"AWARENESS AND KNOWLEDGE OF SKELETAL ORTHODONTIC PROBLEMS OF STUDENTS AGES TO14 AND THEIR PARENTS IN RIYADH, KINGDOM OF SAUDI ARABIA: BASIS FOR PROPOSED ENHANCEMENTS IN ORAL HEALTH SCHOOL PROGRAMS"

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ABSTRACT:

The study determined the level of awareness and knowledge of malocclusion and skeletal orthodontic problems among students ages 7 to 14 and their parents in Riyadh, Kingdom of Saudi Arabia. The study used quantitative, descriptive, comparative, and correlational methods of research. A researcher-made questionnaire was administered to 381 students and 381 parents selected through purposive sampling technique. The results showed that the students were mostly male (93.44%), 13-15 years old (38.32%), in grade level 1 to 3 middle school (38.32%). Their parents were mostly male (65.35%); 35-44 years old (55.12%); majority were in the medium socio-economic status (85.04%); and majority were college graduates (62.74%). The students' level of awareness in terms of malocclusion was "Moderate Level." The students' level of awareness in terms of skeletal problem was "Low Level." The parents' level of awareness in terms of malocclusion was "Moderate Level." The parents' level of awareness in terms of skeletal problem "Low Level." The students' level of knowledge as assessed by themselves in terms of malocclusion "Low Level." The students' level of knowledge in terms of skeletal problem was "Low Level." The parents' level of knowledge in terms of malocclusion was "Moderate Level." The parents' level of knowledge in terms of skeletal problem was "Low Level." There was a significant relationship between the age and grade level of students' and their assessment of knowledge in malocclusion and skeletal problem. There was a significant relationship between the age and highest educational attainment of parents and their assessment of their knowledge in malocclusion and skeletal problem. There was a significant relationship between the age and grade level of students and their assessment of their awareness in malocclusion and skeletal problem. There was a significant relationship between the age and highest educational attainment of parents and their assessment in malocclusion and skeletal problem. There was no significant difference in the level of knowledge and level of awareness among students as assessed by themselves in terms of malocclusion and skeletal problem. No significant difference between the level of knowledge and level of awareness of the parents as assessed by themselves in terms of both malocclusion and skeletal problem was also found in the study.

keywords: Dental Skeletal Problem, Malocclusion, Oral Health, Orthodontic Public School.

CHAPTER I
THE PROBLEM AND ITS BACKGROUND
Introduction

Knowledge is a highly valued state in which a person is in cognitive contact with reality (Zagzebski, 2017). On one side of the relation is a conscious subject, and on the other side is a portion of reality to which the knower is directly or indirectly related. While directness is a matter of degree, it is convenient to think of knowledge of things as a direct form of knowledge in comparison to which knowledge about things is indirect. The former has often been called knowledge by acquaintance since the subject is in experiential contact with the portion of reality known, whereas the latter is propositional knowledge since what the subject knows is a true proposition about the world. Knowing Roger is an example of knowledge by acquaintance, while knowing that Roger is a philosopher is an example of propositional knowledge. Knowledge by acquaintance includes not only knowledge of persons and things, but also knowledge of my own mental states. In fact, the knower's own mental states are often thought to be the most directly knowable portion of reality.

Awareness is the state or capacity to perceive, feel, and be conscious (Chalmers & David, 1997). Since young children assume a significant part in advancing a solid way of life that will endure forever, their attention to oral health and orthodontic treatment should be determined. The knowledge and awareness to parents of their children's oral health is a key part that creates a preventive measure in this way, prompting building up a sound oral health status of their kids. The awareness correspondence offers a very flexible approach to modeling various notions of awareness, some of which have yet to be explored. The authors stress that restrictions depend on which interpretation of awareness is desired in applications. For instance, economists became interested in framing affects including presentation order effects. Presentation order effects may be relevant when information is acquired with the help of online search engines, which typically present lists of search results. Rather than going through all of them, we usually stop when we found a satisfactory result. There may be search results further down the list of which we remain unaware but which we would find much more relevant if we were aware of them.

Parents normally get oral medical care advices from their essential medical services doctors, dental specialists, companions, and families. Parents normally pose explicit inquiries about the time of teeth eruption, season of occasional visit for the dental specialist, time and recurrence of tooth brushing, utilization of fluoride toothpaste and diet and sugar admission. Kids ought to partake in an exclusive expectation of health, including oral health, however as children, they are reliant upon grown-ups for this. Oral health is a fundamental part of general health and impacts an individual's personal satisfaction and it plays social a central role in the avoidance of numerous oral illnesses (WHO 2020).

The aim of this study was to assess the knowledge and awareness on malocclusion and orthodontic skeletal problem needs among students age from 7-14 and their parents within the context of Al-Riyadh, Kingdom of Saudi Arabia, with a purpose of examining the role of age differences and investigate the potential barriers toward orthodontic skeletal treatment and their relevance across age and parents in Al-Riyadh, Saudi Arabia.

Statement of the Problem

This study determined the level of awareness and knowledge of skeletal orthodontic problems among students and parents in Riyadh, Kingdom of Saudi Arabia, which may serve as basis for proposed enhancements in oral health school programs.

Specifically, this study sought answers to the following research questions:

- What is the profile of the students in terms of:
  - Age;
  - Sex; and
  - Grade Level?
- What is the profile of the parents in terms of:
  - Age;
  - Sex;
  - Socioeconomic; and
  - Highest Educational attainment?
- What is the level of awareness of the students as assessed by themselves in terms of:
  - Malocclusion; and
  - Skeletal problem?
- What is the level of awareness of the parents as assessed by themselves in terms of:
  - Malocclusion; and
  - Skeletal problem?
- What is the level of knowledge of students as assessed by themselves in terms of:
  - Malocclusion; and
  - Skeletal problem?
- What is the level of knowledge of the parents as assessed by themselves in terms of:
  - Malocclusion; and
  - Skeletal problem?
- Is there a significant relationship between the profile of students and their assessment of their knowledge in malocclusion and skeletal problem?
- Is there a significant relationship between the profile of the parents and their assessment of their knowledge in malocclusion and skeletal problem?
- Is there a significant relationship between the profile of students and their assessment of their awareness in malocclusion and skeletal problem?
- Is there a significant relationship between the profile of the parents and their assessment of their awareness in malocclusion and skeletal problem?
- Is there a significant difference between the level of knowledge and level of awareness among students as assessed by themselves?
- Is there a significant difference between the level of knowledge and level of awareness of the parents as assessed by themselves?
- Based on the results of the study, what enhancements in oral health school programs can be proposed for students age 7 to 14 and their parents with regard to malocclusion and skeletal problems?

Hypotheses

Based on the research problems, the following null hypotheses were tested:

Ho1: There is no significant relationship between the profile of students and their assessment of their knowledge in malocclusion and skeletal problem.

Ho2: There is no significant relationship between the profile of the parents and their assessment of their knowledge in malocclusion and skeletal problem.

Ho3: There is no significant relationship between the profile of students and their assessment of their awareness in malocclusion and skeletal problem.

Ho4: There is no significant relationship between the profile of the parents and their assessment of their awareness in malocclusion and skeletal problem.

Ho5: There is no significant difference between the level of knowledge and level of awareness among students as assessed by themselves.

Ho6: There is no significant difference between the level of knowledge and level of awareness of the parents as assessed by themselves.

Theoretical Framework

The study was mainly anchored on the theory of Mani, et al. (2021) on knowledge, attitude, and perception regarding myofunctional appliance. Youngsters are developing an unusual kind of malocclusions which are intended to be treated during their formative stage in its place of treating more invasive in their later stage. Myofunctional appliances are intended to set up muscular balance and eradicate oral dysfunction and thus direct in proper growth of the maxilla and mandible, esthetic impairment, discomfort, functional impairment, and ill are the prime purposes behind helpless collaboration and treatment suspension in beginning phase of treatment. Myofunctional treatment support more prominent mandibular skeletal impacts than treatment at a prepubertal stage.

