



Preparing Students Emotionally for the Human Dissection Experience

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Emotional Reactions of Medical Students to Dissection

For centuries, human dissection has been a well-established teaching method in the gross anatomy laboratory, and it calls for additional professional competencies such as team spirit, self-reflection, or “detached concern,” which are also important in novice doctors’ later medical practice [1–3]. For many years, these teaching objectives were represented only in the “hidden curriculum.” Today’s anatomy teaching is guided by the principles of humanism and ethical standards and puts professionalism and reflection in the gross anatomy laboratory into practice [4, 5].

Definition

The term “detached concern” was introduced by GE Dickinson (1997) and was used in a preclinical teaching context [2]. It describes the effort of medical professionals/students to “care” for the patient/body donor, but yet “not get too close.”

Detached concern prevents overly strong emotional reactions which might interfere with the best possible medical treatment and the learning process.

In recent decades, teaching time has been markedly shortened in nearly every medical school [6]. As a result, students are subjected to increased stress with regard to learning and examinations. Additionally, students already undergo emotional stress in expectation of the dissection process. This stress might even resemble the symptoms of post-traumatic stress disorder (PTSD), causing somatic symptoms such as decrease in appetite, nausea, or sleeplessness [7, 8].

This emotional impact might have disruptive effects on the students’ learning process and might trigger detachment as a coping strategy [9]. An inadequate work up of their emotions in this vulnerable phase might impair the development of medical competencies such as professional empathy for the students’ first and future patients [10–12] or could contribute to future mental burnout [13, 14]. Therefore, anatomy staff members should be committed to reducing this mental distress in the anatomy laboratory as much as possible.

Fortunately, “the strongest reactions by medical students to dissection were in anticipation of it” [9, 15–17] (see Fig. 25.1). The nature of these reactions was summarized as follows: “For many, facing the cadaver for the first time elicits a wide range of emotions. These may include thoughts of their own mortality to the sheer admiration of

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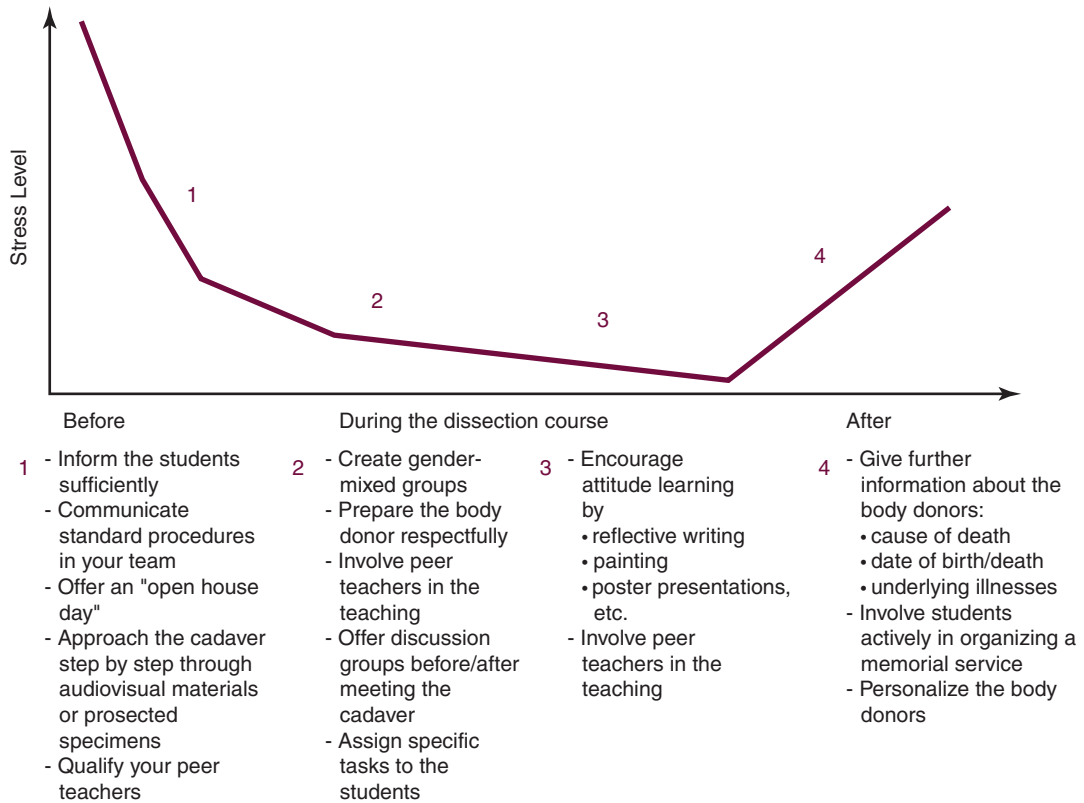


