

## Eye Care Habits of Dental Practitioners at Taibah University Dental College and Hospital

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### Abstract

**Introduction:** Visual acuity is especially important in the field of dentistry. However, many dental practitioners are unaware of their visual acuity and do not undergo regular eyesight examinations. Diminished visual acuity affects the accuracy of dental performance and raises concerns about patient satisfaction and expectations of treatment outcomes.

**Aim:** To determine the eye care status and habits of dental students and dental practitioners associated with the Dental College and Hospital of Taibah University and to assess the importance of magnification devices in dental treatment.

**Methods:** The cohort of this descriptive observational cross-sectional study included male and female dental students and dental practitioners. An online questionnaire was designed using Google Forms. Data were collected, coded, and analyzed using SPSS software. The chi-square test and sample descriptive statistics were applied. A probability (p) value < 0.01 was considered statistically significant.

**Results:** Of a total of 251 respondents to the questionnaire, 177 (70.5%) underwent a previous eyesight examination of which 67 (37.9%) were male and 110 (62.1%) were female. The remaining 74 (29.5%) participants reported to have never undergone an eyesight examination, of which 39 (52.7%) were male and 35 (47.3%) were female, indicating no sex-based bias ( $p = 0.03$ , chi-square test). A significant proportion of the respondents ( $p \leq 0.001$ ) reported that an appropriate eyesight examination frequency was once per year. Subjects with known eyesight deficiencies, especially myopia, underwent regular eyesight examinations more frequently than those with normal vision. A significant proportion of dental practitioners ( $p \leq 0.001$ ) did not use magnification loupes in dental practice.

**Conclusion:** Frequent eyesight examinations are recommended for all dental practitioners regardless of eyesight status. Dental practitioners in all specialties should be encouraged to use magnification loupes in dental practice.

**Keywords:** Eye Care Habits; Eyesight Examination; Magnification Loupes; Check-Up; Dental Student

### Introduction

Visual acuity is especially important in the field of dentistry to ensure the clinical performance of practitioners from the initial examination to completion of the final restoration [1]. Diminished visual acuity is detrimental to the precision and accuracy of dental practitioners and raises concerns about patient satisfaction and expectations of treatment outcomes [2].

Sixth-year students enrolled in the Program of Dental Surgery at the College of Dentistry of Taibah University (Al-Madinah Al-Munawwarah, Saudi Arabia) encounter transitional stages from pre-clinical courses to clinical training. During this time, the range and degree of complexity of dental tasks increase, as well as the length of time in contact with patients, a situation that imposes concerns regarding the effect of visual acuity on clinical outcomes [3]. However, magnification devices, such as surgical microscopes, endoscopes, and magnification loupes, can resolve many visual disorders of dental students and dental practitioners.

Because of the absence of an eyesight examination as a requirement for student admission to the College of Dentistry of Taibah University.

### Aim of the Study

The aim of the present study was to assess the eye sight status and eye care habits of dental students and dental practitioners to investigate the importance of magnification devices in dental treatment.

### Materials and Methods

This descriptive observational cross-sectional study was conducted at the Dental College and Hospital of Taibah University. The hospital has more than 100 dental units with about 300 enrolled dental students in clinical training and more than 100 faculty members representing all specialties of dentistry. The study cohort included dental students in clinical training and faculty members, while dental students enrolled in pre-clinical courses were excluded.

An online questionnaire was designed using Google Forms (<https://www.google.com/forms/about/>) and previously validated as a reliable, self-administrated survey in a study published by the *British Dental Journal* [4]. The established questionnaire was used with few modifications to achieve all standard requirements of the present study. The questionnaire consisted of three sections. Section 1 included questions regarding the demographic characteristics of the participants (i.e. age, sex, qualification, year of study, category, area of practice, registration status with the Saudi Commission for Health Specialties, and years of experience). Section 2 included 10 questions regarding eyesight that required the respondent to select the most appropriate answer: history of previous eyesight examinations, reason for previous examinations, time since the last eyesight examination, eyesight status revealed by the latest examination, recommended treatment for eyesight correction, personal opinion of required frequency of eyesight examinations, status of color vision deficiency, effect of poor eyesight status on dental treatment outcomes, importance of eyesight examinations for dental practitioners, and degree of eyesight satisfaction. Section 3 included two questions regarding the use of magnification loupes.

