Journal of Population Therapeutics & Clinical Pharmacology

RESEARCH ARTICLE
DOI: 10.53555/pbqtd664

A STUDY ON HEALTH OUTCOMES AND HYGIENE MEASURES IN CADAVERIC DISSECTION AMONG MEDICAL STUDENTS

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Abstract
Background: Cadaveric dissection, considered the cornerstone of anatomy education, provides essential hands-on learning for medical students. However, exposure to formalin and cadaveric material may lead to health issues and infection risks if proper hygiene is not maintained.
Aim: To study the physical and psychological health outcomes and assess hygiene measures followed by medical students during cadaveric dissection.
Material and Methods: A cross-sectional, observational study was conducted from October 2023 to September 2024 among 150 first-year MBBS students in the Department of Anatomy. Students meeting the inclusion criteria completed a structured questionnaire assessing symptoms and hygiene practices. Data were analyzed using descriptive statistics and p-values for significance.

Results: Among 150 participants (54% male, 46% female), common symptoms included eye irritation (48%), emotional distress (37%), nausea (30%), and headache (26%). Most symptoms were statistically significant ($p < 0.001$) except eye irritation ($p = 0.708$). Regarding hygiene, 93.3% used gloves, 90% wore lab coats, 86.7% washed hands, but only 63.3% wore face masks. Additionally, 80% were aware of infection risks, and 73.3% reported adequate ventilation.

Keywords: Cadaveric dissection, medical students, health outcomes, hygiene practices, formalin exposure, infection risk, anatomy education, psychological effects, dissection hall safety.

Introduction:

Cadaveric dissection, also known as the 'sharpened' of medical education, is a pivotal and structural tool for understanding the subject of Anatomy. Despite the numerous benefits of cadaveric dissection, procuring and programs and "unclaimed" bodies are the commonest sources for cadavers. Proper preservation of bodies employing the method of embalming is done with the commercial form of formaldehyde in a separate embalming room with adequate ventilation by skilled and trained dissectors. Yet, formalin exposure causes adverse effects such as burning sensation of eyes, nose, throat and lacrimation.[1]

Cadavers are considered the first teacher for medical students. Anatomy laboratories are essential for medical education, where students learn about the structures and their relations in the human body, through hands-on dissection of human cadavers.[2]
Studies have reported increased susceptibility to upper respiratory tract diseases following formalin exposure.[3]
The proximity of the students, table teachers and lab attendants to the cadaver in the dissection hall makes them more susceptible to acquire infections. Moreover, diseases like Pulmonary TB, Hepatitis B & C and transmissible spongiform encephalopathies like Creutzfeldt Jakob Disease spread through the careless handling of cadavers and poor hygiene practices.
Motivating neophyte learners is a complex endeavour influenced by the course of study and the learning environment, in this review article, we will aim to summarize the current knowledge on risk factors, infections in the handling of cadavers, and various infection control precautions in anatomy laboratories along with future perspectives.[4]
Medical students can learn more about the structure and functioning of the human body through cadaveric dissection. It aids in the development of abilities needed for correctly diagnosing and treating a range of medical disorders. Medical students can learn about the anatomical features of the human body and how it functions through dissection.[5]
The above explains why cadaveric anatomy dissections and prosection have been and will remain an integral aspect of training anatomists and doctors as well as other health professionals.[6]
Nevertheless, few difficulties are faced by the students during their first exposure to cadavers and dissection hall. Initial exposure to cadaveric dissection acts as a potential source and cause for psychological trauma, anxiety and appetite loss.[7]

Material and Methods:
The cross-sectional study was conducted involving first-year medical students engaged in cadaveric dissection in the department of Anatomy, at Sarojini Naidu Medical College, Agra. during a period of time October 2023 to September 2024.

Study design: it is cross sectional, observational study.

Inclusion criteria:
1. Currently enrolled in the first-year age of 18-22 years MBBS students.
2. Actively participating in cadaveric dissection sessions as part of the anatomy curriculum.
3. Willing to participate in the study and provide written informed consent.
4. Able to complete the questionnaire or participate in interviews in English language.

Exclusion criteria:
1. Students who have been absent from >50% of dissection sessions, reducing reliability of their responses.
2. Students who are not willing or unable to give informed consent.
3. Students with a known diagnosis of chronic respiratory illness or severe skin allergies that could confound the physical symptom results.
4. Students currently undergoing treatment for psychiatric disorders.

Result:

Gender	**Number of Students**	**Percentage(N) (%)**	**p value**
Male	81	54%	p = 0.327
Female	69	46%	
Total	**150**	**100%**	

Table 1: table represents gender of participants.

Among 150 students, 54% were male and 46% were female. The gender difference was not statistically significant (p = 0.327), indicating a fairly balanced distribution.

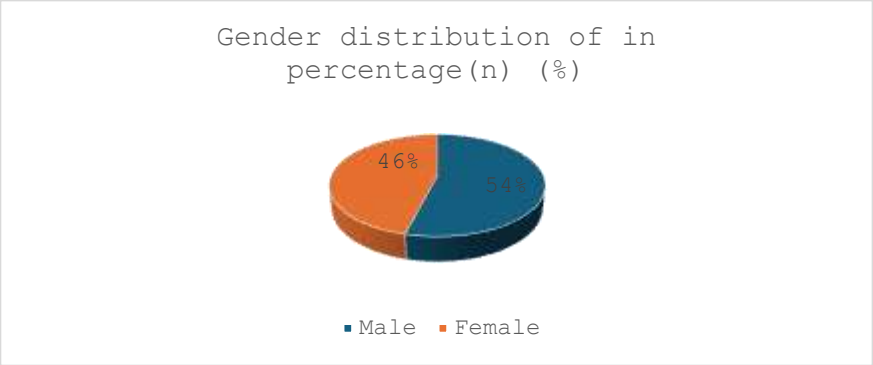

Figure 1: graphical represents gender distribution of the participants.

