effective in alleviating delirium in cancer patients.	***1***	2	3	0.43 (0.10)	0.24 (0.12)	0.2
15. In some cases, sedation (continuous sedative drug administration) is the only method to relieve suffering in patients near death.	***1***	2	3	0.48 (0.11)	0.59 (0.12)	0.5
16. Delirium in terminal cancer patients is often caused solely by morphine.	1	***2***	3	0.26 (0.09)	0.82 (0.10)	**0.0002**
【Gastrointestinal Symptoms】						
17. During the terminal stage of cancer, increased calorie consumption caused by the tumor requires more calories than early-stage cancer.	1	***2***	3	0.09 (0.08)	0.29 (0.09)	0.09
18. When peripheral veins are no longer accessible, the only option for fluid administration is through central venous access.	1	***2***	3	0.30 (0.1)	0.71 (0.11)	**0.01**
19. Steroids can alleviate appetite loss in cancer patients.	***1***	2	3	0.13 (0.09)	0.59 (0.10)	**0.002**
20. Thirst in patients nearing death cannot be alleviated by fluid infusion.	***1***	2	3	0.26 (0.09)	0.82 (0.10)	**0.0002**

Nakazawa’s Palliative Care Knowledge Test consists of answering the 20-item questions about the care of cancer patients by marking one option for each item: “Correct,” “Incorrect,” or “Don’t know.”
The correct answers are indicated in bold italics with underlined.
ANOVA calculated P-values. SE denotes a standard error.

Attitude scores (FATCOD-Form B-J)

The FATCOD-Form B-J scores did not show a notable difference between the pre-lecture (mean = 109, SE = 1.8) and post-lecture groups (mean = 109, SE = 2.1; P = 0.9, Fig. 1B).

Among the 30 items in the FATCOD-Form B-J, statistically significant differences between the pre-lecture and post-lecture groups were observed for item 25, "Addiction to pain-relieving medication should not be a concern when dealing with a dying person," and item 28, "Dying persons should be given honest answers about their condition."

Table 3. Results of FATCOD-Form B.

Item	Pre-lecture group, n = 23, Mean (SE)	Post-lecture group, n = 17, Mean (SE)	P-value
1. I would be uncomfortable talking about impending death with the dying person.	4.2 (0.17)	4.2 (0.19)	0.8
2. Giving care to the dying person is a worthwhile experience.	3.7 (0.20)	3.8 (0.2)	0.8
3*. Death is not the worst thing that can happen to a person.	2.3 (0.2)	2.4 (0.2)	0.6
4. I would be uncomfortable if I entered the room of a terminally ill person and found him/her crying.	4.1 (0.2)	4.2 (0.2)	0.7
5*. Caring for the patient's family should continue throughout the period of grief and bereavement.	3.4 (0.2)	3.1 (0.3)	0.4
6*. I would not want to care for a dying person.	4.0 (0.2)	4.0 (0.2)	1
7*. The length of time required to give care to a dying person would frustrate me.	3.9 (0.2)	3.4 (0.3)	0.2
8*. I would be upset when the dying person I was caring for gave up hope of getting better.	2.5 (0.2)	2.7 (0.3)	0.6
9*. It is difficult to form a close relationship with the dying person.	3.1 (0.2)	3.1 (0.2)	0.8
10. There are times when death is welcomed by the dying person.	4.2 (0.2)	4.1 (0.2)	0.6
11*. When a patient asks, "Am I dying?" I think it is best to change the subject to something cheerful.	3.5 (0.2)	3.6 (0.2)	0.6
12. The family should be involved in the physical care of the dying person.	4.0 (0.1)	4.0 (0.2)	0.8
13*. I would hope the person I'm caring for dies when I am not present.	3.7 (0.2)	3.5 (0.2)	0.4
14*. I am afraid to become friends with a dying person.	3.2 (0.2)	2.6 (0.3)	0.2
15*. I would feel like running away when the dying person actually died.	3.1 (0.2)	2.8 (0.2)	0.3
16. Families need emotional support to accept the behavior changes of the dying person.	4.2 (0.1)	4.4 (0.2)	0.5
17*. As a patient nears death, the nurse should withdraw from his/her involvement with the patient.	3.9 (0.2)	3.9 (0.2)	0.9
18. Families should be concerned about helping their dying member make the best of his/her remaining life.	4.4 (0.1)	4.1 (0.2)	0.2
19*. The dying person should not be allowed to make decisions about his/her physical care.	3.9 (0.2)	4.2 (0.2)	0.2
20. Families should maintain as normal an environment as possible for their dying member.	3.9 (0.1)	4.1 (0.1)	0.1
21. It is beneficial for the dying person to verbalize his/her feelings.	4.1 (0.2)	4.4 (0.2)	0.2
22. Care should extend to the family of the dying person.	4.3 (0.1)	4.5 (0.1)	0.1
23. Nurses should permit dying persons to have flexible visiting schedules.	4.1 (0.2)	4.2 (0.2)	0.9
24. The dying person and his/her family should be the in-charge decision-makers.	4.0 (0.1)	3.9 (0.1)	0.8
25. Addiction to pain-relieving medication should not be a concern when dealing with a dying person.	3.4 (0.2)	2.2 (0.2)	**0.0003**
26*. I would be uncomfortable discussing death with the dying person.	2.4 (0.2)	2.5 (0.2)	0.7
27. When a patient asks, "Am I dying?" I think it is best to change the subject to something cheerful.	3.3 (0.2)	3.5 (0.2)	0.5
28*. Dying persons should be given honest answers about their condition.	3.4 (0.2)	4.2 (0.2)	**0.02**
29*. Educating families about death and dying is not a nurse's responsibility.	3.0 (0.2)	3.0 (0.2)	0.9
30. Family members who stay close to a dying person often interfere with the professional's job of caring for the patient.	3.9 (0.1)	4.1 (0.2)	0.5

