



Knowledge Attitude and Practice towards Using Dental Magnification among Undergraduate Dental Students

Dr. M. Swetha^{1*}, Dr. K. V. N. R. Pratap², Dr. T. Madhavi Padma³, Dr. V. Srujan Kumar⁴, Dr. Surbhit Singh⁵, Dr. S. Navya Sri⁶

¹Student, Department of Public Health Dentistry, Mamata Dental College, Khammam, India.

²Professor and HOD, Department of Public Health Dentistry, Mamata Dental College, Khammam, India.

³Professor, Department of Public Health Dentistry, Mamata Dental College, Khammam, India.

^{4,5}Senior Lecturer, Department of Public Health Dentistry, Mamata Dental College, Khammam, India.

⁶Student, Department of Public Health Dentistry, Mamata Dental College, Khammam, India.

[Original Article](#)

*Corresponding Author: Dr. M. Swetha, Department of Public Health Dentistry, Mamata Dental College, Khammam, India.

E-mail: margamswetha56@gmail.com

Crossref doi: <https://doi.org/10.36437/ijdrd.2025.7.1.B>

ABSTRACT

Dental magnification has revolutionized modern dentistry by improving visualization, precision, and overall treatment outcomes. The use of magnification tools such as loupes, and microscopes, allows clinicians to perform procedures with greater accuracy, reducing errors and enhancing patient care. Magnification improves ergonomics by promoting better posture, reducing fatigue, and minimizing strain-related musculoskeletal disorders. Additionally, it aids in early diagnosis, minimally invasive procedures, and improved documentation. Various levels of magnification cater to different dental specialties, with surgical microscopes offering the highest precision. Despite its numerous advantages, challenges such as cost, learning curve, and adaptation persist. However, as technology advances, dental magnification continues to play a crucial role in the evolution of high-quality dental care.

Aim: To assess the knowledge, attitude, and practice towards using Dental Magnification among undergraduate Dental students.

Objective: To Assess the Knowledge, attitude, and practice towards using dental Magnification among undergraduate dental students based on Gender.

To assess the knowledge, attitude, and practice towards using dental Magnification among undergraduate dental students based on Year of study.

Method: A cross-sectional survey was conducted among 215 dental students, comprising 76 males (35.3%) and 139 females (64.7%), including 52 second-year BDS students, 51 third-year BDS students, 60 fourth-year BDS students, and 52 interns. The survey included 15 questions exploring awareness, and perceptions, of dental students on Dental Magnification. Responses were analyzed based on gender and year of study using chi-square tests to identify statistically significant differences.

Keywords: Awareness, Dentistry, Dental Students, Dental Operating Microscopes, High-quality, Magnification. Vision Acuitv.

Introduction

Dental magnification has become an essential tool in modern dentistry, significantly enhancing the accuracy and efficiency of various dental procedures. It involves the use of magnifying devices such as loupes, dental operating microscopes (DOMs) to provide an enlarged and detailed view of the oral cavity. These devices improve visualization, enabling dentists to detect minute details that may not be visible to the naked eye.

Magnification plays a crucial role in different dental specialties, including restorative dentistry, endodontics, periodontics, and prosthodontics. It enhances the precision of tooth preparations, root canal treatments, and surgical procedures, leading to better clinical outcomes and patient satisfaction. Additionally, the use of magnification supports proper ergonomic posture, reducing the risk of musculoskeletal disorders among dental professionals.

As dental technology continues to advance, magnification has become a standard practice in high-quality dental care. Despite initial challenges such as cost and adaptation, the benefits of improved accuracy, reduced treatment errors, and enhanced diagnostic capabilities make dental magnification an indispensable asset in modern clinical practice.

Methodology

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

B) **Study population:** The health care students including those of II years, III years, IV years, and Interns who responded to the offline paper print questionnaire survey.

C) **Study Instrument:** A self-administered questionnaire was designed based on knowledge attitude and perception had total of 15 questions. Each participant has to fill in their demographic data like Name, age, and year of study. Participant has to select one option from the answers provided against questions. The questions were based on knowledge, attitude, and practice towards dental magnification among dental students.

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

E) **Sampling Method:** The sampling method used is the convenience method.

F) **Inclusion Criteria:** The students who were interested in the study and who were willing to participate.

G) **Exclusion Criteria:** students who are not willing to participate are excluded.

H) **Organizing the study:** The purpose of the study was explained in a short note participants were asked to select one option from the answers provided against the questions.

