

Evaluation of Dental Students Knowledge in Dijlah University about the Chemical Components of Saliva

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ABSTRACT

This cross-section study was conducted in dental hospital at dijlah university college during period extended for three months (1jun – 1april 2023) where 250 dental students from second stage (122) and fifth stage (128) students were asked to answer pretested questioner designed by the researcher to measure the level of knowledge of dental students about chemical composition of saliva. The questioner includes two parts, the first part asked about gender, age, and stage of study. The second part includes twenty questions asked about chemical composition of saliva. The results indicated that older students had significantly better knowledge than younger students ($p = 0.007$). Specifically, 66.7% of students aged 22 and older had good knowledge, compared to only 33.3% of younger students. Male students had significantly better knowledge than female students ($p = 0.01$), with 69.4% of male students having good knowledge compared to only 30.6% of female students. Additionally, fifth-year students had significantly better knowledge than second-year students ($p = 0.001$), with 66.7% of fifth-year students having good knowledge compared to only 33.3% of second-year students. The findings of the present study suggest that age, gender, and academic experience are significant predictors of knowledge acquisition among students. Therefore, educational institutions should consider these factors while designing academic programs and activities to ensure that all students receive equal opportunities to acquire knowledge.

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1- INTRODUCTION

Because numerous oral and systemic conditions present as alterations in saliva flow and composition, it is crucial for dental students to stay informed about these changes. Several factors that may influence salivary flow and its composition, and the knowledge of the effects of these changes on the oral health. Saliva plays an essential role in maintaining the integrity of the oral structures, health, digestion and in controlling oral infection [1]. Saliva presents a promising alternative for diagnosing specific conditions and tracking the progression of various diseases, as well as for measuring medication or drug levels. Saliva, a bodily fluid secreted into the oral cavity, is crucial for maintaining the health of both hard and soft tissues in the mouth. Its complex physical and chemical makeup allows it to perform various protective functions for the oral cavity and the entire body. [2]. Saliva is a complex fluid, with 93% produced by the major salivary glands and the remaining 7% by the minor glands. These glands are found throughout the mouth, except in the gums and the front portion of the hard palate. [3]. 99% of saliva is water and the other 1% is Saliva contains both organic and inorganic components. The organic elements include proteins, carbohydrates, and lipids,

while the inorganic elements consist of calcium, phosphate, magnesium, sodium, chloride, bicarbonate, and hydrogen ions. Additionally, it has trace amounts of zinc, copper, fluoride, and strontium. molecules, and each of its components performs a series of specific functions such as protection from dental caries [4]. Saliva's role in protecting against cavities can be summarized in four key aspects: diluting and removing sugars and other substances, its buffering capacity, and maintaining the balance of demineralization and remineralization / remineralization, and antimicrobial action [5]. Saliva buffering capacity is achieved by salivary proteins such as, Sialin which Contributes significantly to raising the biofilm pH following exposure to fermentable carbohydrates [6]. Saliva also neutralizes and removes acids generated by acidogenic microorganisms, and helps prevent their colonization by altering the conditions necessary for their growth [7]. Saliva is crucial for preserving the physical and chemical stability of tooth enamel by controlling the processes of remineralization and demineralization which is affected by concentrations free of calcium, phosphate, and fluoride in solution and the salivary pH. The concentration of salivary calcium varies with the Salivary flow and is not affected by diet [8,9]. Saliva includes a variety of immunologic and non-immunologic proteins that possess antibacterial properties [10]. Secretory immunoglobulin A (IgA) is the most significant immunologic component in saliva, capable of neutralizing viruses, bacteria, and enzyme toxins. It acts as an antibody against bacterial antigens and can aggregate bacteria, preventing their adhesion to oral tissues [11,12]. Among the non-immunologic proteins in saliva are enzymes. such as lysozyme, lactoferrin, and peroxidase and proline-rich proteins [13]. Saliva through its flow rate play an important role in maintaining the integrity of the soft and hard tissues in the oral cavity. Daily salivary Saliva secretion rates vary from 500 to 700 ml, with an average mouth volume of 1.1 ml. The production of saliva is regulated by the autonomic nervous system [14,15]. Oral health issues can arise from alterations in salivary flow and composition, and these changes can also serve as indicators or manifestations of various oral and systemic conditions and the dental student should have a knowledge of these changes [16,17]. Saliva production can be diminished, a condition referred to as hyposalivation or hypoptyalism, which significantly impacts oral health. Key symptoms and signs of hyposalivation include a sensation of dry mouth, also known as xerostomia, difficulties with denture use, mucosal pain and irritation, a burning sensation on the tongue, and altered taste perception (dysgeusia). Commonly observed signs include reduced glossiness of the oral mucosa, dryness and cracking of the mucosa, fissures on the tongue's dorsum, angular cheilitis, thickened saliva, increased susceptibility to oral infections, especially by Candida species, caries in unusual locations, and enlargement of the major salivary glands [19,20]. Several factors can influence salivary flow, such as physiological conditions that reduce saliva production. These factors include age, the number of teeth, gender, body weight, and the time of day. [21,22]. Other conditions also affect salivary flow include Various categories of medications, especially those with anticholinergic effects, including antidepressants, anxiolytics, antipsychotics, antihistamines, and antihypertensives) [23,24].

