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Self-Perception of Pain during the Periodontal Examination and Associated Clinical Periodontal Variables

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Abstract

Background Patient discomfort and pain associated with the insertion of a periodontal probe into the gingival sulcus and periodontal pocket are common clinical events. **Objectives** The study aimed to assess a self-perception of pain during the periodontal examination and associated clinical periodontal variables. **Materials and Methods** The study was conducted at the University of Sulaimani, 250 participants were included in the study ranging from (18-25) years old. The participants' pain scale was recruited for participation in this cross-sectional and questionnaire-based study that includes clinical periodontal examination and questions related to oral hygiene Performance and methods by students from the College of Dentistry. Full mouth periodontal evaluation to detect the Plaque Index (PI), Bleeding on Probing (BOP), Probing pocket depth (PPD), and Clinical attachment level (CAL), measurements were performed at six sites (mesio-buccal, disto-buccal, mid-buccal, mesio-lingual, disto-lingual and mid-lingual). Pain Experience, using a Visual Analogue Scale (VAS) pain scale was applied to assess the level of pain. The visual analog scale (VAS) is a validated, subjective measure of acute and chronic pain. **Results** According to the chi-square test, there was a statistically significant association between pain and gingival bleeding during periodontal examination and tooth brushing. **Conclusion** In the present study, the severity of periodontal inflammation and bleeding will be found to lead to an increase in the severity of pain during periodontal examinations.

Keywords: Clinical; periodontal examination; preclinical; pain; VAS.

Introduction

"Health is a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity» (Gilpin et al, 2018). Therefore, an additional practical definition of periodontal health would be a state free from inflammatory periodontal disease. This, in turn, means that the absence of inflammation associated with gingivitis or periodontitis, as assessed clinically, is a prerequisite for defining periodontal health. It is a matter of debate if altered morphological conditions resulting from previous exposure to disease processes (e.g. gingival recession, loss of attachment, and

bone loss) may be redefined as novel healthy conditions in the absence of clinical signs and symptoms of inflammation. Interestingly, there are almost no studies or reports attempting to define periodontal health (Mariotti et al, 2014). No longer can periodontal diseases be considered simple bacterial infections. Rather, they are complex diseases of multifactorial nature involving an intricate interplay between the subgingival microbiota, the host immune and inflammatory responses, and environmental modifying factors (Mark Bartold and Van Dyke, 2013). Pain is a multidimensional experience; therefore, the perception of pain is a subjective and individual response. It is associated not only with physical stimulation but with emotional and psychological factors as well. Pain is described as an "unpleasant sensory and emotional experience associated with actual or potential tissue damage" Several studies showed that levels of discomfort experienced decreased with an increase in age (Guzeldemir et al, 2008; Canakçi and Canakçi, 2007). Many reports found women show higher pain experience, more intense levels of pain, and longer duration of pain as compared to men (Karadottir et al, 2007; Unruh et al, 2006). Several studies have shown that there is a difference in the amount of pain, a subject feels depending on the area of the mouth being probed, the presence of gingival inflammation, differences in operators' probing force, higher blood pressure measurements, cigarette smoking, and presence of general anxiety. It has been found that a subject's emotional status due to conditions such as stress, fear, and anxiety can have an impact on the intensity of pain perceived (Guzeldemir et al, 2008; Hassan et al, 2005). Examination of the periodontal tissues is of utmost importance to prevent the development of periodontal diseases, for example, gingivitis, gingival recessions, and periodontitis (Chapple et al, 2017). Gingivitis is a common condition affecting most individuals throughout life, whereas periodontitis in children and adolescents is a rare finding (Susin et al, 2014). A periodontal probe is a commonly used instrument to assess periodontal conditions and the severity of periodontal lesions (Pihlstrom, 1992; Wang et al, 1995). However, patient discomfort and pain associated with the insertion of a periodontal probe into the gingival sulcus and periodontal pocket are common clinical events. Periodontal probing is generally used to measure clinical parameters like bleeding on probing, probing depth, and clinical attachment level (CAL). This provides us with an idea regarding the periodontal disease severity of periodontal structure. The intensity of pain or discomfort has been perceived by practitioners to differ dramatically between patients (Heins et al, 1998). The present study aimed to evaluate different aspects and the importance of periodontal examination among dental students, taking into account both the self-perception of periodontal health and the pain experienced during periodontal examination. furthermore, to evaluate the association between these two parameters and periodontal outcomes. This cross-sectional study and questionnaire-based study is designed to determine pain perception during the periodontal examination and correlate pain experience to the periodontal status among a group of dental students. Associate and correlate the periodontal health status and pain experience to the oral health measures and awareness among the study population. taking into account both the self-perception of periodontal health and the pain experienced during periodontal examination. The aim of the study is to determine pain perception during the periodontal examination and correlate pain experience to the periodontal status among a group of dental students and to associate Pain experience to oral health measures and awareness among the study population.