The study protocol was approved by the Research Ethics Committee of the Dental College and Hospital of Taibah University (study reference no.: TUCDREC/20190227/NMTaymour) and conducted in accordance with the Ethical Principles for Medical Research Involving Human Subjects described in the Declaration of Helsinki. The study was conducted mainly for research purposes, participation was totally voluntary, and data confidentially was secured.

A pilot questionnaire was designed to ensure clarity and understanding, and to introduce any modifications prior to distribution of the final version. The questionnaire was distributed to the selected groups via social media and e-mail. The data were collected using a convenient sampling method, coded, and analyzed using SPSS software (SPSS, Inc., Chicago, IL, USA). Relationships between categorical variables were identified using the chi-square test. A probability (p) value < 0.01 was considered statistically significant.

### Results

Of a total of 251 respondents to the questionnaire, 177 (70.5%) underwent a previous eyesight examination of which 67 (37.9%) were male and 110 (62.1%) were female (Table 1). The remaining 74 (29.5%) participants reported to have never undergone an eyesight examination, of which 39 (52.7%) were male and 35 (47.3%) were female, indicating no sex-based bias (p = 0.03, chi-square test).

In regard to eyesight examination frequency, a significant proportion of the 251 subjects ( $p \leq 0.001$ ) responded that an appropriate examination frequency was once per year with no statistically significant sex-based bias ( $p = 0.091$ , chi-square test). The importance of an eyesight examination was also evaluated among dental practitioners on a scale from 1 (not important) to 10 (very important). Although a greater proportion of females ( $n = 73, 60.8\%$ ) than males ( $n = 47, 39.2\%$ ) reported that an eyesight examination was very important, there was no significant difference between sexes ( $p = 0.817$ , chi-square test). In regard to eyesight satisfaction, a greater proportion of females ( $n = 60, 56.1\%$ ) than males ( $n = 47, 43.9\%$ ) were satisfied with their eyesight status, although there was no statistically significant differences between sexes ( $p = 0.026$ , chi-square test). The main reasons for using magnification loupes were improved working posture, optimization of clinical results, and improved close-up vision of the working area, with no statistically significant influence of sex ( $p = 0.055$ , chi-square test).

Finally, of 16 faculty members who responded to eyesight status, 5 (31.3%) had normal eyesight, 4 (25%) had myopia, 5 (31.3%) had hyperopia, and 2 (12.5%) were not sure. Because of the limited number of responding faculty members, this information was insufficient to arrive at a conclusion.

	Male, n (%)	Female, n (%)	Total, n	p
Normal	22 (47.8%)	24 (52.2%)	46	0.001
Myopia	25 (34.7%)	47 (65.3%)	72	
Hyperopia	7 (29.2%)	17 (70.8%)	24	
Unsure	13 (37.1%)	22 (62.9%)	35	
Total	67 (37.9%)	110 (62.1%)	177	
p	0.388			

**Table 1:** Shows the eyesight status of the respondents according to sex.

*There was a significantly greater proportion of respondents with myopia than hyperopia ( $p \leq 0.001$ ). There was no significant difference in eyesight status between males and females ( $p = 0.388$ , chi-square test).*

	Male, n (%)	Female, n (%)	Total, n	p
Within the last year	33 (37.1%)	56 (62.9%)	89	0.001
Up to 2 years ago	12 (32.4%)	25 (67.6%)	37	
Up to 3 years ago	8 (61.5%)	5 (38.5%)	13	
Up to 4 years ago	7 (41.2%)	10 (58.8%)	17	
Up to five years ago	0 (0%)	4 (100%)	4	
More than 5 years ago	7 (41.2%)	10 (58.8%)	17	
<b>Total</b>	67 (37.9%)	110 (62.1%)	177	
P	0.190			

