Original Article

Teaching professionalism in cadaver dissection: medical students' perspective

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Abstract

This study was designed to facilitate freshman medical students' adaptation to the dissection room and familiarize them with the related ethical codes. Single-group post-test design research was conducted at Tehran University of Medical Sciences in 2018 - 2019. The program began with a brief explanation of the necessity of the subject, and after a documentary film was shown, the principles of professional and ethical behaviors in the dissection room were discussed by a panel of experts. In the end, a valid and reliable evaluation questionnaire (Cronbach's alpha coefficient = 0.89) was distributed among the students. A total of 129 questionnaires were completed and returned. Overall, 94.4% of the students believed that the program provided an excellent opportunity to reflect on professional behaviors during practical anatomy sessions. In addition, 92.8% of the students believed that they would use the ethical points mentioned in the program in the future. Content analysis of the open questions produced three main categories: "motivating learning", "application of theory in practice" and "changing the attitude toward responsibility". The results indicate that adequate preparation for cadaver dissection sessions and learning about professional behavior codes in the first exposure can help medical students to better understand the principles of professional behaviors.

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Introduction

In recent years, along with the rapid advancement of technology, several methods have been introduced to teach anatomy, including surface anatomy, simulators, graphics, etc. (1, 2). Among the existing methods, studying the human body and dissection still have a special place in teaching anatomy (3). According to McMenamin and colleagues, the dissection of cadavers is essential not only in terms of understanding body structures and functions, but also for resolving psychosocial issues that hinder the advancement of medical science (4). Evidence shows that anatomy education will not be complete without cadaver dissection, even with the new technology that is available in the field of teaching (3).

Cadaver dissection has long been one of the most common methods of teaching anatomy and provides students with better and more realistic visualization of different parts of the human body (5, 6). From this perspective, the science of dissection is a way of studying and entering the human body for a better understanding of diseases. In addition, many experts believe that attending the dissection room is the first experience of medical students in their professional encounter with the human body; therefore, these sessions are among the first training opportunities to teach professionalism to the students (7). Furthermore, the role of cadaver dissection has evolved over time and now encompasses the teaching of professionalism and ethics. The most recent recommendations of the Medical Council of India were intended to integrate professionalism in undergraduate medical curricula (8).

Despite the great importance of dissection in learning anatomy, there have always been challenges. Today, cadavers are donated by the so-called "whole body donors" (9). The most significant ethical aspect of donation is to fulfill the donors' wishes (10, 11). Respectfulness, maintenance of dignity, accountability, language, compassion, identification/anonymity, etc. are other aspects of respecting the rights of donors and some major concerns of donors' families (12, 13). This issue is so important that one of the main reasons for refusing to donate is concerns about disrespect to the body (14). Furthermore, students' inappropriate perceptions of the cadavers and how they are prepared for the dissection room can exacerbate their anxiety and sometimes lead to neglecting the principles of ethical and professional behaviors in the dissection room. Because of these challenges, some experts have stressed the need to prepare students for entering the dissection room so that they can cope effectively (15, 16). Several studies have pointed out the importance and necessity of preparing students for exposure to cadavers and the dissection room, emphasizing the need to change the attitude of students (17, 18). Evidence shows that the opportunity provided by cadaver learning and exposure may serve as medical students' first teacher to enhance professional behaviors (14, 19). Although studies indicate a growing interest in preparing students for exposure to cadavers professionally, there is a paucity of

empirical studies assessing the impact of teaching programs on medical students in establishing codes of conduct for cadaver dissection. This study was aimed at designing, implementing and evaluating an intervention program from students' perspective to prepare them for entry into the dissection room by familiarizing them with the principles of professional behaviors regarding cadavers.

Methods

Setting

Along with revising the undergraduate medical curriculum at Tehran University of Medical Sciences (TUMS), the expected competencies of graduates of medicine were developed (20). "Professionalism and medical ethics" is considered as one of the expected competencies in which students will be taught and assessed in their studies. Furthermore, the practical session of the anatomy course at Tehran University of Medical Sciences consists of dissection, surface anatomy, simulation, and graphics. All medical students are exposed to cadavers for about 94 hours during the basic sciences phase. Attending the dissection room and exposure to cadavers are among the first professional experiences of medical students that occur as early as the initial days of their curriculum.