The implications of this study are subject to increasing knowledge and awareness to make a future life full of happiness in terms of health or living environment.

Person-centered care model in dentistry, new business and care models are upsetting the dental consideration framework, and changing it into one that is centered on disease management and prevention-oriented primary care that considers overall health and well-being. That proposed a person-centered care model to improve oral health as an integral part of overall health. The model distinguished three vital participants who go about as change specialists with their separate jobs and obligations: Person, supplier, and health care system designer. This theory studied from (Hyewon Lee et al 2018) will have a significant impact on social life in terms of increasing knowledge and awareness of students and their families and giving them the necessary knowledge that could be a positive factor on the educational level regarding this study, which will be about knowledge and awareness on skeletal orthodontic problems of students age 7 to 14 and their parents in Riyadh, kingdom of Saudi Arabia: basis for a proposed enhancements in oral health school programs.

<div align="center">Conceptual Framework</div>

INDEPENDENT VARIABLE   **DEPENDENT VARIABLE**

<div style="border:1px solid;">
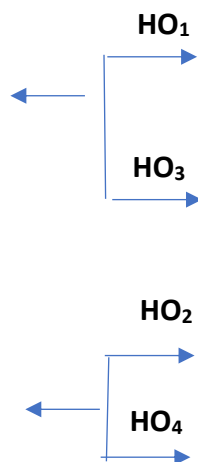
Basis for Proposed Enhancements in Oral School Health Programs

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Figure 1. Knowledge And Awareness on Skeletal Orthodontic Problems of Students Age 7 To 14 And Their Parents In Riyadh, Kingdom Of Saudi Arabia: Basis For A Proposed Enhancements In Oral Health School Programs.

The first box represents the independent variables, the respondents (students age from 7-14 and their parents) profile. The dependent variables which included in the second box represent the assessment of the students age from 7-14and their parents on their knowledge.

The third box represents the assessment of the students age from 7-14 and their parents on their awareness. The fourth box represents the level of knowledge and level of awareness among students age from 7-14 and their parents as assessed by themselves.

The first two-tailed arrow represents the relationship between the profile of the _ students age from 7-14 and their parents and their assessment of the knowledge. The second two-tailed arrow represents the relationship between the profile of the students age from 7-14 and their parents and their assessment of the awareness.

The first one-tailed arrow represents the difference in the level of knowledge and level of awareness among students age from 7-14 as assessed by themselves.

The second one-tailed arrow represents the difference in the level of knowledge and level of awareness of the parents as assessed by themselves.

Significance of Study

This study will be beneficial to the following:

For parents: Awareness of malocclusion among parents is needed to make correction towards their children orthodontic treatment.

For students: Awareness in treating dental skeletal problems early increases the child's confidence in many ways, the most important of which is the external appearance and function.

For the society: The societal role is very important for what may alleviate problems that may be difficult to solve in the future.

For the dental and orthodontic practitioners: Increasing awareness and rationalizing the auditors in oral care, which leads to increasing public awareness and creating an appropriate environment in the community.

For Future Researchers: This study can help create or find several future solutions to educate the community.

For Orthodontic Association: The results will be very effective to activate the performance of orthodontic societies in terms of working to increase awareness and knowledge and work to reduce risks to humans.

Scope and Limitations

The present study primarily focused on determining the level of awareness and knowledge of skeletal orthodontic problems among students ages seven to fourteen years old and their parents in selected public and private schools in Riyadh, Kingdom of Saudi Arabia. The study involved 381 respondents who were students and their parents. The students were currently enrolled in selected public and private schools in Riyadh, Kingdom of Saudi Arabia. To elicit detailed information, part of the data gathering included the profiles of the students and their parents, such as age, sex, grade level for the school-age children, highest educational attainment for the parents of school-age children, and socio-economic status.

This study limits its coverage to selected public and private schools under the Department of Education in Riyadh, Kingdom of Saudi Arabia. This served as the locale of the study. Students ages 7 to 14 years old were currently enrolled. Further, involved in the study were the parents of the school-age children, who were either the mother or the father. The study excluded students ages seven to fourteen who were not currently enrolled, Saudi nationals, and students who lived outside Riyadh, Kingdom of Saudi Arabia. The data were collected using a researcher-made questionnaire in the form of a survey. Furthermore, this limits the concept of malocclusion to skeletal problems. The data gathering procedure took place from March to May 2022.

One of the difficulties in gathering data was the fact that more than 100 students were unable to reply to the survey because the questionnaire employed was first incomprehensible. As a result, with the help of three orthodontist who served as validators, the questionnaire was made simpler so that it would be easier for the students to understand. The survey instrument that was made available to the participants was also translated into Arabic. Furthermore, this limits the concept of malocclusion to skeletal problems. The data gathering procedure took place from March to May 2022.

Definitions of Terms

The following terms are operationally defined for the purpose of further understanding the study:

Awareness is the perception of school-age children and their parents in the locale of the study about malocclusion and skeletal problems. School-age children and their parents' ability to see, hear, or become aware of something through the senses is something they are concerned about and interested in a specific situation or development regarding malocclusion and dental skeletal problems.

Dental Skeletal Problem refers to the school-aged children in the research who have a bone age delay in respect to chronological age, resulting in redirection of jaws growing, which has a detrimental impact on the growth and development of school-aged children's jaws and teeth.

Knowledge refers to facts, information, and abilities that school-aged children and their parents have learned via experience or education are referred to as knowledge. Specifically, it refers to a subject's theoretical or practical grasp of malocclusion and dental skeletal problems in school-aged children and their parents in the study's area.

Malocclusion happens when a child's teeth develop crooked or crowded. The child's bite might potentially be a concern. That is, when the jaw is closed, the upper jaw's teeth do not ordinarily contact the lower jaw's teeth.

Oral Health relates to the respondents' overall oral health and well-being. Early infancy is the optimum period for children to develop long-lasting habits that will help them grow up to be healthy adults. Eating, speaking, and the appearance of a child's teeth are all crucial.

Parent is defined as either the mother or father of school-age children in the study location. The parent is the primary caregiver for their young.

Students are children aged seven to fourteen who attend grade school in both public and private schools in the Riyadh, Kingdom of Saudi Arabia.

Public School is a place where the first and direct responsibility is the government, as it first accepts Saudi students and specific seats for foreign students

Private School is an independent school in its financial affairs and governance. It is non-governmental, privately funded, and is not managed by local governments, but the government is supervising it through laws and regulations.

CHAPTER II
REVIEW OF RELATED LITERATURE AND STUDIES

This chapter presents the related literature and studies about the assessment of knowledge and awareness of skeletal orthodontic problems among students age 7-14 and their parents.

Cross sectional study was conducted by Hameed et al (2018) among 1000 youthful grown-ups between ages 18-22 in Sathyabama University, Chennai, India. A questionnaire consisting of 24 multiple choice questions were given to the members to evaluate their awareness, disposition towards malocclusion and orthodontic treatment. Over 70% of the members show concern and interest on self-view, 39.9% of the complete review populace were discontent with the plan of their teeth. There was a general absence of information about the etiology and the impacts of malocclusion among the members. 60.2% of the populace have not visited a dental specialist in the beyond 3 years. Many had mixed signals towards orthodontic treatment.

Aishwarya (2019) concluded that overview concentrate alone isn't really a reasonable indicator to let know if the young people are dealing with this issue. The majority of them know about malocclusion however not the ill impacts. In addition, practically every one of them are going through orthodontic treatments, nowadays, that they focus closer toward oral wellbeing and hygiene. A total of 75 individuals reacted for the web-based survey. The young people who reacted were in the age gathering of 11-18 years. Malocclusions are for the most part found in teenagers. It isn't just misalignment of teeth yet additionally incorporates swarming of teeth and spaces between their teeth. This exploration shows that, these days, a large portion of them keep up with oral hygiene and they get some down time to do as such.