Aims of study

- 1- To find out level of knowledge regarding chemical composition of saliva among students and dental department, Dijlah university college.
- 2- To find out associations between gender and knowledge of students.
- 3- To find out associations between year of study and knowledge.
- 4- To find out associations between age of study and knowledge.

2- METHOD

This cross-section study was conducted in dental hospital at dijlah university college during period extended for three months (1jun – 1epril 2023) where 250 dental students from second stage (122) and fifth stage (128) students were asked to answer pretested questioner designed by the researcher to measure the level of knowledge of dental students about chemical composition of saliva according to gender and stages of study.

The questioner includes two parts, the first part asked gender, age, and stage of study. The second part includes twenty questions asked about chemical composition of saliva.

Scoring

One mark was given to each corrected answer while zero given to the wrong or non-answer.

The score of knowledge of each student was calculated according to the following formula:

$$Score = \frac{\text{Number of correctly answered questions}}{\text{Total number of questions}} \times 100\%$$

The level of knowledge was determined according to the following:

- 1- Poor knowledge was given to student who scored less than 50%.
- 2- Fair knowledge was given to student who scored about 50 – 75%.
- 3- Good knowledge was given to student who scored more than 75%.

Ethical consideration

- 1- The research proposal was discussed and approved by the ethical and scientific comity in dental department at Dijlah university college.
- 2- Verbal consent was taken from each student after full explanation of aim of study and ensuring him/her about the confidentiality of the collected data which will not be used for any purpose other than current study.

Statistical analysis

The collected were loaded into SPSS V26 statistical program. Descriptive statistics were presented using tables and graphs.

The Chi square test was employed to determine the significance of relationships between related categorical variables, a p-value of less than 0.05 was used as the threshold for statistical significance.

3- RESULTS

The study aimed to investigate the relationship between demographic factors and the extent of knowledge among students in a particular academic institution. The study examined a sample of 250 students and analyzed their age, gender, and academic year to determine if these variables influenced their level of knowledge.

Demographic Distribution of the Sample

The study included 250 students and their demographic characteristics were analyzed in Table 1. The majority of students were between the ages of 19 and 24, with the highest percentage (25.5%) being 19 years old and the lowest (11.6%) being 24 years old. Almost half of the students were male (46.6%). In terms of grade, there were slightly more fifth-year students (51.0%) than second-year students (49.0%).