I) **Statistical Analysis:** Data from the filled questionnaire was collected in a tabular form in an Excel worksheet and evaluated for analysis. The analysis was performed by SPSS version 29.

Results

A total of 215 students took part with female of 64.7% and male of 35.3%. The age of participants ranges from 19 -25. In this study, females have more knowledge than males. IV years have more knowledge than followed by Interns and II year students followed by III year students. Loupes were the most widely used form of magnification (41.9%) followed by magnifying glasses (28.8 %).When it comes to dental specialties, 50.2% believed it would be useful in endodontics treatment, prosthodontic, surgical treatment.

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
AGE	215	18	26	21.74	1.464

Valid N (listwise)	215				
--------------------	-----	--	--	--	--

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	76	35.3	35.3	35.3
	2	139	64.7	64.7	100.0
	Total	215	100.0	100.0	

Year of study					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	52	24.2	24.2	24.2
	2	51	23.7	23.7	47.9
	3	60	27.9	27.9	75.8
	4	52	24.2	24.2	100.0
	Total	215	100.0	100.0	

Q1

Gender				Q1				Total
				1	2	3	4	
1	Year of Study	1	Count	4	8	9	5	26
			% of Total	5.3%	10.5%	11.8%	6.6%	34.2%
		2	Count	11	3	7	4	25
			% of Total	14.5%	3.9%	9.2%	5.3%	32.9%
		3	Count	6	1	5	1	13
			% of Total	7.9%	1.3%	6.6%	1.3%	17.1%
		4	Count	9	0	1	2	12
			% of Total	11.8%	0.0%	1.3%	2.6%	15.8%
	Total		Count	30	12	22	12	76
			% of Total	39.5%	15.8%	28.9%	15.8%	100.0%
2	Year of Study	1	Count	5	3	16	2	26
			% of Total	3.6%	2.2%	11.5%	1.4%	18.7%
		2	Count	7	7	11	1	26
			% of Total	5.0%	5.0%	7.9%	0.7%	18.7%

		3	Count	27	4	9	7	47
			% of Total	19.4%	2.9%	6.5%	5.0%	33.8%
		4	Count	21	7	4	8	40
			% of Total	15.1%	5.0%	2.9%	5.8%	28.8%
	Total		Count	60	21	40	18	139
			% of Total	43.2%	15.1%	28.8%	12.9%	100.0%
Total	Year of Study	1	Count	9	11	25	7	52
			% of Total	4.2%	5.1%	11.6%	3.3%	24.2%
		2	Count	18	10	18	5	51
			% of Total	8.4%	4.7%	8.4%	2.3%	23.7%
		3	Count	33	5	14	8	60
			% of Total	15.3%	2.3%	6.5%	3.7%	27.9%
		4	Count	30	7	5	10	52
			% of Total	14.0%	3.3%	2.3%	4.7%	24.2%
	Total		Count	90	33	62	30	215
			% of Total	41.9%	15.3%	28.8%	14.0%	100.0%

P-value 0.041**Q2**

Gender				Q2				Total
				1	2	3	4	
1	Year of Study	1	Count	6	5	7	8	26
			% of Total	7.9%	6.6%	9.2%	10.5%	34.2%
		2	Count	4	11	3	7	25
			% of Total	5.3%	14.5%	3.9%	9.2%	32.9%
		3	Count	0	4	4	5	13
			% of Total	0.0%	5.3%	5.3%	6.6%	17.1%
		4	Count	0	7	0	5	12
			% of Total	0.0%	9.2%	0.0%	6.6%	15.8%
	Total		Count	10	27	14	25	76
			% of Total	13.2%	35.5%	18.4%	32.9%	100.0%

2	Year of Study	1	Count	1	8	0	17	26
			% of Total	0.7%	5.8%	0.0%	12.2%	18.7%
		2	Count	1	9	3	13	26
			% of Total	0.7%	6.5%	2.2%	9.4%	18.7%
		3	Count	9	9	1	28	47
			% of Total	6.5%	6.5%	0.7%	20.1%	33.8%
		4	Count	1	1	2	36	40
			% of Total	0.7%	0.7%	1.4%	25.9%	28.8%
	Total		Count	12	27	6	94	139
			% of Total	8.6%	19.4%	4.3%	67.6%	100.0%
Total	Year of Study	1	Count	7	13	7	25	52
			% of Total	3.3%	6.0%	3.3%	11.6%	24.2%
		2	Count	5	20	6	20	51
			% of Total	2.3%	9.3%	2.8%	9.3%	23.7%
		3	Count	9	13	5	33	60
			% of Total	4.2%	6.0%	2.3%	15.3%	27.9%
		4	Count	1	8	2	41	52
			% of Total	0.5%	3.7%	0.9%	19.1%	24.2%
	Total		Count	22	54	20	119	215
			% of Total	10.2%	25.1%	9.3%	55.3%	100.0%