Sonavane et al. (2014) make study to investigate the prevalence of oral diseases, knowledge, and oral hygiene practices including health care seeking behavior, proper diet and oral habits for a healthy mouth of school children in Bijapur using a questionnaire and oral examination. The subjects for the study were randomly selected from three schools of Bijapur in the age group of 7-12 years. A total of 300 children were screened with the help of predesigned questionnaire and scored in accordance with World Health Organisation (WHO) criteria. Out of 300 students 37.33% of the children having oral problems belonged to the age group of ten. Out of 300 students 18% had carious teeth. Out of 300 students 67.67% brushed their teeth once a day. Out of 300 students 75.33% brushed their teeth in horizontal strokes only. A significant relationship was found between the frequency of brushing and the oral problems faced by the students. Chi-square test also showed a

significant relationship between the type of strokes and the oral problems faced by the students. Out of 235 students who having oral problems, 80.43% did not visit the dentist for regular check-ups.

According to Faizee (2018) malocclusion has been a problem since ancient times. Various variables impact malocclusion, for example, oral abnormalities, inconsistencies in the dentition like changes in shape, position and number of teeth. However, awareness and attitude about the issue varies inside the area, depending on their education and understanding. Subsequently, perception is fundamental to reduce and stay away from the injurious impacts of malocclusion. Hence the objective of this study is to perceive the knowledge of youngsters and enlighten their perception on misaligned teeth.

Charu Khurana 2020 study was to assess the knowledge, attitude, approach, and action change of school teachers toward oral health and the impact of this training intervention in improving their knowledge. The training improved the knowledge of school teachers on oral health which indicates that the adopted method of oral health education was well received by the participants from all over the country.

CHAPTER III
METHODOLOGY

This chapter presents the research methods and procedures that the researcher will be applied during the duration of the study. This chapter includes a discussion of the research design, samples and sampling technique, research instruments, data gathering procedures, and statistical tools used in the study.

Research Design

The study used the quantitative approach, utilizing the descriptive-correlational and comparative survey methods of research. Descriptive studies are observational studies which range from case and case series reports to extensive epidemiological studies. The essential features of the descriptive studies are their cross-sectional nature from an epidemiological perspective (Indu 2020).

In the comparative study design, researchers consider two variables (unmanipulated) and establish a formal procedure to conclude that one is better to the other when there is a significant difference (Villanueva, 2013).

This research design determined the difference in knowledge and awareness on skeletal orthodontic problems of students age 7 to 14 and their parents in Riyadh, kingdom of Saudi Arabia: basis for a proposed enhancements in oral health school programs.

The Sample and Sampling Techniques

Samples of 381 primary and middle school students were collected, as well as 381 students' parents. This was done through public and private schools, as the first school, which consisted of the first, second and third grades of primary school for boys, was visited, as that school, which is located in the western region from the city of Riyadh.

A visit was made to the second school consisting of the primary stage from the first to the sixth grade for males. The third school that was visited contained the intermediate stage, which is divided into the first, second and third intermediate classes for males. Thus, 352 male students were collected. Because of the conservative environment on which the foundations of education depend in the Kingdom of Saudi Arabia, as male schools are completely separated from female schools, only one school

was visited for females, consisting of the first, second and third grades of primary school, and since males are not allowed to enter the school, contact was made with the school director Only 25 female students were collected.

Purposive sampling was used as a sampling technique. Students in selected public and private schools in Riyadh, Saudi Arabia aged seven to fourteen years old were classified in relation to age into three groups, which fall according to the age of the accompanying them, as follows: primary deciduous teeth stage, mixed teeth stage, and permanent teeth stage. Each part had specific questions regarding oral health in general and the extent of knowledge and awareness of skeletal problems and stages of malocclusion in particular.

Their parents were also chosen; they are the father or mother of school-age children. Furthermore, the school-age children are those born in the Kingdom of Saudi Arabia. Data collection was not performed for those children under the age of seven and those over fourteen years old, as well as their parents who live outside of Riyadh, Saudi Arabia; and school-aged children who were not born in the Kingdom of Saudi Arabia or who are not Saudi nationals; and for those students and parents who were on leave of absence and those who did not consent to the data collection. The data gathered was from every member of the population. Students and parents who were available and gave their signed informed consent to respond were invited based on the eligibility criteria.

Research Instrument and Data Gathering Procedure

The research instrument used in the study was the researcher-made instrument. The questionnaire was researcher-made and derived from references available in the related literature.

Each group of respondents, namely: the school-age children and their parents were given a separate questionnaire. The participants were given questions translated into local Arabic language to make it easier in communicating and to be at the same level of understanding for their ages. Part I of the questionnaire contained the Profile of the School-age children including the age, sex, grade level and socio-economic status.; the parents' profile including the age, sex, highest educational attainment and socio-economic status.

Part II of the questionnaire contains the items on the respondent's awareness and knowledge on malocclusion and skeletal problem. The respondents' assessed their awareness and knowledge on malocclusion and skeletal problem. These was assessed by using a rating scale of:

Awareness on Malocclusion and Skeletal Problem

Range	Qualitative Interpretation	Symbol
3.26 - 4.00	Extremely Aware	EA
2.51 - 3.25	Moderately Aware	MA
1.76 - 2.50	Somewhat Aware	SA
1.00 – 1.75	Not at all Aware	NA

Knowledge on Malocclusion and Skeletal Problem

Range	Qualitative Interpretation	Symbol
3.26 - 4.00	Extremely Known	EK
2.51 - 3.25	Moderately Known	MK
1.76 - 2.50	Somewhat Known	SK
1.00 – 1.75	Not at all Known	NK

Part III of the questionnaire contains the items related to the level of awareness and knowledge on malocclusion and skeletal problem. The rating scale was used wherein 4 is High Level (HL), 3 is Moderate Level (ML), 2 is Low Level (LL), and 1 is None at All (NA).

parents of the school-age children. Once approval is granted from the research committee and the ethics committee.

The result of the pilot study was subjected to Chronbach Alpha reliability statistics of 0.78 which was interpreted as "Very Reliable". The researcher invited Fifteen (15) school-age children and Fifteen (15) parents of the school-age children from each locale as actual respondents. The respondents were asked personally to accomplish all items of the questionnaire.

Next, via a pilot study, the researcher analyzed the questionnaire to guarantee and ensure that it was valid, reliable, and aided answer the questions. The researcher distributed the questionnaire to a small sample containing Fifteen (15) school-age children and Fifteen (15) parents of the school-age children. This pilot study concentrated on guaranteeing the simplicity of utilizing the poll and the accessibility of the school.

some printing mistakes and unclear questions, which I fixed before the final questionnaire was administered.

Another communication letter was made for the actual conduct of the study for which the researcher invited school-age children ages 7 to 14 years old and the parents of the school-age children from various locales, public and private schools in the Riyadh Kingdom of Saudi Arabia as respondents. The school-age children and their staff parents were asked personally to accomplish parts 1, 2, and 3 of the questionnaire.

Ethical Considerations

Consent forms were offered to and obtained from respondents, indicating that ethical consideration would be observed during the data collection method. This encompasses the right to privacy, the right to self-determination, the right to autonomy, and the right to remain anonymous. The actual data collection took place using the pen-and-paper approach, in which respondents were asked to indicate their responses on the given survey forms. Collection of data took place from March to May 2022 after approval was granted by the research committees of each locale of the study.

Statistical Treatment of Data

Upon the completion of the data and tabulation, statistical treatments followed. To analyze and interpret the result of the study, the researcher used both descriptive and inferential statistical tools. Descriptive statistics employed frequencies and mean scores.Frequency of respondents belonging to a certain profile category and frequency of respondents giving the same rating was determined. The following are the statistical toolsused in this

study:

Percentage was used to compute the profile variables considered in the study is the distribution and display of data that specifies the percentage ofobservation that exist for each data point or grouping of data points (Lavrakas, 2017). It was used to show the relative proportion of the respondents in terms of their socio-demographic profile using the formula:

Formula: P = f/n

Table 1.2

Where:

P is percentage

f is frequency of response or case

n is the total number of respondents or cases.