FATCOD-Form B consists of answering the extent to which you agree or disagree with the 30-item statements by selecting a number from 1 to 5, where 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree.
The statements, which are underlined in bold italics, are reverse-scored, with scores calculated as six minus the obtained Likert scale score.
ANOVA calculated all P-values.SE denotes a standard error.

Interestingly, for item 25, the pre-lecture group scored significantly higher than the post-lecture group (pre-lecture group: mean = 3.4, SE = 0.2; post-lecture group: mean = 2.2, SE = 0.2; P = 0.0003). Conversely, item 28 exhibited significant improvement in the post-lecture group (pre-lecture group: mean = 3.4, SE = 0.2; post-lecture group: mean = 4.2, SE = 0.2; P = 0.02, Table 3).

Furthermore, no significant correlations were found between age, gender, or bereavement experiences and the overall FATCOD-Form B-J scores (P > 0.05 for all comparisons, Fig. 1B).

DISCUSSION

This study shows that just a few lectures on palliative care can significantly enhance medical students' understanding, especially in essential topics like the philosophy of palliative care and symptom management. These results align with previous research, emphasizing that even short educational sessions can effectively boost comprehension of palliative care principles[9]. The observed enhancement in knowledge highlights the importance of well-structured teaching sessions for addressing gaps in fundamental medical education. Nevertheless, as evaluated by the FATCOD-Form B-J, the minimal change in attitudes reveals a significant deficiency in the lectures' effectiveness in impacting care's emotional and empathetic aspects.

After the lecture, the considerably enhanced knowledge scores indicate that a well-organized and focused curriculum can tackle specific educational deficiencies successfully. Notable progress in the "Philosophy" and "Dyspnea" areas stands out, as these topics frequently include misconceptions or aspects of palliative care that are not emphasized enough[10]. For example, some students mistakenly believe that opioids for pain management reduce life expectancy or increase the risk of addiction; however, targeted education can help dispel these misconceptions[11]. Enhancements in these areas correspond with research highlighting the significance of incorporating evidence-based knowledge into palliative care education[12].

Except for items 25 and 28, the FATCOD B-J results indicate no significant differences in attitudes between third-year and fourth-year students. However, this lack of difference might be attributed to the high baseline scores of third-year students, who already demonstrated positive attitudes toward palliative care. As third-year medical students, they are likely to have acquired foundational medical education, which could have contributed to their appropriate attitudes. Indeed, for item 25, the pre-lecture group scored significantly higher than the post-lecture group (P = 0.0003), suggesting pre-existing knowledge rather than a shift in attitudes. The average total score for Nakazawa's Palliative Care Knowledge Test was significantly higher for the post-lecture group (P < 0.0001); however, among the five questionnaire items on pain/opioids, the post-lecture group correctly answered only two items, with no difference in the correct response rate for the remaining three items between the two groups.