Participants

The study population consisted of first-year undergraduate medical students of Tehran University of Medical Sciences. Inclusion criteria for entering the study were being a freshman student at the university and having the experience of attending the dissection room and familiarity with its conditions. The exclusion criterion was the unwillingness to participate in the program. A convenience sample of 193 medical students participated in our study, 49.21% of whom were female, and the average age was 18.32 years.

Intervention Program

A quasi-experimental study with single group post-test design was developed at Tehran University of Medical Sciences in 2018 - 2019. The researcher-made questionnaire including closed- and open-ended questions was used to evaluate students' perspectives after the program. The educational program was held to prepare the medical students for entry into the dissection room by familiarizing them with the principles of professional behaviors regarding cadavers. This program was conducted in the first month of the basic sciences phase in two sessions. During the first 2-hour session, medical students were exposed to cadavers in the dissection room. After a week, the 4-hour educational program was held. This program first began with a brief explanation of the necessity and purpose of the subject. Then, a documentary film about the ethical issues surrounding the donation of bodies was shown to all first-year medical students. The showing was held in the amphitheater of the medical school in Persian language using a video-projector. In the current study, the whole film was shown over a period of 30

minutes without any interruption, followed by a discussion. After that, a panel with seven experts in the fields of medical ethics (2 professors), anatomy (4 professors) and medical education (1 professor) explained the code of practice and the necessary ethical codes for performance in the dissection room. Examples of these codes include: refraining from photography and filming in the dissection room, avoiding joking with other students or acting contrary to student etiquette, treating cadaver characteristics as confidential information, inhibiting damage to the cadavers, equipment and facilities of the dissection room, and so on. The training material for the panel was presented based on the guideline for professional conduct in medical practice in Iran (21). Furthermore, two applicants intending to donate their bodies to the dissection room took part in the expert panel. They were invited to explain the reasons for their decision to donate their bodies as well as their concerns. In order to provide an opportunity to reflect on the views of students, some experiences and points of view were presented by four students. In the end, the ethical points were summed up, and after reading the commitment letter of the ethical code, the students completed the questionnaires.

Instrument

A researcher-developed questionnaire was used to assess students' attitudes. The questionnaire included 12 closed-ended questions and one open-ended question to evaluate students' perspectives on the program. Items were scored on a five-point Likert scale ranging from 5 (Totally agree) to 1 (Totally disagree). To assess the instrument's content validity, the draft was given to eight experts in the field of medical ethics, medical education, and anatomy for appraising the clarity and conciseness of the instrument qualitatively. Once their comments and feedbacks were incorporated into the draft, the final version of the instrument was pilot tested on twenty medical students. Cronbach's alpha test was used to determine the internal reliability of the questionnaire (Cronbach's alpha coefficient = 0.89). The results were analyzed using SPSS software version 22.0. Frequency and percentage were used to analyze the descriptive data, and the Mann-Whitney test was used to analyze the results by gender. For the open-ended questions, a conventional qualitative content analysis was used to analyze responses (22). Responses were read several times by the analyst, who determined a coding scheme inductively. After coding, segments of the text were abstracted and summarized.

Ethical Considerations

The study was approved by the ethics committee at Tehran University of Medical Sciences No. IR.TUMS.VCR.REC.1397.644). Participants were offered the opportunity to complete an anonymous, voluntary survey at the end of the program. All participants were assured that their responses were confidential and that their answers would not influence their educational status in the university.

Result

Of the 193 students participating in the program, 129 completed and returned the questionnaire (response rate of 66.8%).

Quantitative Results

The majority of participants (94.4%) stated that this program provided the opportunity to think and reflect on the principles of professional behavior in dissection classes. Also, 88.9% of the students considered the program to be quite informative in terms of the ethical codes of the dissection room, and 89.6% of them acknowledged that this program enhanced their motivation to follow these principles in anatomy sessions. In addition, according to 95.9% of the respondents, this program increased their sense of responsibility to better use the equipment and facilities of the dissection room and learned more efficiently. Also, the majority of the students (92%) stated that this program created the basis for understanding the importance of professionalism since the early years of medical education. Details of the students' views are presented in Figures 1 and 2. Figure 1 shows the percentage of students' agreement about the program's effects on awareness of ethical codes and professionalism in cadaver dissection. Figure 2 shows the percentage of students' satisfaction with the implementation and content of the program.