1. **Weighted Mean (WM)** was used to determine the level of knowledge and awareness of students age from 7-14 and their parents. Weighted Mean is the average of a set of values wherein each measurement has a different weight or degree of importance (Investopedis,2017). The sum of all items or terms divided by the total number of items or termsusing the formula below:

Formula: WM = fw/n Where:

WM = weighted mean

fw = sum of the frequency multiplied by unit of weightn = total number of respondents

To determine the level of knowledge and awareness of the respondents as stated in Statement of the Problem 2 and 3, the following Likert scale was used:

Scale	Range	Verbal Interpretation	Symbol
4	3.26-4.00	High level	HL
3	2.51-3.25	Moderate level	ML
2	1.76-2.50	Low level	LL
1	1.00-1.75	None at all	NA

This technique was use to eliminate questionable items from the scale. The essence of Likert technique is to increase the variations in the possible scores by codingfrom "Strongly Agree" to "Strongly Disagree" instead of merely "Agree" or "Disagree." Ascale score was computed for each respondent. If respondent A makes a very high score, and person B makes a very low score, their answers to all questions can be compared to see if there is any single question that two persons with two differentscores will be answered identically.

2. **Chi-square** was used to test the hypotheses. This test was used in order to find the significant relationship between the socio-demographic profile and level of knowledge and awareness of the respondents. (1) the relationship between the profile of students age 7-14 and their assessment of their knowledge in malocclusion and skeletal problem (2) the relationship between the profile of the parents and their assessment of their knowledge in malocclusion and skeletal problem (3) the relationship between the profile of school-aged children and their assessment of their awareness in malocclusion and skeletal problem (4) the relationship between the profile of the parents and their assessment of their awareness in malocclusion and skeletal problem. The formula for Chi-square is

Formula:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

Where:

X^2 = stands for the value of chi-square O_i = stands for observed frequency

E_i = stands for expected frequency, asserted by the null hypothesis N = stands for the number of cells in the table

Independent t-test is also called the two-sample t-test, is an inferential statistical test that determines whether there is a statistically significant difference between the means in two unrelated groups. The independent t-test was employed in this study to validate if there is a significant difference in (1) difference between the level of knowledge and level of awareness among students age from 7-14 and their parents as assessed by themselves (2) difference between the perceived problems of the students age from 7-14 and their parents as assessed by themselves in terms of malocclusion and skeletal problem. The formula for independent t-test is as follows:

$$t = \frac{\overline{X}_1 - \overline{X}_2}{\sqrt{\frac{s_1^2}{N_1} + \frac{s_2^2}{N_2}}}$$

S^2 is an estimator of the common **variance** of the two samples. It can be

calculated as follows:

$S^2 = \sum(x - \bar{x}_1)^2 + \sum(x - \bar{x}_2)^2$

$N_1 + N_2 - 2$

Where:
$\bar{x}_1$ = mean of group 1
$\bar{x}_2$ = mean of group 2
N_1 = sample size of group 1 N_2 = sample size of group
$2 S_1^2$ = variance of group 1 S_2^2 = variance of group

　　　　Once t-test statistic value is determined, need to compare it with the critical value of t-test table corresponding to the confidence level alpha (5%). The degrees of freedom (df) used in the test are:
df = $N_1 + N_2 - 2$

CHAPTER IV

PRESENTATION, ANALYSIS, AND INTERPRETATION OF DATA

　　　　This chapter presents, analyzes, and interprets the data collected in the study based on the research questions enumerated in Chapter I.

1. Profile of the Students when Grouped According to their Profile
Table 1.1 Percentage and frequency distribution of Students according to Age

Age	f	%
7-9 years old	106	27.82
10-12 years old	129	33.86

13-15 years old	146	38.32
TOTAL	**381**	**100.00**

Table 1.1 presents the frequency and percentage distribution of the age of the student-respondents, where in 146 or 38.32% of the respondents are in the 13-15 years old age group. While 129 or 33.86% of the respondents belong in the 10-12 years old age group; then 106 or 27.82% belong to the 7-9 years old age group. The Saudi education system is divided into 3 stages: primary (7-12) intermediate (13-15) high(16-18) and each level they are in separated building.

Table 1.2 Percentage and frequency distribution of Students according to Sex

Sex	f	%
Male	356	93.44
Female	25	6.56
TOTAL	**381**	**100.00**

Table 1.2 shows the frequency and percentage distribution of the sex of the student-respondents, wherein 356 or 93.44% of the respondents are male. While the remaining 25 or 6.56% of the respondents are female.

Table 1.3 Percentage and frequency distribution of Students according to Grade Level

Grade Level	f	%
Grade 1-Grade 3 Elementary school	106	27.82
Grade 4-Grade 6 Elementary school	129	33.86
Grade 1-Grade 3 Middle school	146	38.32
TOTAL	**381**	**100.00**

As to the grade level of the respondents, 146 or 38.32% are in the Grade 1 to 3 middle school; while 129 or 33.86% belong to the Grade 4 to 6 elementary school; and 106 or 27.82% are in the Grade 1 to 3 Elementary school.

2. Profile of the Parents when Grouped According to their Profile

Table 2.1 Percentage and frequency distribution of Parents according to Age

Age	f	%
35-44 years old	210	55.12
45-54 years old	150	39.37
55-64 years old	21	5.51
TOTAL	**381**	**100.00**

Table 2.1 presents the frequency and percentage distribution of the age of the parent-respondents, wherein 210 or 55.12% of the respondents are in the 35-44 years old age group. While 150 or 39.37% of the respondents belong in the 45-54 year old age group; then only 21 or 5.51% belong to the 55-64 years old age group.

Table 2.2 Percentage and Frequency Distribution of Parents according to Sex

Sex	f	%
Male	249	65.35
Female	132	34.65
TOTAL	**381**	**100.00**

Table 2.2 shows the frequency and percentage distribution of the sex of the parent-respondents, wherein 249 or 65.35% of the respondents are male. While the remaining 135 are female or 34.65% of the respondents.

Table 2.3 Percentage and frequency distribution of Parents according to Socio-economic status

Socio-economic status	f	%
Low	7	1.84
Medium	324	85.04
High	50	13.12
TOTAL	**381**	**100.00**

Table 2.3 shows the socio-economic status of the respondents, 324 or 85.04% are in the medium socio-economic status; while 50 or 13.12% belong to the high socio-economic status; and 7 or 1.84% are in the low socio-economic status.

Table 2.4 Percentage and frequency distribution of Parents according to Highest Educational Attainment

Highest Eucational Attainment	f	%
Middle School Level	1	0.26
High School Level	119	31.23
College Level	13	3.41
College Graduate	239	62.74
Masters Degree	6	1.57
Doctorate Degree	3	0.79
TOTAL	**381**	**100.00**

Table 2.4 presents the frequency and percentage distribution of the highest educational attainment of the parent-respondents. Only 3 or 0.79% of the respondents have Doctorate Degree; while 6 or 1.57% have Master's Degree; 239 or 62.74% have graduated College; 13 or 3.41% are in College level; while 119 of the respondents reached High School level; and only 1 or 0.26% or the respondents just finished Middle School.

