

# AWARENESS AND ATTITUDE TOWARDS USING MAGNIFICATION LOUPES AMONG DENTAL STUDENTS AND RESIDENTS OF DENTAL COLLEGE

<sup>1</sup>T.V.RAJALAKSHMI RAKSHANAA, <sup>2</sup>Dr. MANISH RANJAN

Department of Conservative dentistry and Endodontics  
Saveetha Dental College and Hospitals,

## ABSTRACT:

**AIM:** The aim of this study was to assess the awareness and attitude among dental students and residents; and also to explore their perception about the advantages and disadvantages of magnification loupes.

**MATERIALS AND METHOD:** A questionnaire was formulated with questions that assessed both the awareness and attitude towards using dental magnification. They were filled by students and residents of various dental colleges and were assessed accordingly.

**BACKGROUND:** The use of magnification in dentistry is expanding rapidly. Magnification is aimed to enhance visualisation of dental details thus improving diagnosis and treatment, as well as to improve the ergonomics of dental practitioners.

**REASON:** The reason for this survey is mainly to create an awareness about magnification loupes among dental students and residents.

**Keywords:** Magnification, accuracy, loupes, ergonomics.

## INTRODUCTION:

Magnification in general is considered one of the great revolutions in science, and specifically in dentistry. This revolution allowed scientists to undertake precise studies in the natural world and accelerate progress in the fields of medicine and dentistry. The proper use of loupes or surgical microscopes in dentistry has made its way into the curriculum of many universities over the past few years, and is also strongly promoted by the manufacturers. Thus, magnifying aids are becoming increasingly more common in dental practices. Almost everyone using loupes and microscopes is convinced that these instruments have advantages and improve both the quality and ergonomics of their work.<sup>(1)</sup>

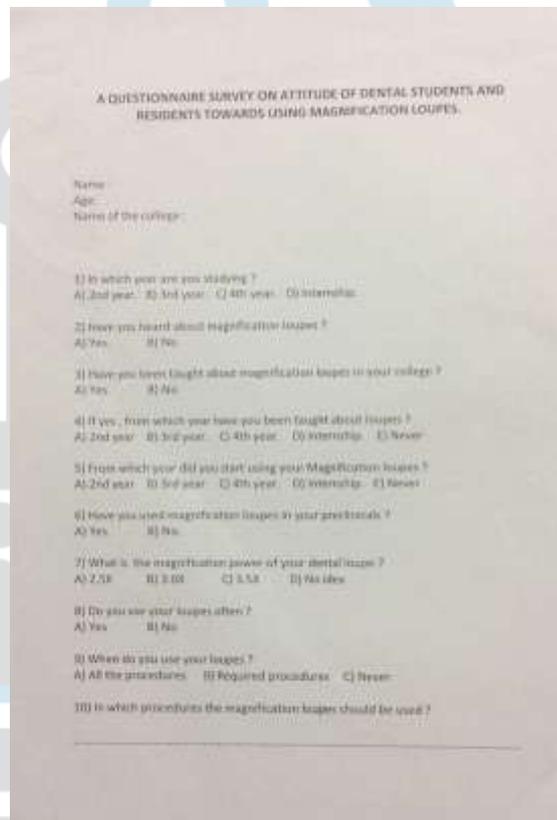
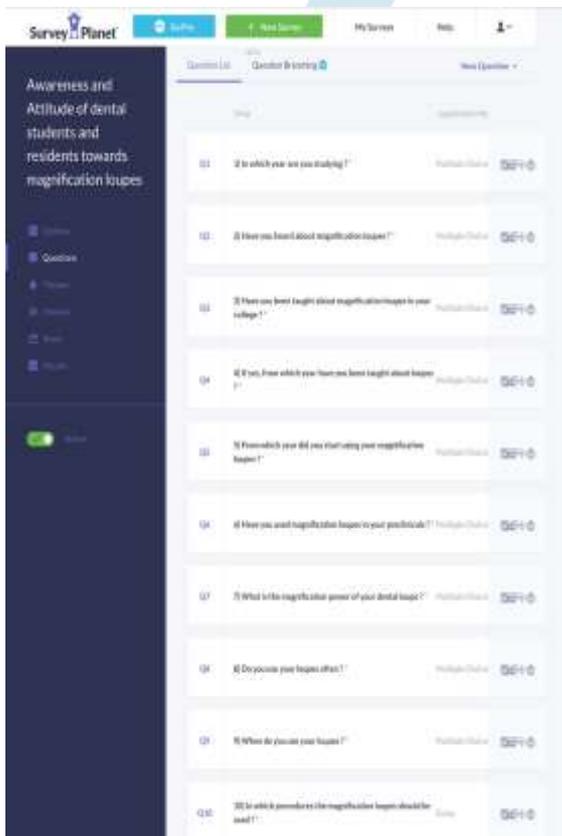
Despite the significant cost and relatively prolonged learning curve when starting using magnification tools in the different dental specialties, it is generally, believed that their use should be advocated. Advantages include improving the quality of treatment, achieving better posture during dental practice, reducing visual stress, and decreasing musculoskeletal injury when implementing them in our dental practices. These advantages occur only after going through the proper training and after gaining the required skills.<sup>(2-6)</sup>

