International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

IJAMSCR |Vol.13 | Issue 4| Oct - Dec -202

www.ijamscr.com

ISSN: 2347-6567

DOI : https://doi.org/10.61096/ijamscr.v13.iss4.2025.907-912

Review

The Precision of Electrocautey: A Medical Marvel: A Kap Study on Undergraduate Students" Among Health Care Students in Khammam City

Dr. D. Tejavardhini[1*], Dr. T. Madhavipadma[2], Dr. K.V.N.R. Pratap[3], Dr. B.Vengal Rao[4], Dr. Srujankumar[5], Dr. K. Darshika Chandini[6]

[1]Student, Department of public health dentistry, Mamata dental college, Khammam, India
[2]Professor and HOD, Department of public health dentistry, Mamata dental college, Khammam, India
[3]Professor and HOD, Department of public health dentistry, Mamata dental college, Khammam, India
[4]Professor, Department of public health dentistry, Mamata dental college, Khammam, India
[5]Senior lecturer, Department of public health dentistry, Mamata dental college, Khammam, India
[6]Senior lecturer, Department of Public health dentistry, Mamata dental college, Khammam, India

*Author for Correspondence: Dr. D. Tejavardhini
Email: tejavardhini1212@gmail.com

Published on: 17.12.25

Published by:
Futuristic Publications

2025| All rights reserved.

Creative Commons Attribution 4.0 International License.

Abstract

Electrocautery is a widely used surgical modality valued for its precision, efficacy in tissue dissection, and ability to achieve rapid hemostasis. Despite its routine application across medical and surgical disciplines, undergraduate medical students often have limited exposure to its principles, safety measures, and practical implications. Understanding their knowledge, attitudes, and practices regarding electrocautery is essential for improving early surgical education and promoting safe clinical practice.

AIM: To assess the knowledge, attitude, and practice levels of undergraduate medical students toward the use, benefits, and safety considerations of electrocautery in Khammam city

OBJECTIVES: To assess the use of Electrocautery in health care students based on age. To assess the perception of under graduate dental student on Electrocautery based on year of study.

METHOD: A cross-sectional survey was conducted among 201 dental students, comprising 64 males (31.8%) and 134 females (68.2%), including. The survey included 15 questions exploring the use of Electrocautery among health care students were analyzed based on gender, age and year of study using chi-square tests to identify statistically significant differences.

Keywords: Electrocautery, Surgical precision, Surgical education, Electrosurgery safety, Medical training, Hemostasis, Operative technology awareness, Clinical skills development.

INTRODUCTION:

Electrocautery has become an indispensable tool in modern surgical practice, offering surgeons the ability to cut, dissect, and coagulate tissues with remarkable precision. Its capacity to achieve immediate hemostasis, reduce intraoperative bleeding, and shorten operative time has revolutionized surgical techniques across multiple specialties. As surgical technology continues to advance, proficiency in electrocautery has become increasingly essential for safe and effective patient care.

Despite its widespread use, formal training in electrocautery at the undergraduate level remains limited. Medical students often observe its application during clinical postings but may lack foundational knowledge of its mechanisms, safety principles, and potential complications. Improper use of electrocautery can pose significant risks, including thermal injury, equipment-related accidents, and operating room hazards. Therefore, developing a clear understanding of electrocautery early in medical education is crucial.

Knowledge, Attitude, and Practice (KAP) studies serve as valuable tools for assessing learners' comprehension, perceptions, and behaviors toward specific medical procedures or technologies. Evaluating KAP related to electrocautery among undergraduate students is particularly important, as it reflects their preparedness for surgical rotations and future clinical responsibilities. Identifying gaps in their understanding can guide curriculum enhancement and targeted training interventions.

This study aims to assess the knowledge, attitudes, and practices of undergraduate medical students regarding the use and safety of electrocautery. By highlighting strengths and deficiencies in their learning, the research seeks to contribute to improved surgical education and promote safer, more competent clinical practice in the operating room.

METHODOLOGY:

A) Study design and area: A cross sectional study was carried out at tertiary care teaching hospital khammam.

B) Study population: The health care students including those of first year to internship dental students who responded to the offline paper print questionnaire survey.

C) Study Instrument: A self-administered questionnaire was designed based on "THE PRECISION OF ELECTROCAUTEY: A MEDICAL MARVEL: A KAP STUDY ON UNDERGRADUATE STUDENTS"

HEALTH CARE STUDENT had a total 15 questions. Each participant has to fill their demographic data like Name, age, and year of study.

Participants have to select one option from the answers provided against questions and the questions were based on social media use and professionalism among health care student.