3. The Level of awareness Students as Assessed by themselves in terms of Malocclusion and Skeletal Problems

Table 3.1 Level of awareness of students as assessed by themselves in terms of Malocclusion

Awareness-Malocclusion	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1.After removing primary teeth there will be permanent teeth	2.60	ML
2. Crowding teeth need to visit	2.11	LL

orthodontist		
3. Presence of space between teeth are normal	1.79	LL
4. My oral health is important	3.78	HL
5. Regular visits to the dentist are important to my oral health	3.44	HL

GRAND MEAN	2.74	ML

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 3.1 shows the level of awareness of students as assessed by themselves in terms of malocclusion, wherein the average score was 2.74 or Moderate Level. Item Number 4, "My oral health is important" got the highest numerical interpretation of 3.78 or High Level. While Item Number 3, "Presence of space between teeth is normal" got the lowest numerical interpretation of 1.79 or Low Level. The findings show that among the student-respondents their level of awareness in malocclusion can still be improved so as to help them take care of their teeth.

Table 3.2 Level of Awareness of Students as Assessed by themselves in terms of Skeletal Problem

Awareness-Skeletal Problem	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1.Skeletal problem can affect the facial appearance	2.94	ML
2.Surgery can correct skeletal problems at adult age.	1.62	NA
3.Mouth breathing can cause bone problems.	1.87	LL
4.Thumb sucking habit can cause jaw problem	1.90	LL
5.Biting on the lips permanently is wrong	1.98	LL

GRAND MEAN	2.06	LL

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 3.2 presents the level of awareness of students as assessed by themselves in terms of skeletal problem, wherein the average score was 2.06 or Low Level. Item Number 1, "Skeletal problem can affect the facial appearance" got the highest numerical interpretation of 2.94 or Moderate Level. While Item Number 2, "Surgery can correct skeletal problems at adult age" got the lowest numerical interpretation of 1.62 or None at All.

4. The Level of Awareness of Parents as Assessed by themselves in terms of Malocclusion and Skeletal problems

Table 4.1 Level of Awareness of Parents as Assessed by themselves in terms of Malocclusion

Awareness-Malocclusion	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1. There is specific management after the early loss of milk teeth	3.19	ML
2. Only a few teeth may need to be removed for aligning irregular teeth	3.05	ML
3. I see that my child keep hiding hi/her smile	2.39	LL
4. Aesthetics smile must be free of Irregular teeth	3.70	HL
5. Malocclusion affects the way people breathe through the mouth or nose.	1.30	NA

GRAND MEAN	2.73	ML

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 4.1 depicts the level of awareness of parents as assessed by themselves in terms of malocclusion, wherein the average score was 2.73 or Moderate Level. Item Number 4, "Aesthetics smile must be free of Irregular teeth" got the highest numerical interpretation of 3.70 or High Level. While Item Number 5, "Malocclusion affects the way people breathe through the mouth or nose." got the lowest numerical interpretation of 1.30 or None at All. The findings show that even among the parent-respondents their level of awareness in malocclusion is not yet that high, which may affect the way they teach or advice their children regarding their teeth.

Table 4.2 Level of Awareness of Parents as Assessed by themselves in terms of Skeletal Problem

Awareness-Skeletal Problem	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1. Oral habit can be treated orthodontically	2.33	LL
2. Wearing dental appliance is beneficial for my child's oral health	1.18	NA
3. Treatment of child with skeletal problem is costly	3.52	HL
4. Early orthodontic treatment helps in eliminating oral habits such as (thumb sucking or tongue thrust) which may lead to a major dental problem later in life if not treated	2.36	LL
5. Children try to imitate their parents' behavior	2.15	LL
GRAND MEAN	**2.31**	**LL**

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 4.2 presents the level of awareness of parents as assessed by themselves in terms of skeletal problem, wherein the average score was 2.31 or Low Level. Item Number 3, "Treatment of child with skeletal problem is costly" got the highest numerical interpretation of 3.52 or High Level. While Item Number 2, "Wearing dental appliance is beneficial for my child's oral health." got the lowest numerical interpretation of 1.18 or None at All. The findings show that among the parent-respondents their level of awareness in skeletal problem is not that high, which may still be improved on with proper oral health education from dental personnel.

5. The Level of Knowledge of Students as Assessed by themselves in terms of Malocclusion and Skeletal Problems
Table 5.1 Level of Knowledge of Students as Assessed by themselves in terms of Malocclusion

Knowledge-Malocclusion	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1.Teeth are an important part of the body	3.12	ML
2. Extraction of teeth can lead to a misaligned jaw	1.89	LL
3. Regular dental visits are crucial for my overall health	2.13	LL
4. Late extraction of primary teeth can lead to misalignment of permanent teeth	2.11	LL
5. Malocclusion may cause difficulty in eating	2.40	LL
Grand Mean	**2.33**	**LL**

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 5.1 shows the level of knowledge of students as assessed by themselves in terms of malocclusion, wherein the average score was 2.33 or Low Level. Item Number 1, "Teeth are an important part of the body" got the highest numerical interpretation of 3.12 or Moderate Level. The rest of the 4 other items all got a verbal interpretation of Low Level. While Item Number 2, "Extraction of teeth can lead to a misaligned jaw" got the lowest numerical interpretation of 1.89 or Low Level. The findings show that among the student-respondents their level of knowledge in malocclusion can still be improved so that they can take good care of their teeth.

Table 5.2 Level of Knowledge of Students as Assessed by themselves in terms of Skeletal Problems

Knowledge-Skeletal Problems	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1. Lower jaw protrusion indicates a skeletal issue	1.79	LL
2. Upper jaw protrusion indicates a skeletal problem	1.80	LL
3. Permanently breathing from the mouth cause bad jaw shape	2.10	LL
4. Tongue-thrusting is a bad habit	2.80	ML
5. Using an appliance to modify the problem of the growth in maxilla and mandible that will avoid any skeletal problem in the future	2.15	LL
Grand Mean	**2.13**	**LL**

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 5.2 presents the level of knowledge of students as assessed by themselves in terms of skeletal problem,, wherein the average score was 2.13 or Low Level. Item Number 4, "Tongue-thrusting is a bad habit" got the highest numerical interpretation of 2.80 or Moderate Level. While Item Number 1, "Lower jaw protrusion indicates a skeletal issue" got the lowest numerical interpretation of 1.79 or Lower Level. The results show that among the student-respondents their level of knowledge in skeletal problem is even lower compared to malocclusion.

6. The Level of Knowledge of Parents as Assessed by themselves in terms of Malocclusion and Skeletal Problems
Table 6.1 Level of Knowledge of Parents as Assessed by themselves in terms of Malocclusion

Knowledge-Malocclusion	Numerical Interpretation	Verbal Interpretation
	Mean	Q.I
1. Teeth are an important part of the body	3.70	HL
2. Regular dental visits are crucial for the children's overall health	2.82	ML
3. Late extraction of primary teeth can lead to misalignment of permanent teeth	3.10	ML
4. Malocclusion may cause difficulty in eating	2.35	LL
5. The first permanent teeth appeared around 6 years old.	2.76	ML
Grand Mean	**2.95**	**ML**

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 6.1 depicts the level of knowledge of parents as assessed by themselves in terms of malocclusion, wherein the average score was 2.95 or Moderate Level. Item Number 1, "Teeth are an important part of the body" got the highest numerical interpretation of 3.70 or High Level. While Item Number 4, "Malocclusion may cause difficulty in eating." got the lowest numerical interpretation of 2.35 or Low Level. The findings show that among the parent-respondents their level of knowledge in malocclusion is not that high, which may affect the way they teach or advice their children regarding their teeth.