Dental students and hygienists are required to perform very fine precise movements within the small parameters of the oral cavity. The use of direct vision throughout the entire oral cavity combined with a balanced posture is not always feasible.<sup>(7)</sup> The head position is considered balanced when it is tilted no more than 20 degrees forward.<sup>(8)</sup> Ninety percent of the time, a typical clinician's head is tilted forward to angles ranging from 17 degrees to 39 degrees and at angles greater than 40 degrees during 10% of the time.<sup>(9)</sup> These extreme positions are not reflective of a balanced, comfortable clinical posture. A clinician is at risk for musculoskeletal trauma when a posture remains outside the balanced parameters for long periods of time. Controversy exists in the dental hygiene field as to if and when loupes should be introduced to dental hygienists. This is likely due to the fact that using loupes in the practice of dental hygiene is still a fairly new concept. More evidence is mounting regarding the advantages of using loupes in both patient care and for the dental hygienists themselves. Traditionally, the use of magnification and enhanced lighting has been viewed as an aid to failing vision for older or otherwise visually impaired practitioners, but the benefits may be more far-reaching. Unfortunately, performance standards for dentistry remain somewhat ill-defined, which complicates any effort to measure objectively the effects of magnification on treatment outcomes. This survey is thus conducted to create an awareness about the magnification loupes that are used in the field of dentistry among various dental colleges.



**MATERIALS AND METHODS:**

The survey was conducted with the help of questionnaire. A questionnaire was formulated with 15 questions in it. These questions were formulated such that they assessed both the awareness and attitude of the dental students and residents (postgraduates) of various dental colleges towards using dental magnification loupes. They were distributed manually to various colleges in Chennai and were filled by the students and postgraduates. Also an e-questionnaire was formulated in the survey planet and the link was sent via email to dental students and residents of dental colleges in other cities. All the responses were recorded. Totally 350 (n=350) questionnaire were to be recorded. Of this 100 questionnaire were filled by students of my institute (Saveetha Dental College). This was just to assess the attitude of our students towards the magnification loupes. The postgraduate students included in this study were from the field of Endodontics and conservative dentistry. All the participants of this survey were above 18 years of age. Both manual and e-questionnaire were collected and assessed accordingly.