Fig. 25.1 Students' typical stress level before, during, and after the dissection course and an overview of suitable interventions to handle the students' emotional reactions

knowing that someone cared to help others learn about the body, even in death" [18]. Apart from negative emotions a lot of students experience dissection as positive and fascinating [19, 20]. Shortly after the first contact with the cadaver, a habituation process starts in most students, and students' fears reduce significantly.

These findings have been confirmed by many other research groups [21–24]. During the dissection course, students become more aware of mental stress as soon as they have to work on body parts which are intimate or express the human personality such as the face or hands or at times when the cadaver still appears intact [25, 26]. In due course of time, the fear of dissecting the cadaver gives way to professional curiosity, assessment, and occupational stress [19]. However, between 4% and 6% of the students experience difficulties

adapting, which is expressed in the form of ongoing nightmares, poor appetite, sleeplessness, and learning difficulties [27]. It is only at the end of the assessment period that students once again focus on the role of the body donor, and this requires further guidance by staff members.

Different strategies were described regarding how students might handle mental distress during the dissection course. Without proper guidance to visualize a cadaver as a learning object and as an individual at the same time, faulty strategies might be learned. If students do not develop this professional ability of "caring for the body and yet not getting too close"—a concept Dickinson et al. [2] labeled "detached concern"—this could in the long run lead to burnout or non-empathetic treatment of patients [14, 24, 28, 29]. Other coping strategies are

humor, name-giving, intellectualization, and the application of philosophic or religious attitudes [22, 30]. In addition, the skill of “detached concern” could even be a predictor for assessment results and state examinations [31]. Therefore, emotional distress and its coping strategies demand the faculty’s attention.

Reasons Why Anatomists Should Care About Emotional Stress in the Dissection Laboratory

- Interferes negatively with the students’ learning process
- Interferes negatively with the development of medical competencies
- Increases the risk of students’ burnout
- Reduces students’ willingness to donate their own body

Main Factors Causing Students’ Emotional Reactions

No Previous Medical Training

Some investigations have shown that students without previous medical training have a higher need for psychological support [24] and take longer to form proper coping strategies than those students who had completed some sort of medical training before entering medical school. But the influence of a previous medical training is still controversial.

Previous Experience with Death and Dying

In general, at the start of dissection, about half of the students have never seen a cadaver before [16]. For these students, the first day of the course is particularly hard. Apart from not being acquainted with the sight of a cadaver, the emotional turmoil caused by a recent death in the family can be connected to strong emotional reactions [32].

While there is no obvious impact of age on the extent of mental distress, there seems to be a relationship between reporting anxiety and personality traits like extraversion or openness measured by the “Big Five” personality inventory [33]. Unfortunately, personality tests are not recommendable as screening instruments due to practical reasons such as anonymity and the considerable expense of performing these tests.

Sex Differences

With regard to the first contact with the body donor, women were shown to start at higher psychological distress levels than their male colleagues [16]. This may be explained by the fact that women have a high body esteem and think more frequently about their own mortality [34]. Subsequently, female students do not get used to the new situation in the dissection laboratory as quickly as male students, and they request introductory courses to get used to the dissection laboratory more often [23, 24, 32].