Table 6.2 Level of Knowledge of Parents as Assessed by themselves in terms of Skeletal Problems

Knowledge-Skeletal Problems	Numerical Interpretation		Verbal Interpretation
	Mean	Q.I	
1. Tongue-thrusting is a bad habit can lead skeletal problem	2.24	LL	
2. Oral habit and malocclusion have a connection	2.45	LL	
3. Upper and Lower jaw protrusion indicates a skeletal issue	2.18	LL	
4. Extraction of teeth can lead to a misaligned jaw	3.00	ML	
5. Malocclusion affects the way people breathe through the mouth or nose	2.34	LL	
Grand Mean	**2.44**	**LL**	

**High Leve (HL) 3.26-4.00; Moderate Level (ML) 2.51-3.25; LowLevel (LL) 1.76-2.50; None at All (NA) 1.00-1.75

Table 6.2 presents the level of knowledge of parents as assessed by themselves in terms of skeletal problem, wherein the average score was 2.44 or Low Level. Item Number 4, "Extraction of teeth can lead to a misaligned jaw" got the highest numerical interpretation of 3.00 or Low Level. While Item Number 3, "Upper and Lower jaw protrusion indicates a skeletal issue." got the lowest numerical interpretation of 2.18 or Low Level. The findings show that among the parent-respondents their level of knowledge in skeletal problem is low, which may mean that they can seek the help from their family dentists to give them proper oral health education.

7. Relationship Between the Profile of the Students and their Assessment of their Knowledge in Malocclusion and Skeletal problem

Table 7.1. Relationship between the Profile of the Students and their Assessment Knowledge in terms of Malocclusion

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	6.68	6	12.592	Ho: Rejected HA: Accepted	Significant Relationship
Sex	2.54	3	7.815	Ho: Accepted	Non Significant
Grade Level	6.68	6	12.592	Ho: Rejected HA: Accepted	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 7.1 shows the relationship between the profile of students and their assessment of their knowledge in malocclusion wherein both age and grade level resulted with a significant relationship with the students' assessment of their knowledge in malocclusion. This may mean that age and grade level are factors affecting students' knowledge on malocclusion.

Table 7.2. Relationship between the Profile of the Students and their Assessment of their Knowledge in terms of Skeletal Problems

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation

Age	5.29	6	12.592	Ho: Rejected	Significant Relationship
Sex	1.22	3	7.815	Ho: Accepted	Non Significant
Grade Level	5.29	6	12.592	Ho: Rejected	Significant Relationship

*alpha level of significance at 0.05; two-tailed

While, Table 7.2 presents the relationship between the profile of students and their assessment of their knowledge in skeletal problem wherein both age and grade level had significant relationship with the students' assessment of their knowledge in skeletal problem. This may mean that age and grade level are factors affecting students' knowledge on skeletal problem.

8. Relationship Between the Profile of the Parents and their Assessment of their Knowledge in Malocclusion and Skeletal problem

Table 8.1. Relationship Between Profile of Parents and their Assessment of their Knowledge in terms of Malocclusion

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	18.90	6	12.592	Ho: Rejected Ha: Accepted	Significant Relationship
Sex	5.06	3	7.815	Ho: Accepted	Non-Significant
Socio economic Status	4.88	6	12.592	Ho: Accepted	Non- Significant
Highest Educational Attainment	29.17	15	24.996	Ho: Rejected Ha: Accepted	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 8.1 shows the relationship between the profile of parents and their assessment of their knowledge in malocclusion. Using chi-square at 0.05 level of significance only age and highest educational attainment were related significantly with the knowledge in malocclusion. While both sex and socio-economic status resulted to a non-significant relationship with knowledge in malocclusion.

Table 8.2. Relationship between Profile of Parents and their Assessment of their Knowledge in terms of Skeletal Problem

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	15.36	6	12.592	Ho: Rejected Ha: Accepted	Significant Relationship
Sex	2.17	3	7.815	Ho: Accepted	Non-Significant
Socio economic Status	5.69	6	12.592	Ho: Accepted	Non- Significant
Highest Educational Attainment	25.42	15	24.996	Ho: Rejected Ha: Accepted	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 8.2 presents the relationship between the profile of parents and their assessment of their knowledge in skeletal problem. Using chi-square at 0.05 level of significance only age and highest educational attainment tested significantly with the knowledge in skeletal problem. While both sex and socio-economic status resulted to a non-significant relationship with knowledge in malocclusion.

9. Relationship Between the Profile of the Students and their Assessment of their Awareness in Malocclusion and Skeletal problem

Table 9.1. Relationship Between Profile of Students and their Assessment of their Awareness in terms of Malocclusion

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	17.84	6	12.592	Ho: Rejected	Significant Relationship
Sex	6.11	3	7.815	Ho: Accepted	Non Significant
Grade Level	17.84	6	12.592	Ho: Rejected	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 9.1 shows the relationship between the profile of students and their assessment of their awareness in malocclusion wherein both age and grade level resulted with a significant relationship with the students' assessment of their awareness in malocclusion. Sex had a non-significant relationship with awareness in malocclusion.

Table 9.2. Relationship between Profile of Students and their Assessment of their Awareness in Terms of Skeletal Problem

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	15.24	6	12.592	Ho: Rejected	Significant Relationship
Sex	4.06	3	7.815	Ho: Accepted	Non Significant
Grade Level	15.24	6	12.592	Ho: Rejected	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 9.2 presents the relationship between the profile of students and their assessment of their awareness in skeletal problem wherein at 0.05 level of significance both age and grade level had significant relationship with the students' assessment of their awareness in skeletal problem. Sex had a non-significant relationship with awareness in skeletal problem.

10. Relationship Between the Profile of the Parents and their Assessment of their Awareness in Malocclusion and Skeletal Problem

Table 10.1 Relationship Between Profile of Parents and their Assessment of their Awareness in terms of Malocclusion

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	13.71	6	12.592	Ho: Rejected Ha: Accepted	Significant Relationship
Sex	3.89	3	7.815	Ho: Accepted	Non-Significant

Socio economic Status	8.10	6	12.592	Ho: Accepted	Non- Significant
Highest Educational Attainment	26.23	15	24.996	Ho: Rejected Ha: Accepted	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 10.1 shows the relationship between the profile of parents and their assessment of their awareness in malocclusion. Using chi-square at 0.05 level of significance only age and highest educational attainment were related significantly with the awareness in malocclusion. While both sex and socio-economic status resulted to a non-significant relationship with awareness in malocclusion.

Table 10.2. Relationship Between Profile of Parents and their Assessment of their Awareness in terms of Skeletal Problem

Profile	Computed Chi-square Value	Degree of Chi-square Freedom	Tabular Value	Decision	Interpretation
Age	17.35	6	12.592	Ho: Rejected Ha: Accepted	Significant Relationship
Sex	4.07	3	7.815	Ho: Accepted	Non-Significant
Socio economic Status	6.39	6	12.592	Ho: Accepted	Non- Significant
Highest Educational Attainment	28.14	15	24.996	Ho: Rejected Ha: Accepted	Significant Relationship

*alpha level of significance at 0.05; two-tailed

Table 10.2 presents the relationship between the profile of parents and their assessment of their awareness in skeletal problem. Using chi-square at 0.05 level of significance only age and highest educational attainment tested significantly with the awareness in skeletal problem. While both sex and socio-economic status resulted to a non-significant relationship with awareness in malocclusion.

Also there was an impact of the Gender on the awareness (ß=0.30, t=3.78, p<0.05) with an advantage for female. There was an impact of the age on the awareness (ß=0.07, t=2.31, p<0.05) with an advantage for older. There was an impact of the education on the awareness (ß=0.22, t=3.25, p<0.05) with an advantage for postgraduate. Knowledge: R2= 0.03, t means only 3 % of the influence made by independent variables (demographic factors) to predict the knowledge, (F=7.28, p<0.05). Education was the most influencer of the knowledge (ß=0.10, t=3.79, p<0.05) with an advantage for postgraduate. There was an impact of the gender on the knowledge (ß=0.12, t=2.46, p<0.05) with an advantage for female. There was an impact of the age on the knowledge (ß=0.10, t=2.50, p<0.05) with an advantage for older. There was an impact of the age on the knowledge (ß=0.03, t=3.12, p<0.05) with an advantage for north and central region respectively.