Table 1 provides answers to the questions according to gender. There was a significant difference between the viewpoints of male and female students except in the items of "understanding the purpose and necessity of the program" and "increased motivation to follow the principles of professional behavior".

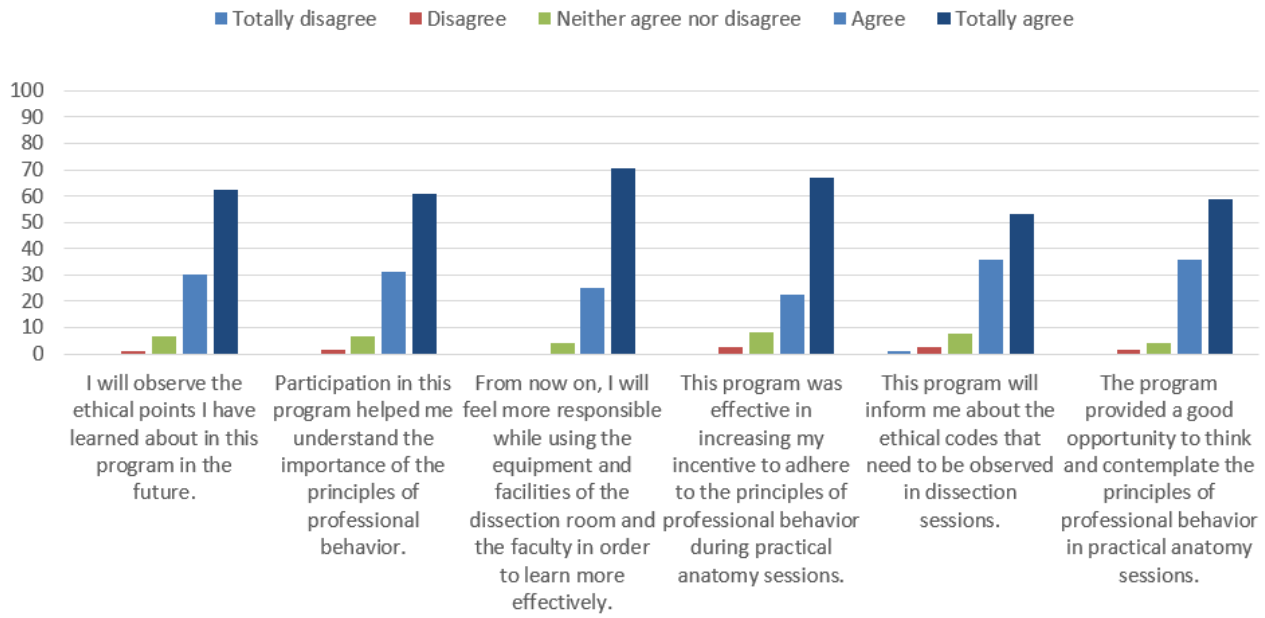

Figure1: Students' opinion about the effects of the program on awareness towards ethical codes and professionalism in cadaver dissection.

Table 1- Students' opinions about the effects of the educational program by gender