In addition, the average scores for items 3, 8, and 26 were in the 2-point range for both groups, while the post-lecture group scored 3 points or less for items 14, 15, and 25, and the pre-lecture group scored in the 3-point range. As demonstrated, except for a few questions, the pre-lecture group already exhibited high average scores. Therefore, post-lecture students may find improving upon the already "good" baseline attitudes challenging, resulting in a possible "ceiling effect." This limitation should be acknowledged when interpreting the unchanged attitude scores between the two groups.

Even with advancements in knowledge, the minimal shift in attitudes prompts inquiries regarding the effectiveness of lecture-based education. This observation supports earlier studies indicating that altering attitudes is not easily achieved through traditional teaching methods and may need experiential learning or hands-on patient engagement to cultivate empathy and a deeper understanding[5, 11]. For instance, rotations in hospice settings or simulated patient interactions are evidenced to more effectively nurture positive attitudes[5]. This emphasizes the need for a more thorough approach integrating lectures with practical experience.

Notably, this study found no significant link between bereavement experiences and attitudes, which contrasts with previous research indicating that personal encounters with death improve empathy and understanding in palliative care[13, 14]. This discrepancy can be linked to the differing quality and context of bereavement experiences among participants. Students with direct caregiving roles or significant interactions with terminally ill relatives might gain deeper emotional insights than those with more distant involvement. Furthermore, cultural attitudes toward death and dying can significantly influence the impact of bereavement, with these attitudes varying widely across societies[6, 11].

This study highlights the value of incorporating experiential and reflective learning in palliative care education. While lectures lay a crucial groundwork of knowledge, they fail to shape the attitudes essential for delivering holistic, patient-centered care. Reflective activities like journaling about experiences of loss or engaging in guided group discussions can assist students in processing personal grief and linking it to their professional caregiving practices[13]. Additionally, integrating immersive learning experiences like hospice visits, role-playing, and simulated patient scenarios could enhance palliative care's emotional and relational aspects more effectively[15].

This study has a few limitations. The response rate was low, with only 15.2% from the pre- and 11.8% from the post-lecture groups. These figures align with web-based survey response rates, which typically fall between 10% and 30%[16, 17]. However, this could restrict the generalizability of the results. Furthermore, relying on self-reported questionnaires raises the possibility of social desirability bias since participants might have answered in ways they believed were favorable.

The observed differences in knowledge about palliative care between third- and fourth-year students might not solely result from the lecture. Both groups are exposed to numerous lectures and acquire comprehensive medical knowledge throughout their medical education. This broader learning environment may contribute to improving knowledge, including palliative care. Therefore, it is essential to recognize this as a limitation when interpreting the impact of the palliative care lecture on knowledge scores. Future studies should aim to isolate the specific effects of the palliative care lecture from other educational influences to provide a more precise evaluation.

Finally, this study was conducted at a single medical school in Japan, meaning the results might not be easily relevant to other institutions or cultural settings. Since cultural norms influence perceptions of death and dying, accounting for these variations is essential when creating a global palliative care education[10]. Ultimately, the study focused on the short-term effects of select lectures and did not investigate the long-term retention of information or lasting changes in attitudes. Future studies should utilize longitudinal methods to evaluate the lasting impacts of education interventions.

CONCLUSION

This study emphasizes how palliative care lectures boost knowledge while noting their shortcomings in altering attitudes. An integrated approach incorporating didactic, experiential, and reflective elements is crucial for addressing palliative care education's cognitive, emotional, and practical dimensions. Future research should explore the effects of diverse educational strategies and their lasting impacts on knowledge and attitudes concerning palliative care.

DECLARATIONS

Competing interests

The authors declare that they have no competing interests.

Author Contributions

MN and HN drafted the manuscript, analysed data and designed this study. YS and MO provided the Google form for all questionnaires and collected the data. TN analysed and assisted with interpreting all data and drafted the manuscript. All authors have read and approved the final manuscript.

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