**Table 2:** List the time since the last eyesight examination of the respondents.

*A significantly greater proportion of the respondents underwent an eyesight examination within the last year as compared to within the past 5 years or more ( $p \leq 0.001$ ). Respondents with known eyesight deficiencies (mostly myopia) underwent regular eyesight examinations more frequently than those with normal vision, indicating a significant influence of eyesight status ( $p \leq 0.001$ ). There was no significant effect of sex on the frequency of eyesight examinations ( $p = 0.190$ , chi-square test).*

	Male, n (%)	Female, n (%)	Total, n	p
Reminder from an optician	8 (40%)	12 (60%)	20	0.001
Advised by dentistry staff	2 (50%)	2 (50%)	4	
Noticed change in eyesight	44 (38.9%)	69 (61.1%)	113	
Wanted a change in appearance	1 (17.6%)	5 (83.3%)	6	
Felt time was due	2 (22.2%)	7 (77.8%)	9	
Other	10 (40%)	15 (60%)	25	
<b>Total</b>	67 (37.9%)	110 (62.1%)	177	
P	0.780			

**Table 3:** Lists the reasons as specified by respondents for undergoing an eyesight examination. The main reason for undergoing an eyesight examination was a change in vision acuity ( $p \leq 0.001$ , chi-square test). There was no significant difference in responses between males and females ( $p = 0.780$ , chi-square test).

	Male, n (%)	Female, n (%)	Total, n	p
Glasses	39 (35.1%)	72 (64.9%)	111	0.001
Contact lenses	3 (42.9%)	4 (57.1%)	7	
Laser surgery	3 (30.0%)	7 (70.0%)	10	
Not applicable	22 (44.9%)	27 (55.1%)	49	
<b>Total</b>	67(37.9%)	110 (62.1%)	177	
P	0.635			

**Table 4:** Presents the eyesight correction methods preferred by the respondents. A significantly greater proportion of the respondents ( $p \leq 0.001$ ) preferred glasses as opposed contact lenses and laser surgery. There was no significant influence of sex on preference of eyesight correction methods ( $p = 0.635$ , chi-square test).

	Male, n (%)	Female, n (%)	Total, n	p
No	78 (41.7%)	109 (58.3%)	187	0.001
Yes	12 (48%)	13 (52%)	25	
Not sure	16 (41%)	23 (59%)	39	
<b>Total</b>	106 (42.2%)	145 (57.8%)	251	
P	0.825			

**Table 5:** List the color vision deficiency status among the included participants according to sex. A significantly greater proportion of the participants ( $p \leq 0.001$ ) had no color vision deficiency. There was no significant influence of sex on color vision deficiency ( $p = 0.825$ , chi-square test).

	Male, n (%)	Female, n (%)	Total, n	p
Strongly agree	58 (43.3)	76 (56.7%)	134	0.001
Agree	39 (42.9%)	52 (57.1%)	91	
Neither agree nor disagree	3 (23.1%)	10 (76.9%)	13	
Disagree	4 (44.4%)	5 (55.6%)	9	
Strongly disagree	2 (50%)	2 (50%)	4	
<b>Total</b>	106 (42.2%)	145 (57.8%)	251	
P	0.682			

**Table 6:** Refers to the effects of poor eyesight status on the success of dental treatments. A significantly greater proportion of the participants ( $p \leq 0.001$ ) strongly agreed that poor eyesight status affects treatment outcomes. There was no significant difference between the responses “agree” and “strongly agree” or between sexes ( $p = 0.682$ , chi-square test).