Symptom	Number of Students (n)	Percentage (%)	p-value
Eye irritation	72	48	0.708
Emotional shock/distress	55	37	0.003
Nausea	45	30	< 0.001**
Headache	39	26	< 0.001**
Anxiety or fear	41	27	< 0.001**
Dizziness	28	19	< 0.001**
Loss of appetite	22	15	< 0.001**
Sleep disturbances	18	12	< 0.001**
Unusual thirst	15	10	< 0.001**
No symptoms reported	21	14	_

Table 2: Physical and Psychological Symptoms Experienced During Cadaveric Dissection (n = 150)
Among 150 medical students, the most common symptoms during cadaveric dissection were eye irritation (48%), emotional distress (37%), and nausea (30%). Most symptoms showed highly significant p-values (p < 0.001), indicating they were not due to chance. However, eye irritation (p = 0.708) was not statistically significant. Overall, the results suggest that dissection induces notable physical and psychological effects, emphasizing the need for orientation and support to reduce student discomfort.

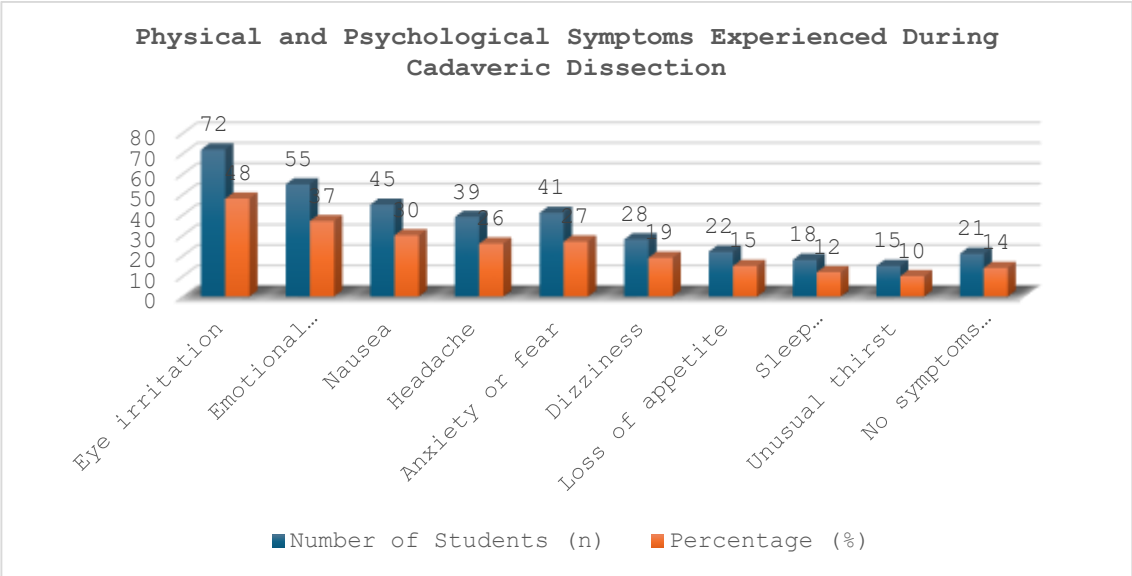

Fig 1: Diagram represent Physical and Psychological Symptoms Experienced During Cadaveric Dissection.

Question	Yes (%)	No (%)
Are you aware of the risk of infection during dissection?	120 (80%)	30 (20%)
Do you regularly use gloves during dissection?	140 (93.3%)	10 (6.7%)
Do you wear a face mask during dissection?	95 (63.3%)	55 (36.7%)
Do you wear a lab coat or apron in the dissection hall?	135 (90%)	15 (10%)
Do you wash your hands immediately after dissection?	130 (86.7%)	20 (13.3%)
Do you avoid eating or drinking inside the dissection hall?	145 (96.7%)	5 (3.3%)
Do you ensure proper disposal of cadaveric waste?	138 (92%)	12 (8%)
Is there adequate ventilation in your dissection lab?	110 (73.3%)	40 (26.7%)

Table 3: Questionnaire on Hygiene Practices and Awareness of Infection Risk (n = 150)

Discussion: Despite advancements in technology and the incorporation of innovative teaching strategies, cadaveric dissection remains a foundational component of undergraduate anatomy education. It is widely acknowledged by medical educators and professionals that dissection provides a unique opportunity to understand human anatomy in a clinically relevant context. The practical, hands-on experience gained through dissection fosters deeper learning and enhances anatomical comprehension. In recognition of its educational value, the National Medical Commission (NMC) has mandated a specific duration for cadaveric dissection within the revised Competency-Based Medical Education (CBME) curriculum (NMC, 2019).[8]

Conclusion: This study highlights that while cadaveric dissection is essential for anatomical education, it is associated with minor health issues such as eye irritation, headaches, and respiratory discomfort primarily due to formalin exposure. Although most students followed basic hygiene practices, inconsistencies in PPE use were observed. Students who received prior biosafety training reported fewer health complaints, emphasizing the importance of structured orientation. Emotional discomfort was minimal and decreased over time, suggesting good adaptability.[9]

Limitations:

1. Long-term health effects of formalin exposure were not assessed.
2. The study was limited to a single institution, reducing the generalizability of the results.
3. Data were self-reported by students, which may be subject to recall and reporting bias.
4. The influence of cultural, religious, and ethnic factors on attitudes towards dissection was not studied.

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