Materials and Methods

Study design, setting and patient recruitment

Two hundred fifty (250) students were recruited to participate in this cross-sectional and questionnaire-based study including clinical

periodontal examination and questions related to oral hygiene Performance and methods by students from the College of Dentistry. They were invited for data collection to the Dental hospital of the College of Dentistry for periodontal health assessment and provided with a questionnaire form and informed consent form to answer the related questions and an information sheet defining the purpose and the nature of the study. Ethical approval was obtained from the ethical committee of the College of Dentistry, the University of Sulaimani for conducting the current study (N. 42 at 21/06/2023). The study sample was divided into two groups, Preclinical and clinical groups according to the students' stages of study. Further, it was divided according to gender into male and female groups and two age groups, group 1, (18-21 years) and group 2, (22-25), furthermore, the sample was divided according to smoking status into smokers and non-smokers groups.

Evaluation of periodontal status

Evaluation of periodontal condition is performed by applying the following periodontal indices

1. Plaque Index (PI) by (Ainamo and Bay, 1975). This is measured by the absence (0) or presence (1) of plaque after running the periodontal probe along the gingival margin for the presence or absence of plaque.
2. Bleeding on Probing (BOP) by (Ainamo and Bay, 1975). This is measured by the presence or absence of bleeding after probing. Within 30 seconds after probing for absence (0) or presence (1) of bleeding.
3. Probing pocket depth (PPD), by measuring the distance from the free gingival margin to the bottom of the pocket (Lindhe et al, 1982).
4. Clinical attachment level (CAL), by measuring the distance from the cemento-enamel junction to the bottom of the pocket (Pihlstrom, 1992).

Pain Experience, using Visual Analogue Scale (VAS) pain scale was applied to measure the intensity of pain. The visual analog scale (VAS) is a validated, subjective measure of acute and chronic pain. Scores are recorded at the same time as the periodontal examination is performed by making a handwritten mark on a 10-cm line that represents a continuum between "no pain" and "worst pain." (Appendix 1). A Questionnaire form including students' experience of oral hygiene measures and awareness about oral hygiene status was developed including 10 items related to students' oral health status and methods of oral hygiene performance. Items 1 and 2 were about gingival bleeding during tooth brushing. Whereas, items 3 and 4 questioned the accuracy of the performance of the tooth brushing method. Further, item 5 was related to the individual's awareness of bad breath, and items 6 and 7 were about the type of toothbrush and force applied during brushing. Items 8, 9, and 10 were related to methods and frequency of oral hygiene performance, brushing, flossing, and rinsing. Furthermore, the smoking status of the sample was included in the questionnaire form as nonsmokers and smokers that smoke more than 10 cigarettes/day (Appendix 2).

Inclusion and exclusion criteria

Inclusion criteria

Male and female, systemically healthy subjects, ages ranged between 17 to 25 years and smoked more than 10 cigarettes/day and non-smokers.