P-value 0.087

Q3

Gender				Q3				Total
				1	2	3	4	
1	Year of Study	1	Count	1	8	8	9	26
			% of Total	1.3%	10.5%	10.5%	11.8%	34.2%
		2	Count	4	5	3	13	25
			% of Total	5.3%	6.6%	3.9%	17.1%	32.9%
		3	Count	0	2	5	6	13
			% of Total	0.0%	2.6%	6.6%	7.9%	17.1%

		4	Count	1	5	2	4	12
			% of Total	1.3%	6.6%	2.6%	5.3%	15.8%
		Total	Count	6	20	18	32	76
			% of Total	7.9%	26.3%	23.7%	42.1%	100.0%
2	Year of Study	1	Count	4	2	3	17	26
			% of Total	2.9%	1.4%	2.2%	12.2%	18.7%
		2	Count	2	2	10	12	26
			% of Total	1.4%	1.4%	7.2%	8.6%	18.7%
		3	Count	12	8	4	23	47
			% of Total	8.6%	5.8%	2.9%	16.5%	33.8%
		4	Count	6	2	4	28	40
			% of Total	4.3%	1.4%	2.9%	20.1%	28.8%
		Total	Count	24	14	21	80	139
			% of Total	17.3%	10.1%	15.1%	57.6%	100.0%
Total	Year of Study	1	Count	5	10	11	26	52
			% of Total	2.3%	4.7%	5.1%	12.1%	24.2%
		2	Count	6	7	13	25	51
			% of Total	2.8%	3.3%	6.0%	11.6%	23.7%
		3	Count	12	10	9	29	60
			% of Total	5.6%	4.7%	4.2%	13.5%	27.9%
		4	Count	7	7	6	32	52
			% of Total	3.3%	3.3%	2.8%	14.9%	24.2%
		Total	Count	30	34	39	112	215
			% of Total	14.0%	15.8%	18.1%	52.1%	100.0%

P-value 0.310

Q4

Gender				Q4				Total
				1	2	3	4	
1	Year of Study	1	Count	6	11	5	4	26
			% of Total	7.9%	14.5%	6.6%	5.3%	34.2%
		2	Count	9	5	10	1	25
			% of Total	11.8%	6.6%	13.2%	1.3%	32.9%
		3	Count	3	6	3	1	13
			% of Total	3.9%	7.9%	3.9%	1.3%	17.1%
		4	Count	2	6	0	4	12
			% of Total	2.6%	7.9%	0.0%	5.3%	15.8%
	Total		Count	20	28	18	10	76
			% of Total	26.3%	36.8%	23.7%	13.2%	100.0%
2	Year of Study	1	Count	14	7	4	1	26
			% of Total	10.1%	5.0%	2.9%	0.7%	18.7%
		2	Count	2	9	7	8	26
			% of Total	1.4%	6.5%	5.0%	5.8%	18.7%
		3	Count	20	17	8	2	47
			% of Total	14.4%	12.2%	5.8%	1.4%	33.8%
		4	Count	8	11	12	9	40
			% of Total	5.8%	7.9%	8.6%	6.5%	28.8%
	Total		Count	44	44	31	20	139
			% of Total	31.7%	31.7%	22.3%	14.4%	100.0%
Total	Year of Study	1	Count	20	18	9	5	52
			% of Total	9.3%	8.4%	4.2%	2.3%	24.2%
		2	Count	11	14	17	9	51
			% of Total	5.1%	6.5%	7.9%	4.2%	23.7%
		3	Count	23	23	11	3	60
			% of Total	10.7%	10.7%	5.1%	1.4%	27.9%
	4	Count	10	17	12	13	52	

		% of Total	4.7%	7.9%	5.6%	6.0%	24.2%
	Total	Count	64	72	49	30	215
		% of Total	29.8%	33.5%	22.8%	14.0%	100.0%