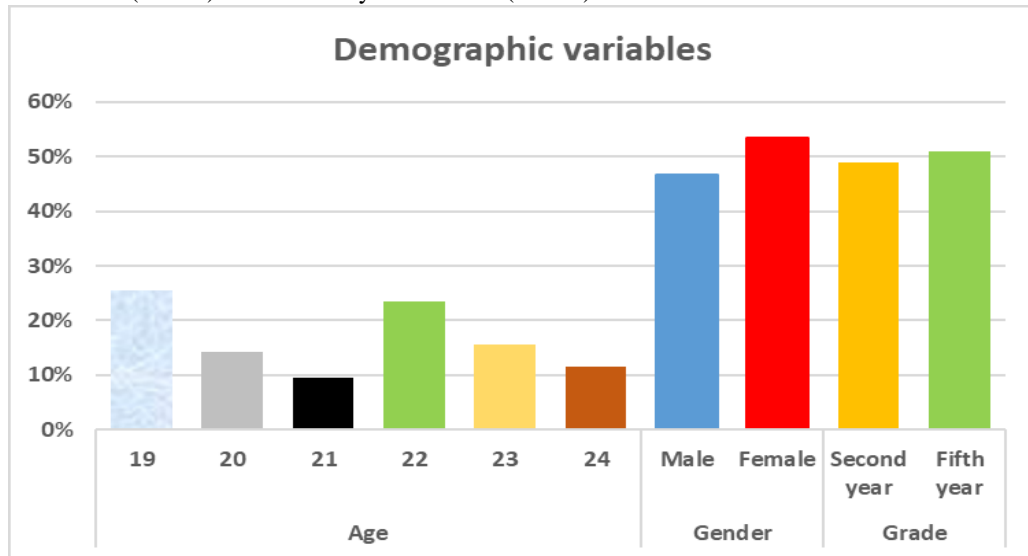


Figure 1: Show the demographic variables age, gender and grade.

Table 1: Distribution of Studied Cases According to Demographic Variables

Age	19.0	64	25.5%
	20.0	36	14.3%
	21.0	24	9.6%
	22.0	59	23.5%
	23.0	39	15.5%
	24.0	29	11.6%
	Gender	Male	117
Female		134	53.4%
Grade	2 nd grade	123	49.0%
	5 th grade	128	51.0%

Association between Demographic Variables and Level of Knowledge

Table 2 displays the associations between demographic variables and the level of knowledge among the study participants. The results indicate that age, gender, and grade significantly influence the level of knowledge among the participants.

Regarding age, the study found that older students (22 years and older) had a significantly higher rate of good knowledge (66.7%) compared to younger students (33.3%). This finding suggests that age is an important factor in acquiring knowledge, with older students having more experience and exposure to educational materials, which may have contributed to their better performance.

Furthermore, the study found a significant difference in knowledge levels between male and female students, with male students having better knowledge (69.4%) than female students (30.6%). This finding suggests that gender plays a crucial role in acquiring knowledge, with males having better access to educational resources or showing a higher interest in academic activities.

The study also found a significant difference in knowledge levels between second-year and fifth-year students, with fifth-year students having a significantly higher rate of good knowledge (66.7%) compared to second-year students (33.3%). This finding indicates that the level of knowledge is associated with academic experience, with more years of education contributing to better performance.

Overall, these results suggest that age, gender, and academic experience are significant predictors of knowledge acquisition among the study participants. Therefore, educational institutions should consider these factors while designing academic programs and activities to ensure that all students receive equal opportunities to acquire knowledge.

Table 2: Associations between Demographic Variables and Level of Knowledge

Demographic Variable	Knowledge Level	Poor N (%)	Fair N (%)	Good N (%)	P-value
Age	19.0	21(33.3%)	37(24.3%)	6(16.7%)	0.007
	20.0	16(25.4%)	15(9.9%)	5(13.9%)	
	21.0	2(3.2%)	21(13.8%)	1(2.8%)	
	22.0	12(19.0%)	33(21.7%)	14(38.9%)	
	23.0	6 (9.5%)	27(17.8%)	6 (16.7%)	
	24.0	6 (9.5%)	19(12.5%)	4(11.1%)	
Gender	Male	25(39.7%)	67(44.1%)	25(69.4%)	0.01
	Female	38(60.3%)	85(55.9%)	11(30.6%)	
Grade	2 nd grade	43(68.3%)	68(44.7%)	12(33.3%)	0.001
	5 th grade	20(31.7%)	84(55.3%)	24(66.7%)	