Exclusion criteria

included previous periodontal treatment, third molars, students requiring prophylactic antibiotics before probing, students suffering from coagulation/ bleeding disorder, students under anti-depressant and analgesic medication, and menstruation period.

Inter and Intra examiner calibration

A pilot study was accomplished for clinical examination outcome accuracy at the level of 85% to 90% between the examiner and a professional periodontist to identify the inter-examiner accuracy and the researcher's result reproducibility for the intra-examiner calibration

at a level of 87% accuracy.

Statistical analysis

Descriptive statistical analysis was performed to summarize the outcomes of the study for each parameter evaluated. Variables with a continuous distribution were shown their mean and standard deviation and categorical variables were shown their counts and percent. the differences within variables measurements are statistically significant or not according to the pain score classification were assessed by one-way ANOVA and the difference between two independent groups was assessed by independent t-test. Hypotheses about association within categorical variables were assessed using a chi-square test. Pearson correlation was used to measure the correlation between variables. To conduct the statistical analysis, the Shapiro–Wilk and Kolmogorov–Smirnov test implies that clinical characteristics are normally distributed. The statistical significance was determined by using a p-value of less than or equal to 0.05. In all tests, a p-value of 0.05 or lower was considered statistically significant. For the statistical analysis, we utilized SPSS for Windows version 27.0 (SPSS for Windows).

Results

In this study, 150 females which are 60%, and 100 males which are 40% participated among 250 participants. For 29.4 and 14.7% of those who have gingival bleeding during brushing get moderate to severe pain respectively. 41.4% and 6.4% of those who worry about having bad brush get moderate and severe pain respectively. The details of the socio-demographic factors for 250 students are presented in Table 1. The average age of the participants was 21 years. Our participants ranged in age from 17 to 25 years old. The distribution of gender in different groups approximately were male (40%) and female (60%). 55.6% of the participants were in the preclinical stage and 44.4% were in the clinical stage. 12.4 percent of participants were smokers and 87.6 percent of participants were non-smokers. During periodontal examination 49.6 percent of students had mild pain,37.6 % had moderate pain and 3.6 percent had severe pain. The percentage of smokers in the study sample was 12 %. As shown in Figure (1) It is clear from the above pie chart of pain classification that most of the students have mild pain 49.6% during periodontal examination followed by moderate pain 37.6% followed by 9.2% with no pain and the least severe pain which is only 3.6%. Mean values and standard deviations for the clinical characteristics according to gender were presented in Table 2. UBI revealed similar records in the male group (0.48±0.16) and female group (0.46±0.16),. However, UPI, LPI, and LBI revealed more average levels in male group (0.56±0.15, 0.59±0.14 and 0.54±0.14) respectively than female group (0.52±0.14, 0.55±0.13 and0.49±0.14) respectively, There are statistically significant differences between male and female, the p-value of all measurements which are smaller than the significant level (0.05), furthermore significant differences in the UBI and LBI between pre-clinical and clinical groups ($P<0.05$). It is clear from Table (3) that trends for all items related to the awareness of oral health status are presented, the general trend of these items as a whole towards answer (No), overall the percentage (60.6%) votes go to answer (No), according to their point of view, and also that (2%) of the research sample don't not sure about Items, (37.4%) votes go to answer (yes). Table 4 summarizes the descriptive statistics of the clinical characteristics that were analyzed. Lower PI revealed the highest average levels (0.56±0.14) followed by Upper PI (0.54±0.15), Lower BI (0.51±0.14), and Upper BI (0.46±0.16). for other clinical characteristics, there is no significant record so all values are equal to zero. Mean values and standard deviations for the Clinical characteristics according to the pain level are presented in Table 5. When the values of Clinical characteristics were increased the level of pain was increased too. The mean values of clinical characteristics within pain level are different, there are statistically significant

