

# Emotional Reactions of Medical Students to Dissecting Human Bodies: A Conceptual Approach and Its Evaluation

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In recent years, the medical curriculum has been changed in many institutions worldwide. New concepts such as problem-based or evidence-based learning have consequences for teaching anatomy (Drake, 1998). Various papers have been published, for example, on the effects of self-directed learning on teaching anatomy (Peplow, 1990), small group case-based learning programs (Hansen and Krackov, 1994; Peplow, 1992), multiple choice testing in anatomy (Nnodim, 1992), or using computerized representations of anatomy (Rosse, 1995; Walsh and Bohn, 1990). Dissection has also been compared with prosection (Nnodim, 1990). In other articles, the hours available for teaching anatomy have been compared between medical schools in Great Britain, and aspects of teacher training for anatomists have been discussed (Fitzgerald, 1992).

One aspect, however, has seldom been discussed (Putz, 1999) and has rarely been the subject of scientific interest. How do we prepare our young medical students to touch and dissect a human body? Irrespective of whether it is the classical dissection course or problem-based learning using projected material, it will

probably be the first time that students will come into close contact with a dead body and thus be confronted with issues of dying and death. Articles on this topic have been published in journals but not often read by anatomists (Bertman and Marks, 1985; Horne et al., 1990). In our experience, the vast majority of first year medical students have seldom had contact with dying relatives or friends, nor have they actually seen a dead person.

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## The anatomist plays a critical role in initiating a balanced attitude to death and dying in trainee medical doctors

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About 15 years ago, Lippert (1985) asked the provocative question: How humane is human anatomy and to what extent will the behavior of a medical student during dissection influence his/her future attitude to patients? The corpse has no name for the student and need not be asked for permission before major organs are cut. Is the corpse, therefore, not more like a guinea pig than a person with individual characteristics? Babad and Kedar (1999) entitled their contribution to a recent congress "How to remain sensitive without becoming vulnerable: Medical students coping with reactions to dissection."

The two aims of this short article were to describe our concept to in-

tegrate the topic of death and dying into the curriculum of gross anatomy and to present the results of a questionnaire on this topic distributed to students at the end of their first semester.

## INTEGRATED CURRICULUM OF TEACHING GROSS ANATOMY

Annually, the Medical School of Hannover enrolls approximately 350 first year medical students. In contrast to nearly all other faculties in Germany, gross anatomy starts immediately at the beginning of the first semester with a unique concept. A topic is dealt with in lectures in one week, followed by dissecting this region the next week and a seminar in living anatomy dealing with the same area, whereby the students identify the structures on each other partly using ultrasound equipment. In parallel, clinicians present patients twice a week with diseases of the part of the body just learned. This basic concept has been described before (Pabst et al., 1986). In the very first week the topics of dying, death, and postmortem signs are dealt with in the lecture hall and an embalmed body is demonstrated at the end of this lecture. The following week, students go to the dissecting room to see and palpate the corpse (four to five students per corpse). After one hour, groups of about 20 students meet with an anatomist in a seminar room, where they talk about expectations and fears with respect to dissecting a human being. The students are stimulated to talk about their emotions within their group and not suppress them throughout the course.

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**TABLE 1. The main results of the questionnaire**

Was it helpful to attend a demonstration of the corpse in the lecture hall?		
Helpful 72%	No positive effects 27%	Negative 1%
Was it helpful to attend a seminar after the first encounter with the corpse in the dissection hall?		
Helpful 67%	No positive effects 32%	Stressful 1%
Is the attitude to, and treatment of, the corpse by other students correct?		
Correct 75%	Varies 23%	Incorrect 2%

### QUESTIONNAIRE AT THE END OF THE FIRST TERM

An anonymous questionnaire was distributed to the students after the first half of the dissection course (after four months). Several questions were asked about coping with the initial contact and dissecting a human body. Differences were calculated between male and female students and different age groups: up to 21 years (immediately after leaving school) vs. over 22 years (mainly students who entered medical school after some other vocational training, e.g., nurses). A further question dealt with the behavior of fellow students and another asked whether they would have been interested in talking about problems of death and dying during the semester.

The response rate was 97%; 52% of which were female students. There were no significant differences between female and male students or between "younger" and "older" students. In Table 1 the main results are shown. For the vast majority of students, step-by-step contact with the dead body and the discussion in seminar groups that followed, was positive. The answers given on the behav-

ior of fellow students were surprising; during the course we often discussed the topic, but heard no complaints. In the anonymous survey, however, roughly every fourth student was annoyed at times by the behavior or attitude of other students. Table 2 illustrates whether the topic of death and dying should have been dealt with more often. About 40% were interested and 11% were not sure. Answers varied greatly about the need to talk and with whom.

### ETHICAL AND MORAL DEVELOPMENT OF MEDICAL STUDENTS IS INFLUENCED BY ANATOMISTS

In the discussion of modern medical curricula, several theories have been put forward. However, not many scientifically based "outcome studies" are available. In questionnaires distributed to students during their final year working on the wards (Pabst, 1993), at the end of their curriculum (Pabst and Rothkötter, 1996), or to doctors at the end of their residency time in hospitals (Pabst and Rothkötter, 1997), gross anatomy was always ranked among the most clinically rel-

evant parts of the undergraduate curriculum. In studies on ethical environment and personal development (Feudtner et al., 1994), medical ethics (Feudtner et al., 1994; Hojat et al., 1995), and the moral development of medical students (Self et al., 1993), such aspects were found to have a fundamental impact on medical students.