D) Pilot study: A pilot study was conducted on a group of students to assess the validity and reliability of study

E) Sampling method: The sampling method used is convenience method

F) Inclusion criteria: The students who were interested in study and who are willing to participate

G) Exclusion criteria: students who are not willing to participate are excluded

H) Organizing the study: The study was designed in a paper based version of the self-administered questionnaire of 1w questions focusing on knowledge, awareness.

Includes the sections of demographic data: Name, Age, Sex and Year of study demographic information and asked to answer all questions by selecting one option from the provided answers.

I) Statistical analysis: Data from the filled questionnaire was conducted in a tabular form in an excel worksheet and evaluated for analysis.the analysis was performed by SSPS version 29.

RESULTS:

A total of 201 students took part in this with females (68.2%) and male of (31.8%). Age of the participants ranging from 18-25 years. In this study females were more likely to demonstrate perception in dissection room experiences than male. Significantly fourth years showed greater familiarity with advanced applications than first, second, third year and intern students.

	N	Minimum	Maximum	Mean	Std. Deviation
Age	201	19	34	22.58	1.306

Gender				
	Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Male	64	31.8	31.8	31.8
Female	137	68.2	68.2	100.0
Total	201	100.0	100.0	

Year of study					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	I BDS	9	4.5	4.5	4.5
	II BDS	33	16.4	16.4	20.9
	ÌII BDS	33	16.4	16.4	37.3
	IV BDS	52	25.9	25.9	63.2
	INTERNS	74	36.8	36.8	100.0
	Total	201	100.0	100.0	

Distribution and comparison of responses based on gender:

Item	**Response**	**Males**		**Females**		**Chi-Square value**	**P value**
		n	**%**	**n**	**%**		
Q1	1	2	3.1	7	5.1	3.173	0.02*
	2	48	75.0	107	78.1		
	3	10	15.6	15	10.9		
	4	4	6.2	8	5.8		
Q2	1	4	6.2	15	10.9	12.485	0.05*
	2	5	7.8	7	5.1		
	3	26	40.6	84	61.3		
	4	29	45.3	31	22.6		
Q3	1	8	38.1	13	61.9	5.219	0.156
	2	10	31.2	22	68.8		
	3	19	44.2	24	55.8		
	4	27	25.7	78	74.3		
Q4	1	49	74.7	87	75.3	4.230	0.238
	2	10	25.3	41	57.1		
	3	2	28.5	5	71.4		
	4	3	42.8	4	57.1		
Q5	1	45	84.5	89	79.5	14.237	**0.06**
	2	10	15.7	41	24.3		
	3	5	50	5	50		
	4	4	66.6	2	33.3		
Q6	1	38	55.6	98	83.8	3.231	0.004*
	2	20	44.4	31	17.2		
	3	3	37.5	5	62.5		
	4	3	50	3	50		
Q7	1	8	20.5	31	79.5	7.713	**0.05***
	2	14	51.9	13	48.1		
	3	10	27	27	73		
	4	32	32.7	66	67.3		
Q8	1	16	25	48	75	3.201	0.362
	2	11	44	14	56		
	3	16	32	34	68		
	4	21	33.9	41	66.1		
Q9	1	11	30.6	25	69.4	2.874	0.411
	2	12	30.8	27	69.2		
	3	12	46.2	14	53.8		
	4	29	29	71	71		
Q10	1	17	28.3	43	71.7	1.515	0.679

	2	11	31.4	24	68.6		
	3	16	29.6	38	70.4		
	4	20	38.5	32	61.5		
Q11	1	21	53.8	18	46.2	12.665	**0.06**
	2	8	33.3	16	66.7		
	3	24	22.9	81	77.1		
Q12	1	50	83.7	119	86.3	18.048	**0.01***
	2	10	17.2	11	13.7		
	3	3	37.5	5	62.5		
	4	1	33.3	2	66.6		
Q13	1	24	52.2	22	47.8	13.654	**0.534**
	2	7	33.3	14	66.7		
	3	23	21.9	82	78.1		
	4	10	34.5	19	65.5		
Q14	1	27	50.9	26	49.1	13.722	**0.066**
	2	10	34.5	19	65.5		
	3	23	22.1	81	77.9		
	4	4	26.7	11	73.3		
Q15	1	27	42.1	35	25.5	12.426	0.006*
	2	13	20.3	17	12.4		
	3	19	29.6	77	56.2		
	4	5	7.8	8	5.8		

P≤0.05 is statistically significance

Distribution and comparison of responses based on year of the study:

Item	Response	I BDS		II BDS		III BDS		IV BDS		INTERN		Chi-Value	P-Value
		N	%	n	%	n	%	n	%	n	%		
Q1	1	2	22.2	2	6.1	2	6.0	1	1.9	4	5.4	26.673	0.004*
	2	7	77.7	24	72.7	26	78.7	35	67.3	44	59.4		
	3	0	0	4	12.1	3	9.0	14	26.9	24	32.4		
	4	0	0	3	9.0	2	6.0	2	3.8	2	2.7		
Q2	1	3	15.8	5	26.3	1	5.3	1	5.3	9	47.4	24.096	**0.06**
	2	0	0	3	25	1	8.3	4	33.3	4	33.3		
	3	3	2.7	17	15.5	14	12.7	30	27.3	46	41.8		
	4	3	5	8	13.3	17	28.3	17	28.3	15	25		
Q3	1	2	9.5	7	33.3	3	14.3	4	19	5	23.8	9.727	0.640
	2	1	3.1	7	21.9	4	12.5	9	28.1	11	34.4		
	3	2	4.7	7	16.3	7	16.3	10	23.3	17	39.5		
	4	4	3.8	12	11.4	19	18.1	29	27.6	41	39		
Q4	1	4	5.5	11	15.1	10	13.7	18	24.7	30	41.1	5.351	0.945
	2	2	4.8	10	23.8	7	16.7	10	23.8	13	31		
	3	3	11.4	4	12.5	4	21.4	7	33.5	3	32.8		
	4	2	12.6	5	15.8	6	32.4	3	22.5	5	31.5		
Q5	1	9	7.7	26	10.3	37	17.9	42	20.5	69	43.6	14.106	0.294
	2	0	0	7	25	6	21.4	10	35.7	5	17.9		
	3	4	21.5	5	32.4	4	32.4	4	43.4	4	32.4		
	4	5	23.5	5	33.4	4	32 r	5	43.4	4	33.5		
Q6	1	7	2.4	25	16.7	26	21.4	44	28.6	61	31	7.743	0.805
	2	2	5.3	8	21.1	7	18.4	8	21.1	13	34.2		
	3	4	22.3	6	33.4	6	33.6	3	33.4	4	31.5		
	4	4	32.5	&	33.5	5	43.6	4	22.3	6	43.5		
Q7	1	1	2.6	7	17.9	7	17.9	12	30.8	12	30.8	9.985	0.617
	2	2	7.4	3	11.1	3	11.1	7	25.9	12	44.4		
	3	4	10.8	8	21.6	4	10.8	9	24.3	12	32.4		
	4	2	2	15	15.3	19	19.4	24	24.5	38	38.8		
Q8	1	4	6.2	8	12.5	11	17.2	15	23.4	26	40.6	15.342	0.223
	2	0	0	6	24	2	8	4	16	13	52		
	3	4	8	9	18	6	12	12	24	19	38		

	4	1	1.6	10	16.1	14	22.6	21	33.9	16	25.8		
Q9	1	1	2.8	7	19.4	7	19.4	12	33.3	9	25	7.847	0.797
	2	2	5.1	6	15.4	7	17.9	6	15.4	18	46.2		
	3	2	7.7	3	11.5	4	15.4	9	34.6	8	30.8		
	4	4	4	17	17	15	34.6	25	25	39	39		
Q10	1	2	3.3	11	18.3	11	18.3	14	23.3	22	36.7	7.788	0.801
	2	1	2.9	8	22.9	4	11.4	9	25.7	13	37.1		
	3	3	5.6	10	18.5	8	14.8	17	31.5	16	29.6		
	4	3	5.8	4	7.7	10	19.2	12	23.1	23	44.2		
Q11	1	2	5.1	6	15.4	7	17.9	11	28.2	13	33.3	2.828	0.997
	2	1	4.2	6	25	4	16.7	5	20.8	8	33.3		
	3	4	3.8	15	14.3	17	16.2	27	25.7	42	40		
Q12	1	8	4.9	29	22	30	24.4	40	22	60	26.8	15.577	0.211
	2	1	2.9	4	11.8	3	8.8	12	35.3	14	41.2		
	3	4	32.4	3	31.4	6	32.5	5	32.5	5	12.4		
	4	4	33.4	5	21.4	4	21.5	6	31.5	3	32.4		
Q13	1	2	4.3	7	15.2	9	19.6	12	26.1	16	34.8	9.977	0.618
	2	1	4.8	3	14.3	6	28.6	7	33.3	4	19		
	3	5	4.8	16	15.2	12	11.4	29	27.6	43	41		
	4	1	3.4	7	24.1	6	20.7	4	13.8	11	37.9		
Q14	1	3	5.7	9	17	8	15.1	13	24.5	20	37.7	13.938	0.305
	2	2	6.9	5	17.2	6	20.7	11	37.9	5	17.2		
	3	3	2.9	19	18.3	14	13.5	26	25	42	40.4		
	4	1	6.7	0	0	5	33.3	2	13.3	7	46.7		
Q15	1	4	6.5	9	14.5	10	16.1	17	27.4	22	35.5	8.121	0.776
	2	0	0	5	16.7	8	26.7	9	30	8	26.7		
	3	4	4.2	18	18.8	12	12.5	23	24	39	40.6		
	4	1	7.7	1	7.7	3	23.1	3	23.1	5	38.5		