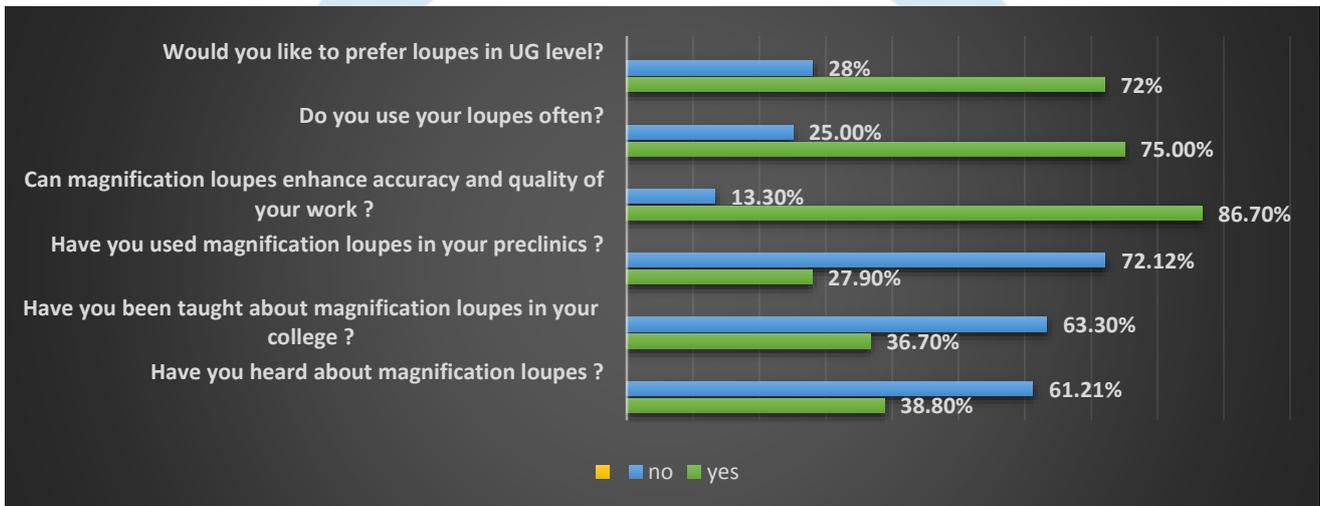
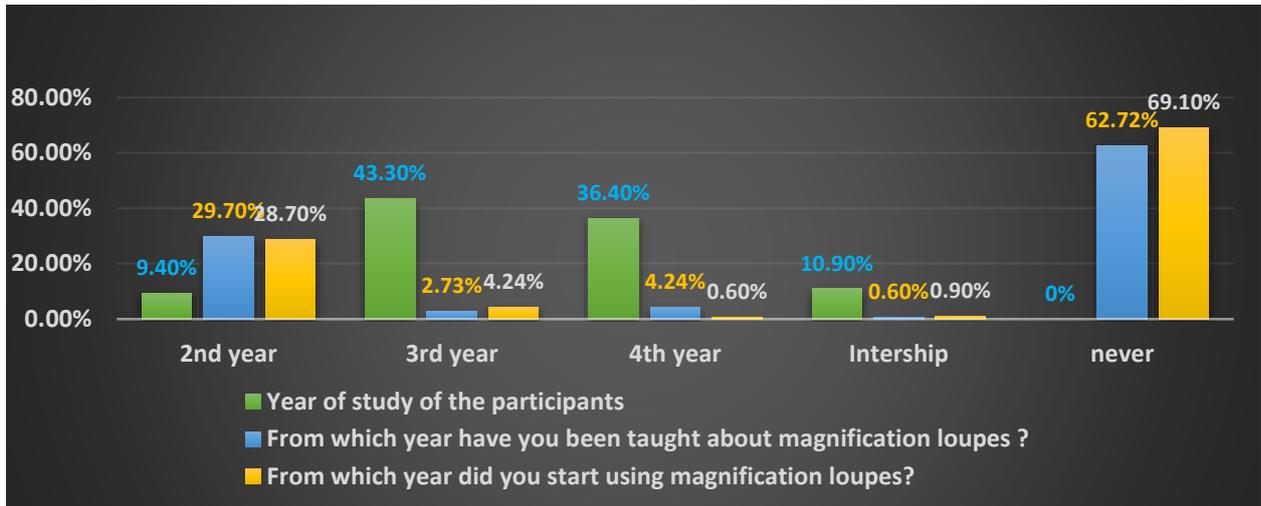