Items	Gender	Totally Agree	Agree	Neither Agree nor Disagree	Disagree	Totally Disagree	Sig
The necessity and purpose of participating in this program were clear to me.	Female	48 (77.4%)	13 (21%)	1 (1.6%)	0 (0%)	0 (0%)	**0.20**
	Male	31 (48.4%)	20 (31.3%)	6 (9.4%)	5 (7.8%)	2 (3.1%)	
The program provided a good opportunity to think and contemplate the principles of professional behavior in practical anatomy sessions.	Female	42 (67.7%)	18 (29.0%)	2 (3.2%)	0 (0.0%)	0 (0.0%)	**0.03***
	Male	32 (50.0%)	27 (42.2%)	3 (4.7%)	2 (3.1%)	0 (0.0%)	
This program informed me about ethical codes that need to be observed in dissection session.	Female	40 (64.5%)	18 (29.0%)	2 (3.2%)	2 (3.2%)	0 (0.0%)	** **0.01**
	Male	27 (42.2%)	27 (42.2%)	8 (12.5%)	1 (1.6%)	1 (1.6%)	
This program was effective in increasing my incentive to adhere to the principles of professional behavior during practical anatomy sessions.	Female	45 (72.6%)	14 (22.6%)	3 (4.8%)	0 (0.0%)	0 (0.0%)	**0.11**
	Male	39 (61.9%)	14 (22.2%)	7 (11.1%)	3 (4.8%)	0 (0.0%)	
From now on, I will feel more responsible while using the equipment and facilities of the dissection room and school to learn more effectively.	Female	49 (80.3%)	12 (19.7%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	** **0.01**
	Male	38 (61.3%)	19 (30.6%)	5 (8.1%)	0 (0.0%)	0 (0.0%)	
The film was helpful in encouraging the students to observe the ethical codes in the dissection room.	Female	50 (80.6%)	11 (17.7%)	1 (1.6%)	0 (0.0%)	0 (0.0%)	** **<0.01**
	Male	36 (56.3%)	20 (31.3%)	7 (10.9%)	0 (0.0%)	1 (1.6%)	
Attendance of professors from different fields in the panel was effective in understanding the importance of the topic.	Female	36 (59.0%)	23 (37.7%)	2 (3.3%)	0 (0.0%)	0 (0.0%)	**0.02***
	Male	26 (44.8%)	18 (31.0%)	12(20.7%)	2 (3.4%)	0 (0.0%)	
Signing a printout of ethical codes will help the students remember their commitment to preserve these principles during their study.	Female	40 (65.6%)	15 (24.6%)	6 (9.8%)	0 (0.0%)	0 (0.0%)	** **<0.01**
	Male	26 (41.3%)	21 (33.3%)	10(15.9%)	6 (9.5%)	0 (0.0%)	
Participation in the program helped me understand the importance of the principles of professional behavior.	Female	44 (71.0%)	16 (25.8%)	2 (3.2%)	0 (0.0%)	0 (0.0%)	** **0.01**
	Male	32 (50.8%)	23 (36.5%)	6 (9.5%)	2 (3.2%)	0 (0.0%)	
I will observe the ethical points I have learned about in this program in the future.	Female	45 (72.6%)	12 (19.4%)	5 (8.1%)	0 (0.0%)	0 (0.0%)	**0.03***
	Male	33 (52.4%)	26 (41.3%)	3 (4.8%)	1 (1.6%)	0 (0.0%)	
I think this program is essential for all students taking basic sciences.	Female	46 (75.4%)	8 (13.1%)	6 (9.8%)	1 (1.6%)	0 (0.0%)	** **0.01**
	Male	34 (54.0%)	15 (23.8%)	9 (14.3%)	3 (4.8%)	2 (3.2%)	
Overall, this was a successful program.	Female	46 (74.2%)	15 (24.2%)	0 (0.0%)	0 (0.0%)	1 (1.6%)	** **<0.01**
	Male	30 (47.6%)	25 (39.7%)	5 (7.9%)	3 (4.8%)	0 (0.0%)	