P-value 0.066

Q5

Gender				Q5				Total
				1	2	3	4	
1	Year of study	1	Count	2	3	9	12	26
			% of Total	2.6%	3.9%	11.8%	15.8%	34.2%
		2	Count	7	4	8	6	25
			% of Total	9.2%	5.3%	10.5%	7.9%	32.9%
		3	Count	1	5	3	4	13
			% of Total	1.3%	6.6%	3.9%	5.3%	17.1%
		4	Count	3	3	2	4	12
			% of Total	3.9%	3.9%	2.6%	5.3%	15.8%
	Total		Count	13	15	22	26	76
			% of Total	17.1%	19.7%	28.9%	34.2%	100.0%
2	Year of study	1	Count	3	2	3	18	26
			% of Total	2.2%	1.4%	2.2%	12.9%	18.7%
		2	Count	3	1	6	16	26
			% of Total	2.2%	0.7%	4.3%	11.5%	18.7%
		3	Count	12	5	6	24	47
			% of Total	8.6%	3.6%	4.3%	17.3%	33.8%
		4	Count	5	6	5	24	40
			% of Total	3.6%	4.3%	3.6%	17.3%	28.8%
	Total		Count	23	14	20	82	139
			% of Total	16.5%	10.1%	14.4%	59.0%	100.0%
Total		1	Count	5	5	12	30	52
			% of Total	2.3%	2.3%	5.6%	14.0%	24.2%

	Year of study	2	Count	10	5	14	22	51
			% of Total	4.7%	2.3%	6.5%	10.2%	23.7%
		3	Count	13	10	9	28	60
			% of Total	6.0%	4.7%	4.2%	13.0%	27.9%
		4	Count	8	9	7	28	52
			% of Total	3.7%	4.2%	3.3%	13.0%	24.2%
	Total		Count	36	29	42	108	215
			% of Total	16.7%	13.5%	19.5%	50.2%	100.0%

P-value 0.291

Q6

Gender				Q6				Total
				1	2	3	4	
1	Year of Study	1	Count	2	6	7	11	26
			% of Total	2.6%	7.9%	9.2%	14.5%	34.2%
		2	Count	5	7	3	10	25
			% of Total	6.6%	9.2%	3.9%	13.2%	32.9%
		3	Count	0	4	5	4	13
			% of Total	0.0%	5.3%	6.6%	5.3%	17.1%
		4	Count	3	3	2	4	12
			% of Total	3.9%	3.9%	2.6%	5.3%	15.8%
	Total	Count	10	20	17	29	76	
		% of Total	13.2%	26.3%	22.4%	38.2%	100.0%	
2	Year of Study	1	Count	2	7	2	15	26
			% of Total	1.4%	5.0%	1.4%	10.8%	18.7%
		2	Count	6	3	2	15	26
			% of Total	4.3%	2.2%	1.4%	10.8%	18.7%
		3	Count	3	5	9	30	47
			% of Total	2.2%	3.6%	6.5%	21.6%	33.8%
		4	Count	4	1	8	27	40
			% of Total	2.2%	0.7%	5.4%	19.0%	27.9%

			% of Total	2.9%	0.7%	5.8%	19.4%	28.8%
	Total		Count	15	16	21	87	139
			% of Total	10.8%	11.5%	15.1%	62.6%	100.0%
Total	Year of Study	1	Count	4	13	9	26	52
			% of Total	1.9%	6.0%	4.2%	12.1%	24.2%
		2	Count	11	10	5	25	51
			% of Total	5.1%	4.7%	2.3%	11.6%	23.7%
		3	Count	3	9	14	34	60
			% of Total	1.4%	4.2%	6.5%	15.8%	27.9%
		4	Count	7	4	10	31	52
			% of Total	3.3%	1.9%	4.7%	14.4%	24.2%
	Total		Count	25	36	38	116	215
			% of Total	11.6%	16.7%	17.7%	54.0%	100.0%

P-value 0.511

Q7

Gender				Q7				Total
				1	2	3	4	
1	Year of Study	1	Count	3	5	7	11	26
			% of Total	3.9%	6.6%	9.2%	14.5%	34.2%
		2	Count	6	4	2	13	25
			% of Total	7.9%	5.3%	2.6%	17.1%	32.9%
		3	Count	1	5	1	6	13
			% of Total	1.3%	6.6%	1.3%	7.9%	17.1%
		4	Count	2	4	3	3	12
			% of Total	2.6%	5.3%	3.9%	3.9%	15.8%
	Total		Count	12	18	13	33	76
			% of Total	15.8%	23.7%	17.1%	43.4%	100.0%
2		1	Count	3	0	3	20	26
			% of Total	2.2%	0.0%	2.2%	14.4%	18.7%