differences were observed for Upper PI (p = 0.005). Mean values and standard deviations for the Clinical characteristics according to the stage were presented in Figure 2. UBI and LBI revealed the more average levels in the preclinical group (0.49±0.15) and (0.54±0.13) than clinical group, So There are statistically significant differences between preclinical and clinical group for UBI (p = 0.004) and LBI (p = 0.004) because the p-value of measurements which are smaller than the significant level (0.05), that is mean that the mentioned measurements have statistically significant difference between preclinical and clinical group. However, there are no statistical differences in UPI and LPI between the preclinical and clinical groups. Table (6) depicts the association between questionaries' items and pain classification. For Q1,29.4% and 14.7% of those who have gingival bleeding during brushing get moderate and severe pain respectively. For Q5,41.4% and 6.4% of those who worry about having bad brush get moderate and severe pain respectively. According to the chi-square test, there is a statistically significant association between pain and (Q1, Q5a, and Q6), at the level of (α= 0.05), and it should be noted that the P-value (Sig.) of Chi-square tests are equal to (0.012, 0.021 and 0.018) respectively, which is smaller than the level of significance (α = 0.05), indicating that there is a statistically significant association between these three items with pain. Table (6) depicts the association between questionaries' items and gender. For Item 8, 95 females use dental floss daily, but 45 males use dental floss daily. For Item 10, 25 males smoke more than 10 cigarettes daily but there are no females smoke more than 10 cigarettes daily. According to the chi-square test, there is a statistically significant association between gender and (Item 8, Item 10) (P <0.05). Mean values and standard deviations for the clinical characteristics according to the Questionaries item are presented in Table 7. For item 1 there are significant differences in UBI, UPI, and LPI (p=0.03, p=0.04, and p=0.02) between those who had gingival bleeding during brush and those who had no gingival bleeding during brush. because the p-value is smaller than the significant level (0.05).

Table (1): Descriptive statistics of demographic variables

Variables	Classes	count	percent
Gender	Male	100	40
	Female	150	60
Student Stage	Preclinical	139	55.6
	Clinical	111	44.4
Smoking Habit	Smoker	31	12.4
	Non-Smoker	219	87.6
Pain Score	0	23	9.2
	1	27	10.8
	2	57	22.8
	3	40	16
	4	53	21.2
	5	27	10.8
	6	14	5.6
	7	9	3.6
Age	17 -21	148	59.2
	22- 25	102	40.8
Pain classification	no pain	23	9.2
	mild	124	49.6
	moderate	94	37.6
	severe	9	3.6
Total		250	100

Table (2): Mean values and standard deviations of clinical characteristics within gender and students' stage

Clinical Characteristic	Male(100)	Female(150)	P-value	Preclinical (139)	Clinical (111)	P-value*
Upper BI	0.48±0.16	0.46±0.16	0.30	0.49±0.15	0.43±0.16	0.004
Upper PI	0.56±0.15	0.52±0.15	0.03	0.54±0.15	0.53±0.16	0.58
Lower PI	0.59±0.14	0.55±0.13	0.02	0.57±0.14	0.55±0.13	0.244
Lower BI	0.54±0.14	0.49±0.14	0.01	0.54±0.13	0.49±0.15	0.004

*Independent t-test

Table (3): Oral hygiene performance and awareness of oral health status

Item	No	I don't Know	Yes	Mode
	Count(%)	Count(%)	Count(%)	
Item1	215(86)	1(0.4)	34(13.6)	No
Item2	165(66)	13(5.2)	72(28.8)	No
Item3	35(14)	12(4.8)	203(81.2)	Yes
Item4	57(22.8)	1(0.4)	192(76.8)	Yes
Item5	108(43.2)	2(0.8)	140(56)	Yes
Item6	215(86)	8(3.2)	27(10.8)	No
Item7	192(76.8)	7(2.8)	51(20.4)	No
Item8	109(43.6)	1(0.4)	140(56)	Yes
Item9	195(78)	4(1.6)	51(20.4)	No
Item10	224(89.6)	1(0.4)	25(10)	No
Total	1515(60.6)	50(2)	935(37.4)	No