Strong Emotional Reactions are Likely to be Shown By

- Students with no previous medical training
- Students with recent death experiences in their social environment
- Female students

Recommended Interventions of Psychological Support

If questioned, students wish in particular for adequate preparation before their first contact with the cadaver and dissection—preferably in small groups such as their dissection teams on the first day of the course. Fear of death and additional stress due to dissection are reduced significantly if the students feel well prepared to enter the course [35]. Therefore, mental distress in the dis-

section course demands anatomists' attention. Practical core elements of an ethical anatomical education that also deal with students' emotions are summarized by Hildebrandt (2006) [4].

In advancing to the hands-on dissection, teachers should emphasize that dissection is a purposeful learning method to acquire the anatomical foundation for clinical practice and that this is in complete accordance with the donors' expectations [36]. Educators have to support the initial habituation process and assist students in developing the professional skill of "detached concern" and encourage students to reflect on their work and emotions.

Preparing students for the dissection experience needs to be implemented with consideration of the local curricular structure. The habituation process needs a preparatory period ahead of the course. Therefore, a dissection course starting in the students' second academic year or second half of their first year is advantageous, because the habituation process can start beforehand. In a modular structured curriculum, which is based on functional body systems and/or uses primarily prosected specimens, the body donor as a human being recedes from being the main focus. In this setting, students might show less emotional reactions, but, on the other hand, indispensable teaching objectives like professionalism and self-reflection are more difficult to address. Thus, the interventions listed below have to be checked in each individual case for their suitability.

Recommended Interventions Before the Dissection Course Starts

1. Create an atmosphere of trust and transparency by passing on comprehensive information to the students about the dissection course itself:
 - Body donation program: From our own experience, it is of particular importance for the students to be told that the cadavers were donated on a voluntary basis during their lifetime according to local regulation and following recommendations for good practice of the IFAA [37]. Body donations are mostly motivated by the donors' own
 - positive experiences as patients during their lifetime and the wish to support young medical students in becoming good doctors. (See also Chap. 22).
 - Techniques of body preservation: Certainly, it would go far beyond the scope of comprehensive information to inform students beforehand about specific body preservation techniques. However, they should be informed about specific features in body appearance after death and preservation such as changes in consistency and color which they have to be aware of on the first day of the dissection course.
 - Counseling services: Inform about possible counseling services in your department, medical school, or university. Many students do not know that these services exist at all or how to contact them.
2. Remember to develop and communicate standard procedures to deal with students' emotional reactions to your staff members. Keep them informed about counseling services too and guide them to an understanding of a uniform role model *you* want them to represent for your students.
 3. Offer an "open house day," which allows students to familiarize themselves with the premises, gross anatomy dissection, and learning facilities without yet being in contact with a cadaver.
 4. Nowadays, it is easy to get in digital contact with future participants of the dissecting course before the course starts. Besides passing on information (e.g., via websites), it also initiates students' reflection on the expected dissection experience and prepares them for the possible emotional reactions. Students might be invited to express their fears and emotions in any manner they like on appropriate platforms (e.g., internet blogs or forums), thus helping them realize that their fellow students share the same feelings [4].
 5. Another possibility for accelerating the students' habituation process is the integration of audiovisual material, which shows the dissection or prosection of human specimens. Audiovisual material might be presented on a single occasion, e.g., during anatomy lectures,

or as web-based presentations for personal usage. It was shown that realistic video presentations on working with human cadavers are able to reduce emotional reactions before the dissection course [38].

The use of audiovisual material should preferably be integrated into the curricular teaching concept. Within this scope, audiovisual material could be part of a preparatory manual for students to work through before actually starting with their first course session, thus utilizing already limited time more effectively. Audiovisual materials might illustrate the preparatory process and its necessary skills and show additional medical images, problem-based case reports, or image-based quizzes.

Perceiving the body donor as a “first patient” could represent important principles to keep the desired balance between the donor as a learning object and a once living being. In this context, students ask for more information about their body donors such as their previous medical history or their motivation to donate their body [39]. In the past, it could be shown that short documentary films illustrating the life and motivation of body donors are very well accepted by students as a preparatory measure to the dissection course. However, a very small number of students are threatened by selected film scenes. Therefore, students’ participation in watching such a film with adjoining discussion should preferably be voluntary [40–42].