	Year of Study	2	Count	3	2	3	18	26
			% of Total	2.2%	1.4%	2.2%	12.9%	18.7%
		3	Count	7	4	11	25	47
			% of Total	5.0%	2.9%	7.9%	18.0%	33.8%
		4	Count	5	2	6	27	40
			% of Total	3.6%	1.4%	4.3%	19.4%	28.8%
	Total		Count	18	8	23	90	139
			% of Total	12.9%	5.8%	16.5%	64.7%	100.0%
Total	Year of Study	1	Count	6	5	10	31	52
			% of Total	2.8%	2.3%	4.7%	14.4%	24.2%
		2	Count	9	6	5	31	51
			% of Total	4.2%	2.8%	2.3%	14.4%	23.7%
		3	Count	8	9	12	31	60
			% of Total	3.7%	4.2%	5.6%	14.4%	27.9%
		4	Count	7	6	9	30	52
			% of Total	3.3%	2.8%	4.2%	14.0%	24.2%
	Total		Count	30	26	36	123	215
			% of Total	14.0%	12.1%	16.7%	57.2%	100.0%

P-value 0.384**Q8**

Gender				Q8			Total
				1	2	3	
1	Year of Study	1	Count	7	7	12	26
			% of Total	9.2%	9.2%	15.8%	34.2%
		2	Count	11	7	7	25
			% of Total	14.5%	9.2%	9.2%	32.9%
		3	Count	2	7	4	13
			% of Total	2.6%	9.2%	5.3%	17.1%
		4	Count	2	8	2	12
			% of Total	2.6%	10.5%	2.6%	15.8%
	Total		Count	22	29	25	76
% of Total			28.9%	38.2%	32.9%	100.0%	
2		1	Count	12	10	4	26

	Year of Study		% of Total	8.6%	7.2%	2.9%	18.7%
		2	Count	12	7	7	26
			% of Total	8.6%	5.0%	5.0%	18.7%
		3	Count	15	15	17	47
			% of Total	10.8%	10.8%	12.2%	33.8%
		4	Count	15	8	17	40
			% of Total	10.8%	5.8%	12.2%	28.8%
	Total		Count	54	40	45	139
			% of Total	38.8%	28.8%	32.4%	100.0%
Total	Year of Study	1	Count	19	17	16	52
			% of Total	8.8%	7.9%	7.4%	24.2%
		2	Count	23	14	14	51
			% of Total	10.7%	6.5%	6.5%	23.7%
		3	Count	17	22	21	60
			% of Total	7.9%	10.2%	9.8%	27.9%
		4	Count	17	16	19	52
			% of Total	7.9%	7.4%	8.8%	24.2%
	Total		Count	76	69	70	215
			% of Total	35.3%	32.1%	32.6%	100.0%

P-value 0.091

Q9

Gender				Q9				Total
				1	2	3	4	
1	Year of Study	1	Count	7	5	4	10	26
			% of Total	9.2%	6.6%	5.3%	13.2%	34.2%
		2	Count	4	4	6	11	25
			% of Total	5.3%	5.3%	7.9%	14.5%	32.9%
		3	Count	2	2	5	4	13
			% of Total	2.6%	2.6%	6.6%	5.3%	17.1%
		4	Count	6	2	3	1	12
			% of Total	7.9%	2.6%	3.9%	1.3%	15.8%
	Total		Count	19	13	18	26	76
			% of Total	25.0%	17.1%	23.7%	34.2%	100.0%
2	Year of Study	1	Count	3	5	4	14	26
			% of Total	2.2%	3.6%	2.9%	10.1%	18.7%
		2	Count	9	3	3	11	26

			% of Total	6.5%	2.2%	2.2%	7.9%	18.7%
		3	Count	5	7	11	24	47
			% of Total	3.6%	5.0%	7.9%	17.3%	33.8%
		4	Count	7	9	4	20	40
			% of Total	5.0%	6.5%	2.9%	14.4%	28.8%
	Total		Count	24	24	22	69	139
			% of Total	17.3%	17.3%	15.8%	49.6%	100.0%
Total	Year of Study	1	Count	10	10	8	24	52
			% of Total	4.7%	4.7%	3.7%	11.2%	24.2%
		2	Count	13	7	9	22	51
			% of Total	6.0%	3.3%	4.2%	10.2%	23.7%
		3	Count	7	9	16	28	60
			% of Total	3.3%	4.2%	7.4%	13.0%	27.9%
		4	Count	13	11	7	21	52
			% of Total	6.0%	5.1%	3.3%	9.8%	24.2%
	Total		Count	43	37	40	95	215
			% of Total	20.0%	17.2%	18.6%	44.2%	100.0%