Note: The table shows the associations between demographic variables and the level of knowledge among the study participants. The table includes the frequency and percentage of participants who were classified as having poor, fair, or good knowledge. The P-value represents the statistical significance of the associations between the demographic variables and knowledge level., N; total number, %; percentage.

4- DISCUSSION

The results indicate that age, gender, and grade significantly influence the level of knowledge among the participants. Specifically, older students (22 years and older) had a significantly higher rate of good knowledge compared to younger students, males had significantly better knowledge than females, and fifth-year students had significantly better knowledge than second-year students. These findings are consistent with previous research that has also found an association between demographic variables and knowledge acquisition. For instance, a study conducted by Naderifar et al. (2020) among Iranian medical students found that age and gender were significant predictors of knowledge and attitudes towards COVID-19 [25]. Similarly, a study by Tamrat and colleagues (2019) in Ethiopia found that gender and academic year were associated with students' academic performance. In both studies, males and older students had better knowledge and performance than females and younger students, respectively [26]. In conclusion, the findings of the present study suggest that age, gender, and academic experience are significant predictors of knowledge acquisition among students. Therefore, educational institutions should consider these factors while designing academic programs and activities to ensure that all students receive equal opportunities to acquire knowledge.

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تقييم معلومات طلبة طب الأسنان في كلية دجلة الجامعة حول المكونات الكيميائية للعاب

الخلاصة

أقيمت هذه الدراسة المقطعية في مستشفى طب الأسنان الخاص بجامعة دجلة خلال فترة زمنية امتدت لثلاثة أشهر (١ يونيو - ١ أبريل ٢٠٢٣). حيث سؤل مئتين وخمسين طالباً من طلاب المرحلة الثانية (١١٢) والمرحلة الخامسة (١٢٨) للإجابة عن مجموعة اسئلة وضعت من قبل الباحثين لغرض تقييم معلومات الطلبة عن التركيب الكيميائي للعاب.

يتكون الاستبيان من جزئين، الجزء الأول تضمن اسئلة عن الجنس والعمر والمرحلة الدراسية للطالب. اما الجزء الثاني فتضمن عشرين سؤالاً عن التركيب الكيميائي للعاب.

نتائج هذه الدراسة بينت انه الطلاب الاكبر عمراً لديهم معرفة اعلى من الطلاب الاقل عمراً ($p = 0.007$). على وجه التحديد، ٦٦.٧٪ من الطلاب ذي الاثنتين وعشرين سنة فما فوق لديهم معرفة جيدة، بالمقارنة مع الطلاب الاقل عمراً ٣٣.٣٪.

للطلاب الذكور معرفة جيدة اعلى من الطلاب الإناث ($p = 0.01$)، بحيث انه ٦٩.٤٪ من الطلاب الذكور لديهم معرفة اعلى مقارنة بالطلاب الاناث ٣٠.٦٪.

بالإضافة طلاب المرحلة الخامسة لديهم معرفة افضل من طلاب المرحلة الثانية ($p = 0.001$)، بحيث انه ٦٦.٧٪ من طلاب المرحلة الخامسة لديهم معرفة اعلى من طلاب المرحلة الثانية ٣٣.٣٪.

تشير نتائج الدراسة الحالية إلى أن العمر والجنس والخبرة الأكاديمية هي مؤشرات مهمة لاكتساب المعرفة بين الطلاب. لذلك، يجب على المؤسسات التعليمية مراعاة هذه العوامل أثناء تصميم البرامج والأنشطة الأكاديمية لضمان حصول جميع الطلاب على فرص متساوية لاكتساب المعرفة.