Table (4): Descriptive statistics of clinical characteristics

Variables	Minimum	Maximum	Mean ± SD
Upper CAL	0.00	0.00	0.00±0.00
Upper PPD	0.00	0.00	0.00±0.00
Upper BI	0.00	0.88	0.46±0.16
Upper PI	0.09	0.88	0.54±0.15
Lower PI	0.19	0.88	0.56±0.14
Lower BI	0.18	0.88	0.51±0.14
Lower PPD	0.00	0.00	0.00±0.00
Lower CAL	0.00	0.59	0.00±0.04

*SD: standard division

Table (5): Mean values and standard deviations of clinical characteristics with pain classification

Clinical Characteristics	No pain(23)	Mild(124)	Moderate(94)	Severe(9)	p-value*
Upper BI	0.43±0.15	0.46±0.15	0.48±0.17	0.53±0.17	0.29
Upper PI	0.54±0.15	0.51±0.15	0.56±0.15	0.66±0.10	0.01
Lower PI	0.51±0.12	0.57±0.14	0.57±0.13	0.60±0.10	0.26
Lower BI	0.47±0.14	0.52±0.14	0.51±0.14	0.57±0.14	0.29

*One-way ANOVA

Table (6): Association between gender and items about oral health status

Item	classes	Sex			p-value
		Male	Female	Total	
Item1	No	87(34.8)	128(51.2)	215(86)	0.694
	I don't Know	0(0)	1(0.4)	1(0.4)	
	Yes	13(5.2)	21(8.4)	34(13.6)	
Item2	No	71(28.4)	94(37.6)	165(66)	0.114
	I don't Know	7(2.8)	6(2.4)	13(5.2)	
	Yes	22(8.8)	50(20)	72(28.8)	
Item3	No	19(7.6)	16(6.4)	35(14)	0.17
	I don't Know	5(2)	7(2.8)	12(4.8)	
	Yes	76(30.4)	127(50.8)	203(81.2)	
Item4	No	24(9.6)	33(13.2)	57(22.8)	0.675
	I don't Know	0(0)	1(0.4)	1(0.4)	
	Yes	76(30.4)	116(46.4)	192(76.8)	
Item5	No	41(16.4)	67(26.8)	108(43.2)	0.409
	I don't Know	0(0)	2(0.8)	2(0.8)	
	Yes	59(23.6)	81(32.4)	140(56)	
Item6	No	87(34.8)	128(51.2)	215(86)	0.251
	I don't Know	1(0.4)	7(2.8)	8(3.2)	
	Yes	12(4.8)	15(6)	27(10.8)	
Item7	No	78(31.2)	114(45.6)	192(76.8)	0.898
	I don't Know	3(1.2)	4(1.6)	7(2.8)	
	Yes	19(7.6)	32(12.8)	51(20.4)	
Item8	No	55(22)	54(21.6)	109(43.6)	0.01
	I don't Know	0(0)	1(0.4)	1(0.4)	
	Yes	45(18)	95(38)	140(56)	
Item9	No	75(30)	120(48)	195(78)	0.443
	I don't Know	1(0.4)	3(1.2)	4(1.6)	
	Yes	24(9.6)	27(10.8)	51(20.4)	
Item10	No	74(29.6)	150(60)	224(89.6)	0.00
	I don't Know	1(0.4)	0(0)	1(0.4)	
	Yes	25(10)	0(0)	25(10)	
Total		100(40)	150(60)	250(100)	

*: Chi-square test

Table (7): Mean values and standard deviations of clinical characteristics within items about oral health status

Table (7): Mean values and standard deviations of clinical characteristics within items about oral health status