P-value 0.381

Q10

Gender				Q10			Total
				1	2	4	
1	Year of Study	1	Count	17	9		26
			% of Total	22.4%	11.8%		34.2%
		2	Count	13	12		25
			% of Total	17.1%	15.8%		32.9%
		3	Count	9	4		13
			% of Total	11.8%	5.3%		17.1%
		4	Count	7	5		12
			% of Total	9.2%	6.6%		15.8%
		Total		Count	46	30	76
				% of Total	60.5%	39.5%	100.0%
2		1	Count	11	14	1	26
			% of Total	7.9%	10.1%	0.7%	18.7%

	Year of study	2	Count	15	11	0	26
			% of Total	10.8%	7.9%	0.0%	18.7%
		3	Count	22	24	1	47
			% of Total	15.8%	17.3%	0.7%	33.8%
		4	Count	25	15	0	40
			% of Total	18.0%	10.8%	0.0%	28.8%
	Total		Count	73	64	2	139
% of Total			52.5%	46.0%	1.4%	100.0%	
Total	Year of study	1	Count	28	23	1	52
			% of Total	13.0%	10.7%	0.5%	24.2%
		2	Count	28	23	0	51
			% of Total	13.0%	10.7%	0.0%	23.7%
		3	Count	31	28	1	60
			% of Total	14.4%	13.0%	0.5%	27.9%
		4	Count	32	20	0	52
			% of Total	14.9%	9.3%	0.0%	24.2%
	Total		Count	119	94	2	215
			% of Total	55.3%	43.7%	0.9%	100.0%

P-value 0.693

Q11

Gender				Q11			Total
				1	2	4	
1	Year of Study	1	Count	17	9	0	26
			% of Total	22.4%	11.8%	0.0%	34.2%
		2	Count	16	8	1	25
			% of Total	21.1%	10.5%	1.3%	32.9%
		3	Count	12	1	0	13
			% of Total	15.8%	1.3%	0.0%	17.1%
		4	Count	7	5	0	12
			% of Total	9.2%	6.6%	0.0%	15.8%
	Total		Count	52	23	1	76
			% of Total	68.4%	30.3%	1.3%	100.0%
2	Year of Study	1	Count	17	9		26
			% of Total	12.2%	6.5%		18.7%
		2	Count	19	7		26
			% of Total	13.7%	5.0%		18.7%
		3	Count	28	19		47
			% of Total	20.1%	13.7%		33.8%
		4	Count	20	20		40
			% of Total	14.4%	14.4%		28.8%
	Total		Count	84	55		139

			% of Total	60.4%	39.6%		100.0%
Total	Year of Study	1	Count	34	18	0	52
			% of Total	15.8%	8.4%	0.0%	24.2%
		2	Count	35	15	1	51
			% of Total	16.3%	7.0%	0.5%	23.7%
		3	Count	40	20	0	60
			% of Total	18.6%	9.3%	0.0%	27.9%
		4	Count	27	25	0	52
			% of Total	12.6%	11.6%	0.0%	24.2%
	Total		Count	136	78	1	215
			% of Total	63.3%	36.3%	0.5%	100.0%

P-value 0.390

Q12

Gender				Q12		Total
				1	2	
1	Year of Study	1	Count	15	11	26
			% of Total	19.7%	14.5%	34.2%
		2	Count	10	15	25
			% of Total	13.2%	19.7%	32.9%
		3	Count	2	11	13
			% of Total	2.6%	14.5%	17.1%
		4	Count	7	5	12
			% of Total	9.2%	6.6%	15.8%
	Total		Count	34	42	76
		% of Total	44.7%	55.3%	100.0%	
2	Year of Study	1	Count	16	10	26
			% of Total	11.5%	7.2%	18.7%
		2	Count	16	10	26
			% of Total	11.5%	7.2%	18.7%
		3	Count	22	25	47
			% of Total	15.8%	18.0%	33.8%
		4	Count	19	21	40
			% of Total	13.7%	15.1%	28.8%
	Total		Count	73	66	139
		% of Total	52.5%	47.5%	100.0%	
Total	Year of Study	1	Count	31	21	52
			% of Total	14.4%	9.8%	24.2%
		2	Count	26	25	51
			% of Total	12.1%	11.6%	23.7%
		3	Count	24	36	60