11. Students' Difference in the Level of Knowledge and Level of Awareness
Table 11.1 Difference between the Level of Knowledge and Level of Awareness among the Students as Assessed by themselves

Level of Knowledge and Awareness	Computed t- test Value	Degree of Freedom	Tabular t- test Value	Decision	Interpretation
Malocclusion	0.86	379	1.980	Ho: Accepted	Non- Significant

Skeletal Problem	1.25	379	1.980	Ho: Accepted	Non- Significant

Significant Oriented Matters

*alpha level of significance at 0.05; two-tailed

Table 11 shows the difference between the level of knowledge and level of awareness among students as assessed by themselves in terms of malocclusion and skeletal problem. Wherein in both malocclusion and skeletal problem there were no significant difference.

12. Parents' Difference in the Level of Knowledge and Level of Awareness

Table 12. Difference Between the Level of Knowledge and Level of Awareness among Parents as Assessed by Themselves

Level of Knowledge and Awareness	Computed t- test Value	Degree of Freedom	Tabular t- test Value	Decision	Interpretation
Malocclusion	0.86	379	1.980	Ho: Accepted	Non- Significant
Skeletal Problem	1.25	379	1.980	Ho: Accepted	Non- Significant

Significant Oriented Matters

*alpha level of significance at 0.05; two-tailed

As to the difference between the level of knowledge and level of awareness of the parents as assessed by themselves in terms of both malocclusion and skeletal problem there were no significant difference. This may mean that parents knowledge and awareness on both malocclusion and skeletal problem do not vary.

A significant association existed between the number of correct reports on traits given by the children and the parents. However, agreement across professional, child, and parental assessments varied for the different traits. The results indicated that the individual's comprehension of professional terms may be unclear and that professionally defined cut-off points often do not coincide with norms existing within the actual family unit.

13. Based on the results of the study, what enhancements in oral health school programs can be proposed for students age 7 to 14 and their parents with regard to malocclusion and skeletal problems?

Based on the results of the study, specifically on the assessment of both group of respondents, the students and the parents, on their level of awareness and knowledge on both malocclusion and skeletal problem, appropriate enhancements in oral health school programs will be proposed.

For the Students the following were the results of the study: level of awareness on malocclusion (2.74), moderate level, this can be further enhance; while for the level of awareness on skeletal problem (2.06), low level; level of knowledge on malocclusion (2.33), low level; and the level of knowledge on skeletal problem (2.13), low level, should be improved and given more time in strengthening the said items.

For the parents, both the level of awareness in terms of malocclusion (2.73), and level of knowledge in terms of malocclusion (2.95) got Moderate Level. While, both level of awareness in terms of skeletal problem (2.31), and level of knowledge in terms of skeletal problem (2.44) got Low Level, which will mean these 2 areas should be give more time and effort so as to enhance the oral health of both the students and parents.

13. Proposed Oral Health Programs for Students Age 7 to 14 and their Parents with regards to Skeletal Orthodontic Problems Derived from the Results of the Study

Based on the study's findings, the researcher would like to propose that the locale's oral health program incorporate awareness and knowledge of malocclusion and skeletal problems among students and their parents. Correct awareness and knowledge of malocclusion and skeletal abnormalities may lead to a better understanding of oral health among students and parents, as a healthy mouth helps children and adolescents to eat, speak, and socialize without pain, discomfort, or humiliation. Consider how pain from untreated dental disorders can lead to eating, sleeping, speaking, and learning difficulties in children and adolescents, compromising their social interactions, academic achievement, overall health, and quality of life.

Dental skeletal problems and malocclusion may be covered in the oral health program. It might also include kid-friendly reading materials and make learning easier for students based on their grade level and age. Furthermore, parents' involvement would have a significant impact on their knowledge of their children. Thus, parents are urged to sit down in the learning environment with invited dental health resource professionals such as dentists and orthodontics to discuss correct oral health knowledge.

Subsequently, the school will empower parents by encouraging them to appear as speakers during oral health care seminars in order to examine their awareness and knowledge of malocclusion and skeletal problems. Students would be more attentive and would feel their parents' support during this involvement. Similarly, students would have a platform to talk and discuss their learning from the oral health program's contents. Hence, the oral health program does not just focus around dental health resource experts; parents' and students' empowerment is reinforced to promote effective learning.

In summary, the researcher created a pamphlet with information about malocclusion and skeletal abnormalities in order to disseminate accurate information to study participants. It is a design fit for grade-level students.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter presents the summary of findings of the data gathered by the researcher and the conclusions derived from the data presented, analyzed, and interpreted. It also includes the recommendations based on the results and conclusions of this study.

Summary of Findings

Below is the summary of findings based on the data presented in the previous chapter:

1. The students were mostly 13-15 years old (38.32%), male (93.44%), and in grade level 1 to 3 middle school (38.32%).
2. Majority of the respondents belonged to the 35-44 years old age group; most were male (65.35%); majority were in the medium socio-economic status; and majority were college graduates.
3. The level of awareness of students as assessed by themselves in terms of malocclusion, the average score was 2.74 or Moderate Level. The level of awareness of students as assessed by themselves in terms of skeletal problem the average score was 2.06 or Low Level.
4. The level of awareness of parents as assessed by themselves in terms of malocclusion the average score was 2.73 or Moderate Level. The level of awareness of parents as assessed by themselves in terms of skeletal problem, the average score was 2.31 or Low Level.
5. The level of knowledge of students as assessed by themselves in terms of malocclusion the average score was 2.33 or Low Level. The level of knowledge of students as assessed by themselves in terms of skeletal problem, the average score was 2.13 or Low Level.
6. The level of knowledge of parents as assessed by themselves in terms of malocclusion was 2.95 or Moderate Level. While the level of knowledge of parents as assessed by themselves in terms of skeletal problem was 2.44 or Low Level.
7. The relationship between the profile of students and their assessment of their knowledge in malocclusion both age and grade level resulted with a significant relationship with the students' assessment of their knowledge in malocclusion. While the relationship between the profile of students and their assessment of their knowledge in skeletal problem both age and grade level had significant relationship with the students' assessment of their knowledge in skeletal problem.
8. Age and highest educational attainment were significantly related with the knowledge in malocclusion. The relationship between the profile of parents and their assessment of their knowledge in skeletal problem using chi-square at 0.05 level of significance only age and highest educational attainment tested significantly with the knowledge in skeletal problem.
9. Age and grade level had a significant relationship with the students' assessment of their awareness in malocclusion. While the relationship between the profile of students and their assessment of their awareness in skeletal problem at 0.05 level of significance both age and grade level had significant relationship with the students' assessment of their awareness in skeletal problem.
10. The relationship between the profile of parents and their assessment of their awareness in malocclusion were significant in terms of were related significantly with the awareness in malocclusion. Meanwhile, the relationship between the profile of parents and their assessment of their awareness in skeletal problem, using chi-square at 0.05 level of significance only age and highest educational attainment tested significantly with the awareness in skeletal problem.
11. The difference between the level of knowledge and level of awareness among students as assessed by themselves in terms of malocclusion and skeletal problem, both malocclusion and skeletal problem was not significant.
12. The difference between the level of knowledge and level of awareness of the parents as assessed by themselves in terms of both malocclusion and skeletal problem have no significant difference.

Conclusions

From the foregoing findings, the following conclusions were drawn:

1. The student-respondents were mostly in the early age group, male, and in the early grade level of the middle school.

2. The parent-respondents were mostly in the middle age group, male, college graduates, and in the middle socio-economic status.

3. The level of awareness of students as assessed by themselves in terms of malocclusion was Moderate Level, which may mean that it can still be improved so as to help them take care of their teeth. The level of awareness of students as assessed by themselves in terms of skeletal problem was Low Level, which suggests that additional information may be given to school children so that at early age they will develop a habit in taking care of their teeth.

4. The level of awareness of parents as assessed by themselves in terms of malocclusion was Moderate Level, which implies that even among the parent-respondents' level of awareness on malocclusion was not yet that high, which may affect the way they teach or advice their children regarding their teeth. While the level of awareness of parents as assessed by themselves in terms of skeletal problem was Low Level, which means that it may still be improved on with proper oral health education from dental personnel.