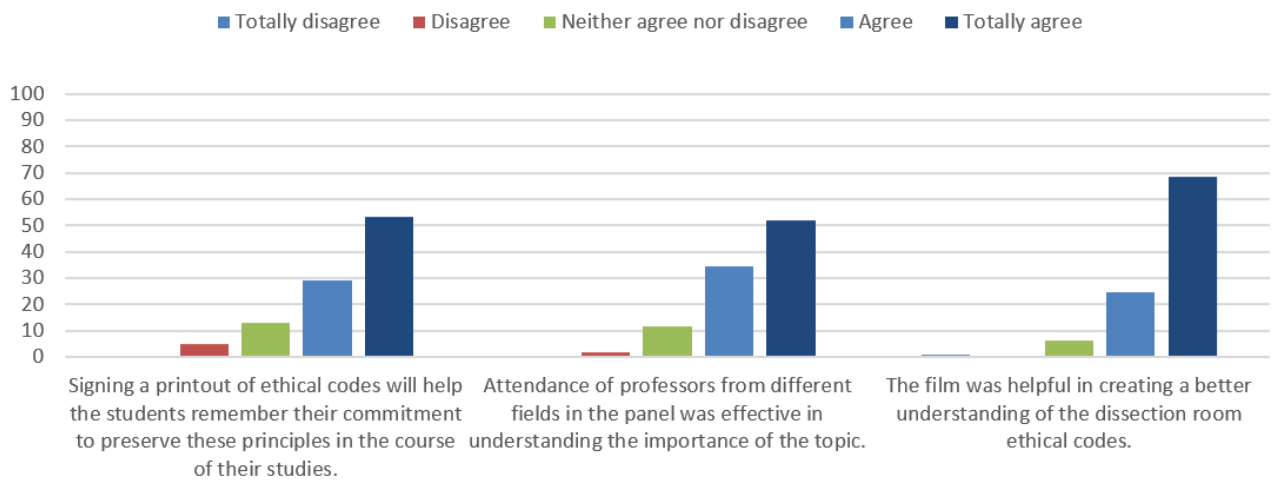

Figure2: Students' opinion about the implementation and content of the program.

Qualitative Results

The conventional content analysis of the responses of forty-one participants who answered the open-ended questions yielded 112 initial codes. After summarizing relevant concepts, 23 codes were extracted. These codes were classified according to their differences and similarities and summarized into three main categories: "motivating learning", "application of theory in practice", and "changing the attitude toward responsibility".

- Motivating Learning

According to students, the use of documentary films in explaining the dissection room issues increases the program's impact. In this regard, one of the participants said:

"The documentary was very influential and showed the importance of the issue." (Participant No:40)

The attendance of experts from different fields in the panel drew more attention to the principles of professional behavior and their role in dissection; this statement was expressed by another participant:

"The presence of professors from different fields makes us realize the importance of the subject more." (Participant No. 23)

In this regard another student said:

"Seeing successful professors and role models has increased our motivation to learn." (Participant No. 17)

- Application of Theory in Practice

According to the participants, the strong point of the program was reflecting on their previous (and first) experience of attending the dissection room in terms of observing the principles of professional conduct.

A quote from one medical student elucidates this point:

"The presented subjects have led us to think about observing ethical principles in the future." (Participant No. 9)

Participants believed that increasing their knowledge of the ethical codes of the dissection room would help them follow the

principles of professional behavior in practice.

"I became aware of the use of materials after participating in the program." (Participant No. 38)

- Changing the Attitude toward Responsibility

This program will prepare students for professional attendance in the dissection room and is an introduction to the observance of professional behaviors in their future profession. According to the students, applying the same principle to other programs with similar goals could internalize professional behaviours.

One of the participants said:

"I wish such meetings to be repeated, so we will not forget our main duties and sense of responsibility. Personally, whenever I attend such meetings, I feel like my first day at the university." (Participant No. 11)

Facilitating the transition to the dissection room and expressing the ethical codes of the dissection room will increase the sense of responsibility in medical students. This issue has been expressed by several contributors as follows:

"This program created a sense of responsibility toward learning in the dissection room." (Participant No. 31)

Another participant also described the effect of this program on the students' beliefs and viewpoints:

"This program made me feel more serious about medical education." (Participant No. 5)

Discussion

Professionalism is one of the core competencies of physicians and is believed to be the cornerstone of physicians' communication with society (23). Teaching these principles to students is the responsibility of all institutions involved in medical education and is not exclusive to clinical units. In addition, the internalization of these principles requires education and repetition from the first days of the curriculum (24, 25). Many experts consider attendance at the dissection room and cadaver encounter as the medical student's first professional experience, and believe that it provides an excellent opportunity to teach them the principles of professional behavior (7). Hence, in this program at the Tehran University of Medical Sciences, School of Medicine, codes of professional behavior of the dissection room were presented to freshman students. In a study conducted at Dublin University, students' attitudes toward dissection were studied and according to the results, 34% of the students were not ready to attend the dissection room even as late as 9 weeks into the anatomy course; this indicates the importance of offering a training course to prepare students for the dissection room (18). Thus, in addition to familiarizing the students with the principles of professional behavior, the present study provides the basis for facilitating their adaptation to attend the dissection room.