			% of Total	11.2%	16.7%	27.9%
		4	Count	26	26	52
			% of Total	12.1%	12.1%	24.2%
	Total	Count	107	108	215	
		% of Total	49.8%	50.2%	100.0%	

P-value 0.060

Q13

Gender				Q13				Total
				1	2	3	4	
1	Year of Study	1	Count	14	7	3	2	26
			% of Total	18.4%	9.2%	3.9%	2.6%	34.2%
		2	Count	14	6	3	2	25
			% of Total	18.4%	7.9%	3.9%	2.6%	32.9%
		3	Count	4	4	4	1	13
			% of Total	5.3%	5.3%	5.3%	1.3%	17.1%
		4	Count	3	4	4	1	12
			% of Total	3.9%	5.3%	5.3%	1.3%	15.8%
	Total		Count	35	21	14	6	76
			% of Total	46.1%	27.6%	18.4%	7.9%	100.0%
2	Year of Study	1	Count	8	9	9	0	26
			% of Total	5.8%	6.5%	6.5%	0.0%	18.7%
		2	Count	14	6	5	1	26
			% of Total	10.1%	4.3%	3.6%	0.7%	18.7%
		3	Count	18	10	16	3	47
			% of Total	12.9%	7.2%	11.5%	2.2%	33.8%
		4	Count	11	8	14	7	40
			% of Total	7.9%	5.8%	10.1%	5.0%	28.8%
	Total		Count	51	33	44	11	139
			% of Total	36.7%	23.7%	31.7%	7.9%	100.0%
Total		1	Count	22	16	12	2	52
			% of Total	10.2%	7.4%	5.6%	0.9%	24.2%

	Year of Study	2	Count	28	12	8	3	51
			% of Total	13.0%	5.6%	3.7%	1.4%	23.7%
		3	Count	22	14	20	4	60
			% of Total	10.2%	6.5%	9.3%	1.9%	27.9%
		4	Count	14	12	18	8	52
			% of Total	6.5%	5.6%	8.4%	3.7%	24.2%
	Total		Count	86	54	58	17	215
			% of Total	40.0%	25.1%	27.0%	7.9%	100.0%

P-value 0.662

Q14

Gender				Q14			Total
				1	2	3	
1	Year of Study	1	Count	9	13	4	26
			% of Total	11.8%	17.1%	5.3%	34.2%
		2	Count	11	9	5	25
			% of Total	14.5%	11.8%	6.6%	32.9%
		3	Count	6	3	4	13
			% of Total	7.9%	3.9%	5.3%	17.1%
		4	Count	6	5	1	12
			% of Total	7.9%	6.6%	1.3%	15.8%
	Total		Count	32	30	14	76
		% of Total	42.1%	39.5%	18.4%	100.0%	
2	Year of Study	1	Count	4	11	11	26
			% of Total	2.9%	7.9%	7.9%	18.7%
		2	Count	12	5	9	26
			% of Total	8.6%	3.6%	6.5%	18.7%
		3	Count	13	22	12	47
			% of Total	9.4%	15.8%	8.6%	33.8%
		4	Count	17	14	9	40
			% of Total	12.2%	10.1%	6.5%	28.8%
	Total		Count	46	52	41	139
		% of Total	33.1%	37.4%	29.5%	100.0%	
Total	Year of Study	1	Count	13	24	15	52
			% of Total	6.0%	11.2%	7.0%	24.2%
		2	Count	23	14	14	51
			% of Total	10.7%	6.5%	6.5%	23.7%
		3	Count	19	25	16	60

			% of Total	8.8%	11.6%	7.4%	27.9%
		4	Count	23	19	10	52
			% of Total	10.7%	8.8%	4.7%	24.2%
	Total		Count	78	82	55	215
			% of Total	36.3%	38.1%	25.6%	100.0%