Item	UBI			UPI			LPI			LBI		
	No	I don't Know	Yes	No	I don't Know	Yes	No	I don't Know	Yes	No	I don't Know	Yes
Item1	0.45±0.15	0.47±0	0.55±0.19	0.53±0.15	0.50±0	0.60±0.16	0.55±0.13	0.52±0	0.62±0.15	0.51±0.14	0.64±0	0.56±0.16
p-value*		0.03			0.04			0.02			0.09	
Item2	0.46±0.16	0.45±0.13	0.48±0.16	0.53±0.15	0.66±0.12	0.53±0.16	0.56±0.13	0.62±0.09	0.55±0.15	0.50±0.15	0.55±0.12	0.54±0.13
p-value*		0.52			0.02			0.23			0.12	
Item3	0.48±0.21	0.47±0.13	0.46±0.15	0.62±0.15	0.56±0.09	0.52±0.15	0.59±0.16	0.57±0.12	0.56±0.13	0.54±0.19	0.49±0.10	0.51±0.13
p-value*		0.85			0.00			0.32			0.46	
Item4	0.47±0.21	0.48±0	0.46±0.14	0.56±0.16	0.55±0	0.53±0.15	0.58±0.15	0.52±0	0.56±0.13	0.54±0.17	0.51±0	0.51±0.13
p-value*		0.95			0.47			0.14			0.27	
Item5	0.46±0.15	0.48±0.19	0.47±0	0.50±0.13	0.64±0.07	0.57±0.14	0.53±0.14	0.60±0.05	0.59±0.13	0.51±0.13	0.47±0.19	0.51±0.14
p-value*		0.73			0.00			0.01			0.00	
Item6	0.45±0.16	0.52±0.07	0.51±0.17	0.53±0.13	0.56±0.10	0.59±0.14	0.56±0.14	0.56±0.14	0.62±0.12	0.51±0.14	0.60±0.09	0.53±0.14
p-value*		0.02			0.15			0.05			0.10	
Item7	0.47±0.16	0.47±0.19	0.45±0.13	0.54±0.13	0.57±0.17	0.51±0.14	0.57±0.14	0.53±0.12	0.53±0.13	0.51±0.14	0.56±0.10	0.51±0.13
p-value*		0.83			0.36			0.10			0.63	
Item8	0.48±0.18	0.58±0	0.45±0.14	0.57±0.13	0.41±0	0.52±0.15	0.59±0.13	0.55±0	0.54±0.14	0.53±0.15	0.48±0	0.50±0.13
p-value*		0.33			0.16			0.03			0.17	
Item9	0.47±0.16	0.49±0.07	0.45±0.17	0.54±0.13	0.57±0.29	0.53±0.16	0.56±0.13	0.60±0.08	0.57±0.15	0.51±0.14	0.57±0.06	0.51±0.15
p-value*		0.77			0.58			0.84			0.74	
Item10	0.47±0.16	0.58±0	0.41±0.12	0.54±0.13	0.53±0	0.57±0.13	0.56±0.14	0.63±0	0.59±0.13	0.51±0.14	0.43±0	0.52±0.16
p-value*		0.15			0.48			0.47			0.82	

*One-way ANOVA

Appendix I
Pain perceptions using VAS

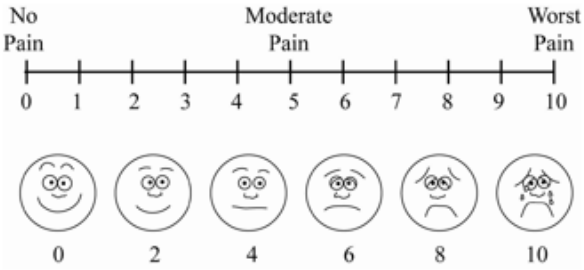

Figure (1): Pain classification among the study sample.

Appendix II

N	Questions	Yes	No	I don't know
Z	My gum tends to bleed when I brush my teeth			
2	I think my teeth getting worse despite my daily brushing			
3	I brush each of my teeth carefully			
4	I often check my teeth in a mirror after brushing			
5	I worry about having bad breath			
6	I use a brush that has hard bristles			
7	I don't feel I've brushed well unless I brush with strong strokes			
8	I use dental floss daily			
9	I use oral rinse daily			
10	I smoke more than 10 cigarettes per day			

Figure (2): Mean values and standard deviations of clinical characteristics between student stages.