We developed our program for undergraduate medical students by combining a film display accompanied by

holding a panel discussion and a donor interview as a new teaching format. Due to differences in students' learning styles, various teaching methods were used in this program. Most of the students considered the program to be successful and recommended the program for other freshman medical students in the future. The results of the study by Cahill and Ettarh showed that 30.4% of the medical students preferred participating in a group discussion about the dissection room and 32.3% of them preferred to hear statements about body donation, while 50.9% believed that watching a film about dissection would be helpful before attending the dissection room (18). According to the majority of participating students, showing the film played an important role in forming, sharing, and further considering their thoughts and feelings in light of maintaining the dignity of the cadaver. Increased emotions and insights in this study corroborate these earlier findings (26). On the other hand, because the dignity of the cadaver is a multifaceted issue, experts in various fields of medical ethics, anatomy, and medical education were invited to explain the different aspects of the code of practice in the dissection room. In this study, the participants stated that the experts of "different fields" helped them understand the various dimensions of the issue and that their divergent comments were beneficial to facilitate the reflecting process. According to study results, creating an opportunity for thinking and reflecting on the principles of professionalism regarding cadavers helps students better understand the importance and necessity of following professional behaviors. On the other hand, familiarity with the principles of professional behavior is related to the promotion of other aspects of professionalism in students (27). In a study conducted at the University of Pakistan School of Medicine, the majority of students believed that preparation meetings were highly influential in coping with psychosocial issues, and 71.9% of the students believed that these meetings had increased their respect for human life and those who donate their bodies (28).

Based on the results of this study, the majority of participants acknowledged that after participating in the program, they felt more responsible in using the equipment and facilities of the dissection room. Understanding the necessity of the issue and motivating the students to comply were the most important results of the present study period. Students cannot be expected to have the motivation to implement the principles of professional behavior without knowing them. Another critical issue is the tendency of students to use these ethical points in the future. Given that the basis of ethical codes in the dissection room and medical practice is similar, one can consider the observance of codes of professional behavior in the dissection room as a form of practicing professionalism in clinical settings (25), especially when attending the dissection room is considered as medical students' first professional experience at the beginning of the study period (7).

In addition to motivating students to observe

the principles of professional behavior, ensuring that they will follow these principles was another objective of the program. For this purpose, a commitment letter to follow the principles of professional behavior was signed by the participants and then hanged in the dissection room as a reminder. According to the positive comments of 82% of the students about the impact of this strategy on maintaining their observance of the principles of professional behavior, it is recommended to follow this practice in future studies.

The female students had more positive views than the male students, except in two items: "understanding the purpose and necessity of the program", and "increased motivation to follow the principles of professional behavior". One possible explanation can be that female students are more likely than male students to underrate their competencies, including professional commitment in self-assessments (29). However, after participation in this program, they were more eager to follow the principles of professional behavior in the dissection room. In addition, according to studies, female medical students usually experience more anxiety levels in dealing with different medical education situations (30), and are more likely to be emotionally affected by the dissection experience (31); this can be the reason why participating in this program proved to increase female students' self-confidence. Furthermore, several studies have suggested that female students might generally be more inclined to change their professional attitudes due to educational interventions. A study by Pearson et al. demonstrated that after frequent exposures to cadavers through a gross anatomy course, female students tend to prioritize altruism more frequently in comparison to male students (32). Also, it has been demonstrated that female students are more supportive of commemoration ceremonies for body donors (33), which may, to some extent, account for the differences in responses. Another study found that female students are more likely to view the cadaver as a person than a specimen (34). This suggests the importance of paying attention to preparing medical students, especially female students, for entry into the dissection room.

One of the limitations of this study may be the lack of examining of the students' attitudes toward the dissection room before and after the program. It would be better if some form of pre- and post-exposure survey could be developed in the future. Another limitation of the study was the timing of completing the questionnaire, which was immediately after the program since the participants' views could change over a longer time. Furthermore, the study is limited to assessing students' attitudes. The results presented here are reasonably limited with some confounding variables, including participants' previous attitudes about donation, students' limited exposure to the dissection room, and the tightness of the program. It is suggested that in future studies, student attitudes toward observing the principles of professional behavior after attending the program be assessed a while after attendance in the dissection room.

Conclusion

This study indicates the need to teach students the principles of professional behavior in dissection classes at the beginning of undergraduate medical education. This type of education will increase freshman students' respect for human life and those who donated their bodies. Providing adequate preparation for cadaver dissection sessions and describing professional behavior codes in medical students' first encounter helps them to better understand the principles of professional behaviors.

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Conflicts of Interests

None declared.

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