In erectile dysfunction, an individual is unable to develop or maintain an erection during sexual intercourse. This disorder is also called impotence and like other sexual dysfunctions, this condition becomes more common with age. Sexual intercourse could be pivotal in human affairs; therefore, the inability to perform is associated with emotional and psychological stigma.

A high proportion of males experience erectile dysfunction at a specific point in their life cycle; usually after the fourth decade of age. The total prevalence rate of erectile dysfunction in male individuals could reach up to 16%. Erectile dysfunction prevalence differs significantly according to geographical location; however, it ranges from a high prevalence rate of 22% of males in the United States to as low as 10% in Spain. In different cross-sectional studies, the total prevalence rate of erectile dysfunction in males above twenty years was approximately 18.4%. In multivariable analyses, erectile dysfunction was remarkably and independently associated with diabetes, lower educational level, and lack of practicing physical activities.

Chronic periodontitis is common in adults; it is uncommon in children or adolescents. It is plaque-induced and a major factor influencing the mortality rate in the world. Periodontal disease is of growing interest because of its association with cardiovascular diseases and diabetes mellitus, smoking, coronary heart disorder, cerebrovascular disorder, and dyslipidemia; therefore, the term “periodontal medicine” has been used to indicate its potential public health significance. Periodontal disease is slowly progressing and is accompanied by unexpected episodes of quick progression. The triggering mechanism for active bone loss has not been clearly explained, but it seems to be correlated with a transition from a typically Gram-positive microflora to the dominance of anaerobic Gram-negative rods.
There is no local study available in Aljouf, Kingdom of Saudi Arabia regarding the prevalence of erectile dysfunction among adult males. There is little data available regarding the association of male erectile dysfunction and chronic periodontitis.

The aim of the study is to evaluate the prevalence of erectile dysfunction among patients presenting with dental problems.

**METHOD**

Non-probability consecutive sampling technique was used at 95% confidence level, taking the expected prevalence of erectile dysfunction of 18.4%, the calculated sample size was 923 at 2.5% margin of error.

Patients attending dental clinical outpatient departments were included in this study. A total of 983 patients received a complete dental examination and completed the questionnaire.

The inclusion criteria were patients attending dental outpatient department, >18 years old, and having chronic periodontitis or any chronic condition. Patients who refused to participate, <18 years old, or not having any kind of chronic diseases were excluded from the study.

An Arabic translation of IIEF-5 Questionnaire (SHIM) was used for data collection. The questionnaire included age, main complaint, smoking habits, diabetes mellitus, hypertension, hyperlipidemia, cardiovascular diseases, erectile dysfunction and SHIM scores. The SHIM questionnaire was adopted to explore erectile dysfunction (ED) and evaluate its prevalence. The questionnaire comprised of 5 statements, each scaled on a 6-point scale from zero to five, with an exception of a single statement that is rated on a five-point scale ranging from one to five. The ultimate score, which ranges from 1-25 is yielded through summing up the total scores. A total score higher than 21 indicates normal erectile function, whereas less than 21 indicates erectile dysfunction. The severity of erectile dysfunction is categorized into 4 classes based on the final SHIM score. These classes are severe erectile dysfunction (1-7), moderate erectile dysfunction (8-16), mild erectile dysfunction (17-21), and no erectile dysfunction (equals or higher than 21). Researchers explained the questionnaire to each participant.

Data were entered into SPSS version-18. Mean±standard deviation was calculated for age and SHIM score. Prevalence for each risk factor was calculated. Chi-Square was calculated to figure out any association of ED with various risk factors.

**RESULT**

A total of 983 male patients with a mean age of 39.1±12.2 years were included in the study, see table 1. One hundred eighty-eight (19.1%) had chronic periodontitis. The mean SHIM score in patients with chronic periodontitis was 18.3±4.8 while in patients without chronic periodontitis the mean SHIM score was 22.6±2.6 (P-value <0.001 using independent samples t-test).