6. The habituation process for the new situation in the dissection course should allow the students to gradually approach the cadaver. A “step-by-step” approximation can occur through initial demonstrations of prosected specimens such as single organs, progressing to whole body parts, and culminating in the presentation of an intact dead human body. Similarly, the teaching method should be adjusted appropriately with lectures at the beginning, followed by an interactive learning process, and finally active dissection. Depending on their previous knowledge, students should get the chance to follow their natural curiosity to approach the cadaver at their own pace. Several projects adopting such

approaches and their positive effects have been described in the past [43, 44].

Recommended Interventions on the First Day of the Dissection Course

1. Female students more frequently experience feelings of fear and disgust than men in expectation of the dissection course. Hence, mixed-sex dissection groups could be advantageous for the purpose of mutual support, a fact that should be considered when organizing the gross anatomy course.
2. It is useful to create a standard operating procedure for the first day in the anatomy laboratory with regard to the students’ first confrontation with the body donor, in coordination with your colleagues. Staff members and peer teachers of each dissection group should be adequately briefed beforehand. Hence, preparing students emotionally for the dissection experience should be an explicit learning objective in peer teacher training.
3. The first contact with the body donor can be markedly eased if reverent and respectful preparation and handling of the cadaver is ensured. Students are less emotionally involved if the donor does not appear overly human. Accordingly, the donor’s face and genital region should be covered, e.g., with towels. Similarly, emotional reactions are frequently enhanced at the sight of hairy skin regions, therefore requiring a thorough total body shaving of the donor.
4. The majority of students favor emotional preparation immediately on the first day of dissection in a small group setting with peer teachers as their trusted person with whom to share their fears and feelings [24]. This kind of small group setting might occur before and/or after the first contact with the cadaver, and—wherever applicable—this might be supported by audiovisual material (see above). Referring to our personal experiences, quite often, the students’ anticipatory fears do not allow a reflective conversation beforehand, yet in some instances, a prolongation of this

tense situation could even increase emotional reactions. Hence, we favor a rather quick guided confrontation with the body donor and sufficient time afterwards for reflection and feedback about one's individual feelings looking back on the first contact with a cadaver.

5. Students might be emotionally relieved to be preoccupied with professional duties. Thus, it could be advisable to have the students perform a physical examination—just as if the donor was their first patient—and document the findings on an admission sheet. Looking at the cadaver in a professional manner diverts the focus from a holistic view toward isolated body parts, regions, or organs.
6. Finally, the practice of personalizing the donor by giving him/her a name offers benefits to medical students as an emotionally focused coping mechanism that takes place at the beginning of the dissection course and that should be guided. Naming seems to aid in increasing students' attention to the humanistic qualities of their cadavers [30].

Recommended Interventions on the First Day of Dissection

- Arrange into mixed-sex dissection groups.
- Create a standard operating procedure for the first day.
- At all times, ensure a respectful handling of the cadaver.
- Arrange a small group setting with peer teachers to reflect on one's fears and feelings before/after the first cadaver contact.
- Engage students with distinct tasks (e.g., admission sheet).

Recommended Interventions During the Dissection Course

Due to stress related to learning and assessments, 75% of the students do not want to par-

ticipate in extensive programs of psychological support during the time of dissection [44, 45]. Apart from that, once they have distanced themselves from the human being they are dissecting, voluntary measures such as discussion groups are welcomed by the majority of students [46, 47]. Additional consultation with psychosocial services or contact with clergy members might be desirable especially for those 4–6% students who continue to experience emotional distress during their work in the anatomy laboratory.

Most of the students are able to handle their emotions within a short period of time through the mechanisms mentioned above. However, this process might be only short term and superficial, therefore requiring additional interventions. Therefore, the dissection course should offer scheduled time for reflection on the course. Medical humanities projects could be valuable in this process of encouraging students' "self-reflective learning" which in the long term promotes a physician's professional skill in "staying grounded" [47].