**Fig 1: E- QUESTIONNAIRE**

**Fig 2: MANUAL QUESTIONNAIRE**

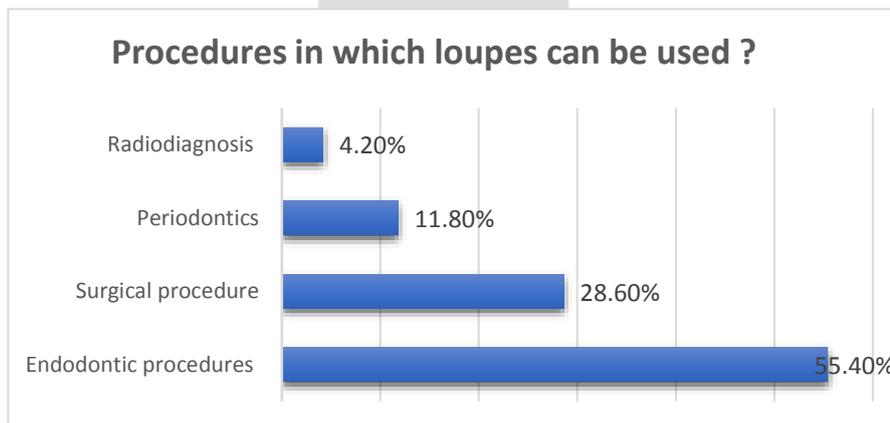
**RESULTS:**

The results have been collected and recorded. They have been tabulated in the form of pie-charts and graphs. Each question which was asked in the questionnaire have been represented in the non verbal form with the percentage of positive and negatives answers.



Three hundred thirty questionnaire were recorded with an overall response rate of 94.3%. Among these 30% of students belonged to our institute (Saveetha Dental College and Hospitals). Levels of education of the respondents were second year, third year, fourth year undergraduate students, 9.4%, 43.3% and 36.4 %, respectively. Unfortunately, only 10.9 % of the respondents were postgraduate students (residents) (all students were from the field of conservative dentistry and Endodontics).

Among this survey population only 38.8% of students have heard about magnification loupes, other 61.2% don't have any idea about the loupes. 36.7% students have reported that they have been taught about magnification loupes in their colleges which includes the 30% students of our institute also. Thus excluding them only 6.7% of other college students have been taught about the loupes in their colleges. 33.84% have reported that they have used their magnification loupes in preclinicals also while 2.86% refuse to use them due to their disadvantages. Almost on an average, 65 % of students don't have any idea about the magnification loupes.



55.4% have reported to use loupes for endodontic procedures, 28.6% for surgical procedures. 42% have reported usage of loupes can increase accuracy and quality of work. 75% practitioners stated it should be mandatory to use loupes from the preclinical level itself.

## DISCUSSION:

In general the whole survey population were asked the same questions just to assess their awareness about the loupes. Though not been using the magnification loupes, 86.7% of participants have accepted that using the loupes can enhance the accuracy and quality of procedures. They have reported that increased sharpening accuracy, easy caries detection, ergonomics can be few advantages of the loupes 45%, 26%, 8% respectively while few disadvantages such as headache, uncomfortable, vision dependency, fatigue have also been reported 42%, 36%, 9%, 9% respectively. 85% have reported that usage of magnification loupes can reduce fatigue of the operator as well as help to maintain proper ergonomics.

Most of the students have mentioned that magnification loupes is mainly used for restorative procedures or any endodontic procedures with few other mentioning about surgical and periodontic procedures. Fortunately 4.2% have also reported loupes can be used for proper radio-diagnosis. In support of hypothesis regarding the opinions about the implementation of the loupes in the educational system, approximately 72% including students and residents thought that loupes would have been beneficial to them if used from preclinical setup itself.<sup>(10)</sup> Although such a large percentage thought that loupes are beneficial in their educational system, only 33.82% thought they should be required, while 66.18% thought they should be an option. Results show that respondents who always use loupes are more likely to support loupes being introduced earlier and as a requirement for students.