The mean SHIM score in all patients was 21.73.6±3.6. Six hundred seventy-four (68.6%) had SHIM score 22 or greater labeled as no erectile dysfunction. Three hundred nine (31.4%) had erectile dysfunction. Twelve (1.2%) had severe erectile dysfunction, 36 (6.4%) had moderate erectile dysfunction, 234 (23.8%) had mild erectile dysfunction, see table 2. Age, diabetes, hypertension, dyslipidemia, smoking, and history of cardiovascular disease was found to be associated with erectile dysfunction in patients presenting to dental clinics, see table 3.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Category</th>
<th>Population with erectile dysfunction (n=309)</th>
<th>Population (n=983)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHIM score in patients with periodontitis (n=188) and without periodontitis (n=795)</td>
<td>Mean ± SD</td>
<td>18.3±4.8, 22.6±2.6</td>
<td>21.7±3.6</td>
</tr>
<tr>
<td>The severity of erectile dysfunction</td>
<td>Moderate</td>
<td>63 (6.4%)</td>
<td>234 (23.8%)</td>
</tr>
<tr>
<td></td>
<td>Mild</td>
<td>234 (23.8%)</td>
<td>674 (68.6%)</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>674 (68.6%)</td>
<td>983 (100%)</td>
</tr>
</tbody>
</table>

* Statistically significant using independent sample t-test and assuming unequal variance

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Erectile Dysfunction</th>
<th>No Erectile Dysfunction</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodontitis</td>
<td>188 (19.1%)</td>
<td>59 (6%)</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Mean age in years</td>
<td>50.1 ± 10.3</td>
<td>33.8 ± 9</td>
<td>&lt; 0.001**</td>
</tr>
<tr>
<td>Smoking</td>
<td>150 (15.3%)</td>
<td>145 (14.8%)</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Diabetes</td>
<td>118 (12%)</td>
<td>29 (2.9%)</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Hypertension</td>
<td>56 (5.7%)</td>
<td>6 (0.6%)</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>42 (4.3%)</td>
<td>41 (4.2%)</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td>Cardiovascular disease</td>
<td>27 (2.7%)</td>
<td>0</td>
<td>&lt; 0.001***</td>
</tr>
</tbody>
</table>

* Statistically significant using chi square test
** Statistically significant using independent sample t test
***Statistically significant using Fischer exact test
DISCUSSION

In our study, 31.4% of individuals had erectile dysfunction; 1.2% were severe, 6.4% were moderate and 23.8% were mild erectile dysfunction. The mean SHIM score was 21.7±3.6; 674 patients (68.6%) had SHIM score 22 or greater labeled as no erectile dysfunction. These results indicate a high prevalence of erectile dysfunction. The study sample was characterized as a diverse sample as the study setting is concerned with providing healthcare services for different kinds of medical conditions. The high prevalence of erectile dysfunction requires a screening program for its detection among adult males presenting with any systemic diseases. This may improve overall health-related quality of life.

It is reported that more than thirty million males in the US experience erectile dysfunction to a certain degree. Fifty-two percent of the subjects of the Massachusetts Male Aging Study had some degree of erectile dysfunction between 40 and 70 years old, 10% having severe ED. Selvin et al found that the prevalence of erectile dysfunction in males >20 years was about 18.4%. Mutagaywa et al found that approximately 55% of the male participants experienced a certain degree of erectile dysfunction; the severity of erectile dysfunction was associated with the progression of age13.

In our study, 19.1% of patients had chronic periodontitis (CPD). SHIM score in patients with chronic periodontitis was 18.3 ± 4.8 while in patients without chronic periodontitis the mean SHIM score was 22.6±2.6. (P-value < 0.001). Yehuda Zadik et al found that 22.9% of male subjects were experiencing erectile dysfunction and 4.3% had cardiopulmonary diseases. Cardiopulmonary diseases had a more significant prevalence rate among males with mild erectile dysfunction (P=0.004) and moderate to severe ED (P-value=0.007) compared to males with no erectile dysfunction14.

In other studies, chronic periodontitis and erectile dysfunction were found to be associated with each other15-20. Oğuz et al study among young adults, erectile dysfunction was found positively associated with chronic periodontitis18. Eltas et al concluded that periodontal treatment might be providing further benefits in improving erectile dysfunction21.

CONCLUSION

The increased prevalence of erectile dysfunction detected among male patients having dental problems reveals that there is an urgent need to screen for erectile dysfunction in those patients. It might also be summed that there is a significant association between both erectile dysfunction and chronic periodontitis. The present study recommends conducting an awareness campaign to increase community awareness in general, and individuals having chronic conditions and its association erectile dysfunction.

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Ethical Approval: Approved by the Institutional Ethical Committee, Local Committee of Bioethics of Jouf University No. (13-25-7/40).

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