1. Students use talking to their peers as their main coping mechanism to overcome their fears about dissection. Implementing peer discussion early in the dissection course by, for example, questionnaires about their feelings concerning dissection is a valuable method of introducing students to an important coping mechanism [24, 46].
2. Previous research suggests that students might be more willing to communicate their feelings associated with death or the dissection experience through *written correspondence* rather than by oral communication. Therefore, memorable experiences are often communicated by reflective writing [18]. Humanistic learning tools such as paintings, vocal performances, writing poetry, interview-projects with the donors' family, and preparing posters or portfolios about the body donor are common instruments for promoting reflection and coping with the new environment of the dissection room [4, 48–53].

3. Peer teachers, specially trained and more experienced students acting as tutors, function as role models and trusted personnel in the dissection room. Therefore, students experience a lower threshold with regard to contacting their peer teacher for any kind of problem compared to contacting staff members. The effectiveness of these peer teaching concepts has been proven in the past [54, 55]. A ratio of one peer teacher assigned to one dissection group around one body donor appears ideal. However, the crucial factor is that qualified peer teachers need in-depth training before entering the dissection course.

Recommended Interventions After the Dissection Course

After course assessments have been completed, students experience a rapid decrease in learning and assessment pressure. Thus, the need to cope with emotions through distancing or depersonalization vanishes. The body donor ceases being only an learning object and turns back into a human being with an individual biography.

Despite the fact that a follow-up meeting might not be explicitly requested by students and that anatomy staff members are not their first choice to discuss their emotions, this is the right time for anatomists to act as role models and to demand students' participation [24]. Generally, at this point in time, the desire to obtain further personal information about the body donor increases. Students seek information such as the donor's cause of death, previous illnesses, and their life or family situation. Likewise, most donors encourage sharing of their information to enhance student education [39].

Anatomists should take the students' desire for a closer personal relationship with the body donor into account in order to help students to reflect on the emotions arising from their dissection experience:

1. Anatomists can meet the desire for information about the donor by disclosing information from the body donor's death certificate

about age, date of death, cause of death, and underlying illnesses. An admission sheet documenting the findings before cadaver fixation might be added [15, 56, 57].

2. Most faculties in European or Anglo-American universities conduct a thanksgiving ceremony at the end of the dissection course [58]. This event is a ceremonious occasion of reflection and farewell for all parties concerned. The students "dismiss" their body donor, a person they have not known personally yet who has influenced not only their acquisition of anatomical knowledge but also their personal and professional advancement [59]. Most often, students, tutors, staff members, and relatives participate in this memorial service; students participate actively by expressing their deep gratitude through valuable music and oral contributions. Asian cultures refer to the cadavers as great teachers, and students respect them as highly valued teachers. In some schools, Buddhist ceremonies accompany the dissection course even on the first day in the laboratory, and body donors are personalized by reading their names aloud [60].

3. Nowadays, thanksgiving ceremonies is practiced in western medical schools to set up a personalized connection with the body donor and to possibly strengthen the students' empathic competence. In this context, a paradigm shift away from anonymizing the body donor toward its personalization is discussed as a meaningful measure for a respectful handling of the body donor [58, 61]. A personal relationship between the body donor and the student might be consolidated—among other things—by an informal meeting of the dissection group and family members of the donor or by video-documented interviews of the donor. Up to now, such a concept of de-anonymizing the donor has primarily been offered as a preparatory measure; however, this would also be applicable as a measure at the end of the dissection course to deal with any unaddressed emotional responses [39, 61].

Conclusion

There are many possibilities to structure the dissection course in order to meet the students' different desires to prepare them progressively for the confrontation with the body donor, to appropriately address the variety of feelings arising, and to help students perform the dissection course successfully from an anatomical and also emotional perspective. With the aid of the interventions mentioned here, the dissection course has an eminent potential to help students develop their professional attitudes and competencies.

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