Only limited numbers of studies have been published on the use of dental magnification among dental students and residents especially in Tamil Nadu. A study conducted in the University of Newcastle, reported that the biggest drawbacks of wearing loupes among dental hygienists. Drawbacks included the need of adjustment period, limited depth of vision, headache, dizziness and trouble in infection control measures.<sup>(11)</sup> Furthermore, the uncomfortable feeling after stopping the use of magnifying devices is simply due to the fact that the eyes need time to readjust to the normal vision.<sup>(3)</sup> Perhaps the most intriguing reason mentioned for avoiding magnification in the educational setting is that the “need” is not clear.

In one of the survey conducted by Jennifer Thomas, only 21.4% reported that they used loupes as a student, 16.2% sometimes, 20.8% plan to, 59.7% in private practise, 30.2% never used loupes.<sup>(10)</sup> Also 38.2% reported that loupes should be used must while 59.7% thought it could be an optional. Another study states that the posture of students can be improved 95% confidently if the students use their loupes in their clinical practise.

Overall, the results of this survey could have a great impact in the practice of dental hygiene in many ways, especially in the educational system. Any dental hygiene school that does not allow students, to use loupes should reconsider its position since such a large percentage of dental students and residents surveyed, indicated that they felt loupes would have been beneficial to them in dental hygiene school.<sup>(10)</sup> Ultimately, it is not only the dental practitioners that will benefit from being introduced to loupes in the educational setting, but also the patients.

## CONCLUSION:

The present study shows that even though all dental practitioners who responded are not currently using loupes, a large percentage of about 72% believe that loupes would have been beneficial in their education. Also 45% of practitioners accepted that magnification loupes enhance the accuracy and quality of the procedure. Usage of loupes have several advantages such as increased accuracy, proper ergonomics, proper diagnosis and caries detection. Also it can raise the standard of our dental practise. Thus this survey could be a starting point into the benefits of the magnification loupes and it shows that it would be beneficial and also mandatory to make magnification loupes a necessity in the educational system of dentistry.

## REFERENCES:

1. Meraner & Nase 2008, Farook et al. 2013, Eichenberger et al. 2015, Visual acuity and magnification devices in dentistry
2. Del Fabbro M, Taschieri S, Lodi G, Banfi G, Weinstein RL. Magnification devices for endodontic therapy. *Cochrane Database Syst Rev.* 2009;9:CD005969.
3. Christensen GJ. Magnification in dentistry: useful tool or another gimmick? *J Am Dent Assoc.* 2003;134:1647–50.
4. Mallikarjun S, Devi P, Naik A, Tiwari S. Magnification in dental practice: How useful is it? *J Health Res Rev.* 2015;2:39.
5. Friedman MJ. Magnification in a restorative dental practice: from loupes to microscopes. *Compend Contin Educ Dent.* 2004;25:48. 53-45.
6. Maillet JP, Millar AM, Burke JM, Maillet MA, Maillet WA, Neish NR. Effect of magnification loupes on dental hygiene student

posture. J Dent Educ. 2008;72:33–44.

7.Branson BG, Bray KK, Gadbury–Amyot C, et al. Effect of magnification lenses on student operator posture. J Dent Educ. 2004;68(3):384–389.

8.Branson BG, Black MA, Simmer–Beck M.Changes in posture: A case study of a dental hygienist’s use of magnification loupes. Work. 2010;35(4):467–476.

9.Chang BJ. Ergonomic benefits of surgical telescope systems: Selection guidelines. J Calif Dent Assoc. 2002;30(2):161–169.

10.Jennifer Thomas, RDH and F Dennis Thomas, MA, PhD(c)Dental Hygienists' Opinions About Loupes In Education: Journal of Dental Hygiene, Vol. 81, No. 4, October 2007; American Dental Hygienists' Association

11.Hayes MJ, Taylor JA, Smith DR. Introducing loupes to clinical practice: dental hygienists experiences and opinions. Int J Dent Hyg. 2015;14:226–30.