In our system, the seminars following the initial encounter with the corpse seemed to be an important opportunity for medical students to share feelings and fears. By talking it over, means of coping could be shared among students. Horne et al. (1990) reported that those students who had had the prior experience of a dead human body wanted more contact with anatomy department staff to discuss emotional aspects of human dissection.

Anatomists are often the first teachers in the curriculum who need to be aware of ethical problems (Bertman and Marks, 1985; Horne et al., 1990; Putz, 1999). More attention should be paid to the first encounter with corpses, and students should be offered the opportunity to discuss their emotions. Many students mentioned they could not talk about these prob-

**TABLE 2. Interest in repeated discussion of death and dying**

Would you prefer to speak about death and related topics repeatedly during the course?				
No 50%		Yes 39%		Unsure 11%
With whom would you prefer to speak about death and related topics? (% of all students; multiple answers possible)				
Student tutor 15%	Anatomist 10%	Clinician 23%	Clergy 10%	Other 5%

lems with family or even closest friends, who tend to find such topics embarrassing. Anatomists should not only teach young medical students the structure and function of organs, but also provide a role model for how future doctors will deal with their patients.

As a consequence of this study, we approached a Protestant and a Catholic member of the clergy. They are eager to integrate the problems of death, dying, and the dissection course in a devotion for the student parish and are also available if students wish to speak to them on these topics. Furthermore, at the beginning of the autumn term a colleague from the department of transplantation surgery was invited to give a talk on determining brain death, organ transplantation, and the decision to become an organ donor, which was followed by a discussion.

## CONCLUSIONS

Despite curriculum changes, the undergraduate medical student's first encounter with a human corpse will still be in anatomy. Our questionnaire documented the need to prepare students for the psychological and physical reactions they may experience during the dissection course. The concept of introducing the students step by step to this situation was graded "very helpful" by the majority of students for coping with dissecting a human body. About 40% expressed a desire for repeated discussion with student tutors, anatomists, clinicians, or clergy. Alternative approaches to discussing these topics should be of-

fered. Emotional issues during human dissection should not be neglected, but addressed repeatedly. The anatomist plays a critical role in initiating a balanced attitude to death and dying in trainee medical doctors.

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## LITERATURE CITED

- Babad Y, Kedar H. 1999. How to remain sensitive without becoming vulnerable: medical students coping with reactions to dissection. *Med Teacher* 21:227.
- Bertman SL, Marks SC. 1985. Humanities in medical education: rationale and resources for the dissection laboratory. *Med Educ* 19:374-381.
- Drake RL. 1998. Anatomy education in a changing medical curriculum. *Anat Rec* 253:28-31.
- Feudtner C, Christakis DA, Christakis NA. 1994. Do clinical clerks suffer ethical erosion? Students' perceptions of their ethical environment and personal development. *Acad Med* 69:670-679.
- Fitzgerald MJT. 1992. Undergraduate medical anatomy teaching. *J Anat* 180:203-209.
- Hansen JT, Krackov SK. 1994. The use of small group case-based exercises in human gross anatomy: a method for introducing active learning in a traditional course format. *Clin Anat* 7:357-366.
- Hojat M, Gonnella JS, Xu G. 1995. Gender comparisons of young physicians' perceptions of their medical education, professional life, and practice: a follow-up study of Jefferson Medical College graduates. *Acad Med* 70:305-312.
- Horne DJL, Tiller JWG, Eizenberg N, Tashkevka M, Biddle N. 1990. Reactions of first-year medical students to their initial encounter with a cadaver in the dissection room. *Acad Med* 65:645-646.

- Lippert H. 1985. Wie human ist die Humananatomie? *Verh Anat Ges* 79:21-30.
- Nnodim JO. 1990. Learning human anatomy: by dissection or from prosections. *Med Educ* 24:389-395.
- Nnodim JO. 1992. Multiple-choice testing in anatomy. *Med Educ* 26:301-309.
- Pabst R. 1993. Gross anatomy: an outdated subject or an essential part of a modern medical curriculum? Results of a questionnaire circulated to final-year medical students. *Anat Rec* 237:431-433.
- Pabst R, Rothkötter HJ. 1996. Retrospective evaluation of a medical curriculum by final-year students. *Med Teacher* 18:288-293.
- Pabst R, Rothkötter HJ. 1997. Retrospective evaluation of undergraduate medical education by doctors at the end of their residency time in hospitals: consequences for the anatomical curriculum. *Anat Rec* 249:431-434.
- Pabst R, Westermann J, Lippert H. 1986. Integration of clinical problems in teaching gross anatomy: living anatomy, X-ray anatomy, patient presentations, and films depicting clinical problems. *Anat Rec* 215:92-94.
- Peplow PV. 1990. Self-directed learning in anatomy: incorporation of case-based studies into a conventional medical curriculum. *Med Educ* 24:426-432.
- Peplow PV. 1992. Students' written reports as an essential part of a case-based learning programme in anatomy. *Med Educ* 26:462-465.
- Putz RV. 1999. Der Leichnam in der Anatomie. *Z Med Ethik* 45:27-32.
- Rosse C. 1995. The potential of computerized representations of anatomy in the training of health care providers. *Acad Med* 70:499-505.
- Self DJ, Schrader DE, Baldwin DC, Wolinsky FD. 1993. The moral development of medical students: a pilot study of the possible influence of medical education. *Med Educ* 27:26-34.
- Walsh RJ, Bohn RC. 1990. Computer-assisted instructions: a role in teaching human gross anatomy. *Med Educ* 24:499-506.