P-value 0.649

Q15

Gender				Q15				Total
				1	2	3	4	
1	Year of Study	1	Count	5	12	4	5	26
			% of Total	6.6%	15.8%	5.3%	6.6%	34.2%
		2	Count	7	13	5	0	25
			% of Total	9.2%	17.1%	6.6%	0.0%	32.9%
		3	Count	2	8	2	1	13
			% of Total	2.6%	10.5%	2.6%	1.3%	17.1%
		4	Count	2	5	5	0	12
			% of Total	2.6%	6.6%	6.6%	0.0%	15.8%
	Total		Count	16	38	16	6	76
			% of Total	21.1%	50.0%	21.1%	7.9%	100.0%
2	Year of Study	1	Count	4	15	4	3	26
			% of Total	2.9%	10.8%	2.9%	2.2%	18.7%
		2	Count	0	20	5	1	26
			% of Total	0.0%	14.4%	3.6%	0.7%	18.7%
		3	Count	9	22	9	7	47
			% of Total	6.5%	15.8%	6.5%	5.0%	33.8%
		4	Count	4	21	8	7	40
			% of Total	2.9%	15.1%	5.8%	5.0%	28.8%
	Total		Count	17	78	26	18	139
			% of Total	12.2%	56.1%	18.7%	12.9%	100.0%
Total		1	Count	9	27	8	8	52
			% of Total	4.2%	12.6%	3.7%	3.7%	24.2%

	Year of Study	2	Count	7	33	10	1	51
			% of Total	3.3%	15.3%	4.7%	0.5%	23.7%
		3	Count	11	30	11	8	60
			% of Total	5.1%	14.0%	5.1%	3.7%	27.9%
		4	Count	6	26	13	7	52
			% of Total	2.8%	12.1%	6.0%	3.3%	24.2%
	Total	Count	33	116	42	24	215	
		% of Total	15.3%	54.0%	19.5%	11.2%	100.0%	

P-value 0.230

Discussion

Studies have been published on the use of dental magnification among dental students at tertiary care teaching hospitals in khammam city, Telangana. Using magnification tools can significantly enhance vision acuity. These problems can be prevented by increasing awareness of ergonomics during dental practices. All dentists for more precise, convenient, and pleasant dental performance. This may decrease the risk of musculoskeletal injury. It can significantly improve students' posture during dental work.

Magnification aids in skill development, helping students refine their techniques with better accuracy and efficiency. It also improves ergonomics, reducing strain and fatigue among students and faculty. 63.3% believe that dental loupes can improve the quality of treatment. When responses were analysed by gender, females demonstrated higher levels of correct answers than males with a correct response rate of 64.7%% and 35.3% respectively.

Conclusion

Dental magnification is no longer a luxury but a necessity in modern dental practice. Its benefits in precision, ergonomics, and treatment success outweigh the challenges, making it an essential tool for clinicians striving for excellence. Most of

the students were aware of dental magnification's significance in improving the accuracy and quality of their work. With ongoing technological advancements, the role of magnification in dentistry will continue to expand, further elevating the standard of patient care. In addition, it provides evidence to improve standards of care at Tertiary care teaching hospital by dental magnification as a integral armamentarium of undergraduate dental education.

References

1. Carr GB, Murgel CA. The use of the operating microscope in endodontics. Dent Clin North Am. 2010;54:191-214. doi: <https://doi.org/10.1016/j.cden.2010.01.002>
2. Malterud MI. Magnification: you can't effectively practice minimally invasive biomimetic dentistry without it. Gen Dent. 2013;61:14-7.
3. Leknius C, Geissberger M. The effect of magnification on the performance of fixed prosthodontic procedures. J Calif Dent Assoc. 1995;23:66-70. <https://pubmed.ncbi.nlm.nih.gov/9052031/>
4. Shanellec DA. Periodontal microsurgery. J Esthet Restor Dent. 2003;15:402-7.

5. Del Fabbro M, Taschieri S, Lodi G, Banfi G, Weinstein RL. Magnification Devices for endodontic therapy. Cochrane Database

Syst Rev. 2009;9:CD005969. doi:
<https://pubmed.ncbi.nlm.nih.gov/26650099/>

How to cite this Article: M. Swetha, K. V. N. R. Pratap, T. Madhavi Padma, V. Srujan Kumar, Surbhit Singh, S. Navya Sri; *Knowledge Attitude and Practice towards Using Dental Magnification among Undergraduate Dental Students*; Int. J. Drug Res. Dental Sci., 2025; 7(1): 19-38, doi:
<https://doi.org/10.36437/ijdrd.2025.7.1.B>

Source of Support: Nil, **Conflict of Interest:** Nil.

Received: 22-12-2024 **Revised:** 27-1-2025 **Accepted:** 04-2-2025