5. The level of knowledge of students as assessed by themselves in terms of malocclusion was Low Level, which suggests that the student-respondents their level of knowledge in malocclusion can still be improved so that they can take good care of their teeth. While the level of knowledge of students as assessed by themselves in terms of skeletal problem was Low Level.

6. The level of knowledge of parents as assessed by themselves in terms of malocclusion was Moderate Level, which means that among the parent-respondents their level of knowledge in malocclusion is not that high, which may affect the way they teach or advice their children regarding their teeth. While the level of knowledge of parents as assessed by themselves in terms of skeletal problem was Low Level, which means that they can seek the help from their family dentists to give them proper oral health education.

7. Age and grade level are associated with students' knowledge on malocclusion and skeletal problem.

8. Age and highest educational attainment are associated with the parents' knowledge on malocclusion and skeletal problem.

9. Age and grade level are factors are associated with both the students' awareness on malocclusion and skeletal problem.

10. Age and highest educational attainment are associated with both the parents' awareness on malocclusion and skeletal problem.

11. Students' knowledge and awareness on both malocclusion and skeletal problem had no significant difference.

12. Parents' knowledge and awareness on both malocclusion and skeletal problem had no significant difference.

Recommendations

The following recommendations are made based on the results of the study.

1. School may need to engage with education stakeholders such as parents and the community to build a health system through lectures and seminars that provide health information on oral health and early care. It is easier and more successful to establish healthy behaviours to prevent oral health problems from childhood and adolescence than it is to change harmful behaviours later in life.

2. The parent-respondents may need to collaborate and be connected with the educational sector, primarily with the school's locality, in order to know the updates on dental care that will keep their children healthy through lectures and seminars that provide health information on oral health and early care.

3. Raising awareness of malocclusion and skeletal problems emphasizing on oral can be corrected by incorporating them into topics that will be discussed in class for the students' respondents in the study's locale. Students may need to participate in the school's program to improve awareness of oral health, including malocclusion and skeletal issues.

4. Parents in the study's area may need to enhance their awareness of malocclusion and skeletal issues as this could alter how they teach their children about their teeth. The school oral health program may include parents' attendance at lectures and seminars on comparable issues. This may improve their approach to educate their children based on correct dentistry and oral health education from invited resource specialists.

5. Students may require additional education to improve their knowledge of malocclusion and skeletal problems. The significance of frequent dental check-ups may be incorporated into lectures and seminars, in addition to the school's strategy of periodically assessing pupils in the school dental clinic and oral health counsel offered through the school oral health program.

6. The school may conduct training on appropriate communication skills and visual presentations on malocclusion and skeletal problems based on the students' age, in which parents, teachers, and the school dentist will participate to

improve and enhance their approach in cascading oral health information on similar topics to their children in order to motivate the children to take good care of their teeth.

7. The school's oral health program may include age- and grade-level-appropriate reading materials to enhance students' knowledge of malocclusion and skeletal abnormalities. Furthermore, formative evaluation may be stressed to track students' progress based on their degree of comprehension.

8. As educational levels improve, it is apparent that improving oral health and dental aesthetics is crucial for parent-respondents. As a result, dental experts' roles include not only their patients-students, but also their parents. Regular oral health counselling, may be required to further assess the parents' comprehension of malocclusion and skeletal abnormalities. Issues can be addressed and handled because parents have such a huge influence on their children's comprehension.

9. Taking into account the cognitive and psychosocial features of children throughout this developmental stage, the orthodontic association may establish ways to address students' knowledge of malocclusion and skeletal abnormalities. Strengthening and formulating policies on oral health programs on these topics may have a substantial impact on the formation of healthy lifestyles in school-age

10. They may create an oral health program aimed at raising awareness of children during a period of primary learning relevant to oral health ideas.

11. Dental and orthodontic practitioners may develop an oral health education curriculum that focuses on the discrepancies in student and parent awareness and knowledge concerning malocclusion and skeletal abnormalities. Additional themes linked to oral health, such as parent-child interactions, peer involvement, changes in parental duties and expectations, and concerns generally addressed in parent-child relationships, may be added into the curriculum.

12. Future researchers may do a mix of quantitative and qualitative research designs on a comparable issue including more locations and variables, such as conceptualizing the social and economic situations that influence communities, families, and individual children.

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"الوعي والمعرفة بمشاكل تقويم الأسنان والهيكل العظمي للطلاب الذين تتراوح أعمارهم بين 7 إلى 14 عامًا وأولياء أمورهم في الرياض"

إعداد الباحث:

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ملخص البحث:

حددت الدراسة مستوى الوعي والمعرفة بسوء الإطباق ومشاكل تقويم الأسنان الهيكلية لدى الطلاب الذين تتراوح أعمارهم بين 7 إلى 14 سنة وأولياء أمورهم في مدينة الرياض، المملكة العربية السعودية. استخدمت الدراسة أساليب البحث الكمية والوصفية والمقارنة والارتباطية. تم إجراء استبيان أعده الباحث على 381 طالبًا و381 من أولياء الأمور تم اختيارهم من خلال تقنية أخذ العينات الهادفة. وأظهرت النتائج أن معظم الطلاب كانوا من الذكور (93.44%)، و13–15 سنة (38.32%)، في الصف الأول إلى الثالث الإعدادي (38.32%). وكان آباؤهم في الغالب من الذكور (65.35%)؛ 35–44 سنة (55.12%)؛ وكانت الأغلبية في الوضع الاجتماعي والاقتصادي المتوسط (85.04%)؛ وكان أغلبهم من خريجي الجامعات (62.74%). وكان مستوى وعي الطلاب بسوء الإطباق "مستوى متوسط". كان مستوى وعي الطلاب فيما يتعلق بالمشاكل الهيكلية "مستوى منخفض". وكان مستوى وعي الوالدين فيما يتعلق بسوء الإطباق "مستوى متوسط". مستوى وعي الوالدين بالمشاكل الهيكلية "منخفض المستوى". المستوى المعرفي للطلبة كما تم تقييمه من حيث سوء الإطباق "مستوى منخفض". كان مستوى معرفة الطلاب فيما يتعلق بالمشاكل الهيكلية "مستوى منخفض". كان مستوى معرفة الوالدين فيما يتعلق بسوء الإطباق "مستوى متوسط". كان مستوى معرفة الوالدين فيما يتعلق بالمشاكل الهيكلية "مستوى منخفض". كانت هناك علاقة ذات دلالة إحصائية بين عمر ومستوى الصف الدراسي لدى الطلاب وتقييمهم للمعرفة في سوء الإطباق والمشاكل الهيكلية. كانت هناك علاقة ذات دلالة إحصائية بين العمر وأعلى مستوى تعليمي للوالدين وتقييمهم لمعرفتهم بسوء الإطباق والمشاكل الهيكلية. توجد علاقة ذات دلالة إحصائية بين عمر الطلاب ومستوى صفهم الدراسي وتقييم مدى وعيهم بسوء الإطباق والمشاكل الهيكلية. توجد علاقة ذات دلالة إحصائية بين العمر وأعلى مستوى تعليمي للآباء وتقييمهم في سوء الإطباق والمشاكل الهيكلية. لا توجد فروق ذات دلالة إحصائية في مستوى المعرفة ومستوى الوعي بين الطلاب حسب تقييمهم لأنفسهم من حيث سوء الإطباق و المشاكل الهيكلية. كما لم يتم العثور في الدراسة على اختلاف كبير بين مستوى المعرفة ومستوى وعي الوالدين كما تم تقييمهما بأنفسهم من حيث سوء الإطباق والمشاكل الهيكلية.

الكلمات المفتاحية: مشاكل الأسنان الهيكلية، سوء الإطباق، صحة فم الأسنان، تقويم الأسنان، المدرسة العامة.