	Male, n (%)	Female, n (%)	Total, n	p
Yes	12 (48%)	13 (52%)	25	0.001
No	94 (41.6%)	132 (58.4%)	226	
Total	106 (42.2%)	145 (57.8%)	251	
p	0.538			

**Table 7:** Presents the use of magnification loupes by dental practitioners according to sex.

A significantly greater proportion of dental practitioners ( $n = 226, p \leq 0.001$ ) did not use magnification loupes with no significant effect of sex ( $p = 0.538$ , chi-square test). A minimal number of participants ( $n = 25$ ) used magnification loupe in dental practice.

## Discussion

The present study was conducted to assess the eye care habits of students and dental practitioners affiliated with the Dental College and Hospital of Taibah University. The assessment included eyesight status and regular eyesight examinations to promote dental practice and encourage the clinical use of magnification loupes to raise awareness of the potential risks of diminished vision acuity in the field of dentistry. This concept was adopted from an earlier study of eye care habits of registered dentists practicing in the United Kingdom [4]. The response rate of the present study was 70.5%, which was considered satisfactory as compared to previous studies [1,4]. These findings indicate that regular eyesight examinations and protection methods were perceived as important to dental practitioners.

Precautionary measures were enacted to obscure all identifiable personal information and conceal the responses of the participants to ensure privacy and confidentiality. This approach was paralleled with the procedures employed in previous studies [4,5].

Notably, twice as many females than males responded to the questionnaire, suggesting that male students and dental practitioners were not as interested in eyesight status as their female counterparts or lacked the time to complete the questionnaire.

The majority of the respondents were aged 20 - 30 years and more than half (54.2%, 96/177) had either myopia or hyperopia. Previous studies have reported that the prevalence of myopia was significantly higher than any other eye disorder [1,4]. Interestingly, none of the respondents reported having a color vision deficiency.

The respondents with myopia were encouraged to undergo regular eyesight examinations to correct the disorder. This approach was taken more seriously among the respondents with eyesight defects as compared to those with normal vision. There was a general consensus among the respondents that an eyesight examination once per year is an acceptable frequency.

The results of this study were generally in agreement with previous reports [1,4]. The vast majority of the respondents agreed that frequent eyesight examinations are important to maintain vision acuity. More strikingly, the primary motivation of the respondents to visit an optician was a noticeable change in vision acuity. In regard to vision correction, the use of traditional eyeglasses is generally preferable to contact lenses and laser surgery [4].

The prevalence of female respondents suggests that females might be more concerned with eyesight status than males. The majority of the dental practitioners who participated in this study recognized the importance of regular eyesight examinations, which should be prioritized by all dentists, and also stressed the influence of good eyesight on the success rate of dental treatments. These findings were in agreement with previous studies on the importance of these issues. The respondents also acknowledged the importance of protective eyewear during dental treatments to avoid accidental injury [6]. Although magnification loupes were recognized as an important tool to optimize clinical results, the dental practitioners in this study did not generally employ these devices. This finding was in contrast to previous studies [7], although there was no obvious explanation for this difference.

There were two major limitations to this study that should be addressed. First, the sample size was not equally distributed between students and faculty members, which resulted in a higher number of students reporting myopia. Second, the age of the faculty members was not included, which influenced comparisons with the bulk of students. Hence, future studies are warranted to address these issues.

### Conclusion

In view of the results disclosed in this study, the inclusion of an eyesight examination is recommended as a part of the medical examination required for student admission to the College of Dentistry of Taibah University. Frequent eyesight examinations should be advocated for all dental practitioners regardless of eyesight status. Dental practitioners should not wait until they experience a change in vision acuity or be advised by a fellow staff member, but rather should personally initiate regular examinations as a preventive measure to ensure optimal delivery of dental care. It is also recommended that dental practitioners in all specialties should be advised on the clinical use of magnification loupes to provide the best possible treatment outcomes.

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### Conflict of Interest

The authors have no conflicts of interest to declare. The study was not funded by any institution or organization.

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