Discussion

Pain perception of the patient cannot be directly assessed by the dentists as communication skills, individual psychological status and, social and cultural backgrounds of the patient affect the expression of pain experienced. This might be due to the reason that pain varies subjectively and is also dependent upon many underlying causes that might be unnoticed clinically. There was a significant correlation between the VAS score of the maxilla and mandible. The correlation between bleeding and VAS score was also significant (P < 0.001). Bleeding on probing indicated the inflammatory condition of the gingiva that raises the possibility of increased pain perception (Wang et al, 1995). Female patients are more anxious than male patients. It may be due to the difference in pain threshold between genders. High awareness of self-reported oral health in a dental student may have a direct impact on the future dentist for patient education, and this may help to create oral health awareness in the patient population (Blicher et al, 2005). The present study aimed to evaluate the Self-perception of pain during the periodontal examination and associated clinical periodontal variables by using (VAS) rate. The findings of the current study indicate that preclinical students have a low ability to identify themselves correctly in suffering from periodontal diseases as compared with clinical students. It could be due to a low level of dental education as compared to clinical students since pain is subjective; it is difficult to measure in quantitative terms (K Poppe, 2014). Based on the findings from the current study, the upper arch bleeding index (UBI) between males and females revealed a statistically non-significant difference (P >0.05). Furthermore, UPI, LPI and LBI revealed more average levels in the male group than the female group and the differences were statistically significant (P <0.05). Our results are consistent with previous reports that female students had better oral health behaviors and lifestyles than males (Al-Omiri et al, 2012). According to the chi-square test, there was a statistically significant association between pain and bleeding, at the level of (α =0.05), and the current result was consistent with a previous study (Wang et al, 1995). This could be attributed to the presence of inflammation and the inflamed tissue radiates pain on examination and probing. Mean values and standard deviations for the clinical characteristics of UBI and LBI revealed statistically significant differences between preclinical and clinical groups (P <0.05), which

could be related to an increase in the level of education and oral hygiene maintenance in cases of clinical. Moreover, the outcome of the current study was found to be consistent with previous reports that female students have better oral health behaviors and lifestyles than males. The association between questionaries' items and gender is like that, there is a statistically significant association between these items with gender. the statistical difference between the variables is non-significant except in the anterior region. This may be because female's oral hygiene maintenance is higher than males as they are more interested in appearance than males. Dental students are generally motivated to maintain good oral health. Several reports support the idea that females possess a greater interest in oral health and perceive their oral health to be good to a higher degree than males in young populations. Further, our female students reported slight differences in pain perception compared to the male participants, and the difference was statistically non-significant (P >0.05). This was consistent with the result, achieved by (Canakci and Canakci, 2007), but different from the results of (Faisal et al, 2015). This might be attributed to the reason that pain measurement is subjective and individual, and the assessment and screening are more difficult because of its physical and psychological properties. Additionally, pain perception is influenced by the patient's systemic conditions, oral pathological status, and patients reporting complaints of pain (Heins et al, 1998).

Limitations

The first limitation of the study was being a cross-sectional study, which precludes a definitive conclusion. Longitudinal studies are necessary to understand the sex differences in oral health awareness and behavior. One likely limitation of our study was not determining the menstrual period of female students.

Conclusions

This study found low pain perception during periodontal probing, with a weak correlation between bleeding on probing and pain perception among the participants. However, pain accompanied periodontal examination among the participants, and the intensity of pain increased with an increased level of gingival inflammation and was positively related to the participant's gender. Females showed a higher perception of pain despite their higher awareness of oral health care. The study also showed that unawareness of oral health care and gingival bleeding among male and female participants was found to increase the level of gingival bleeding and consequently the perception of pain during periodontal examination.

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