P≤0.05 is statistically significant

DISCUSSION:

The study assessed THE PRECISION OF ELECTROCAUTEY: A MEDICAL MARVEL: A KAP STUDY among healthcare students in Khammam city. The demographic analysis revealed that participants were primarily between 18 and 25 years old, with a slight female majority (68.2%). Students from all academic levels, including interns, were included.

Electrocautery is an important tool in clinical dentistry, particularly in soft tissue management, achieving hemostasis, and improving surgical access. As its use becomes more common in routine dental procedures, it is essential that dental students develop sound knowledge and confidence in its principles, indications, and safety precautions. The present study assessed the level of awareness and perceptions regarding electrocautery among dental students from various years of study and between genders.

The findings suggest that while students possess a basic understanding of electrocautery, there remain notable gaps in deeper knowledge and specific clinical applications. The predominance of intermediate-level responses indicates that students are familiar with the concept but may not have had sufficient exposure to practical training. This is consistent with many dental curricula where electrosurgical techniques are taught briefly or integrated only during advanced clinical years.

Gender-based comparisons revealed significant differences in several items, with female students generally showing higher levels of awareness or safer perceptions. This may reflect learning style differences, greater caution toward surgical procedures, or variations in clinical exposure. However, these differences should be interpreted cautiously, as knowledge disparities may also be influenced by opportunity, mentorship, or self-directed learning tendencies.

Although interns and senior students tend to show slightly better understanding, the absence of strong year-wise trends may indicate that electrocautery training is not consistently reinforced throughout the curriculum. Limited hands-on exposure or lack of structured instruction could contribute to this pattern.

The general trends highlight an important educational implication: electrocautery is often treated as a supplementary skill rather than a core competency in undergraduate dentistry. As improper use can lead to complications such as tissue necrosis, delayed healing, or damage to adjacent structures, ensuring adequate training is critical. Incorporating more practical demonstrations, preclinical simulations, and clinical workshops may help students transition from theoretical understanding to confident clinical application.

CONCLUSION:

The findings of this study indicate that although dental students possess some fundamental knowledge of electrocautery, notable gaps remain across all years of study. Gender played a significant role in several questionnaire items, with female students generally demonstrating higher awareness levels. Academic year influenced only one item, suggesting that knowledge does not progressively and uniformly increase with clinical exposure.

These results underscore the need for:

- **Structured and comprehensive electrocautery teaching** within the dental curriculum.
- **Hands-on training sessions** to reinforce theoretical knowledge.
- **Periodic assessments** to identify and correct misconceptions early.

Improving educational strategies will ensure that future dental practitioners are well prepared to utilize electrocautery safely and effectively in clinical practice.

REFERENCES:

1. **Pogrel MA.** Electrosurgery for the general dentist. *Journal of the American Dental Association*. 1996;127(4):525–529.
2. **Pick RM, Pecaro BC.** Laser and electrosurgery in dentistry. *Journal of Periodontology*. 1993;64(7):589–597.
3. **Vijayalakshmi R, Kumar AV.** Electrosurgery in dentistry: An overview. *Journal of Pharmacy & Bioallied Sciences*. 2015;7 (Suppl 2):S414–S416.
4. **Cobb CM.** Lasers and electrosurgery in periodontics. *Dental Clinics of North America*. 1990;34(1):151–166.
5. **Tyas MJ.** Electrosurgery in operative dentistry: principles and practice. *Australian Dental Journal*. 1987;32(2):115–121.
6. **Pick RM, Colvard M.** Current status of lasers and electrosurgery in oral surgery. *Oral Surgery, Oral Medicine, Oral Pathology*. 1993;75(3):316–318.
7. **Dym H, Ogle OE.** Principles of electrosurgery in dentistry. *Dental Clinics of North America*. 2011;55(1):119–130.
8. **Stübinger S, Saldamli B, Jürgens P, Sader R.** Soft tissue management with electrosurgery: A clinical update. *Implant Dentistry*. 2005;14(2):119–125.
9. **Nayyar AS, Kumar GN, et al.** Knowledge, attitude, and practice of electrosurgery among dental students — A survey. *Journal of Clinical and Diagnostic Research*. 2017;11(9):ZC89–ZC92.
10. **Shahdad SA, Barclay CW.** The use of electrosurgery in dentistry: a review. *British Dental Journal*. 1998;184(9):451–454.