Removable partial dentures (RPDs) are a typical treatment for supplanting missing teeth. Notwithstanding, concerns exist in regards to their effect on the health of the abutment teeth supporting the dental replacement. **Objective:** To assess the impact of RPDs on the periodontal health of abutment teeth.

**Methods:** This cross-sectional study included patients from the Prosthodontics department, Bacha Khan Medical College (Medical Teaching Institute, Mardan) between January 6th, 2020, to June 6th, 2020. Examining depth (pocket depth among gum and tooth) and tooth versatility were assessed in patients utilizing RPDs. The probing depth was estimated at six focuses around every tooth, and a depth of 1-3 mm was viewed as normal. **Results:** The study found no massive contrasts in testing depth or tooth versatility in view old enough, sort of tooth (front or back), or orientation. Notwithstanding, a genuinely critical affiliation was seen between probing depth and tooth mobility, proposing a possible connection between these two proportions of periodontal wellbeing. **Conclusions:** This study recommends that while RPD plan itself could not straightforwardly impact explicit periodontal boundaries like probing depth and tooth mobility, keeping up with great oral cleanliness and guaranteeing fitting RPD configuration are pivotal for forestalling expected periodontal issues.

**Keywords:** Tooth Mobility, Probing Depth, Partial Dentures, Periodontal Health


***Corresponding Author:**
Madiha Riasat
Department of Periodontology, Institute of Dental Sciences, Khyber Medical University, Kohat, Pakistan
madiha.riasat@gmail.com

Received Date: 2nd February, 2024
Acceptance Date: 27th February, 2024
Published Date: 29th February, 2024
compromised periodontal wellbeing\[11,12\]. This current cross-sectional study addressed this information gap by exploring the periodontal status, explicitly probing depth, in a neighborhood populace who have gotten ordinary oral prophylaxis following RPD addition. By assessing the particular populace inside this specific situation, this study tried to contribute important information and distinguished possible unfriendly impacts of RPDs that can be forestalled or relieved through appropriate periodontal support programs and compelling patient training with respect to oral cleanliness practice. The discoveries of this examination can add to the progression of information and illuminate proof based clinical practices in the administration of patients with RPDs.

**M E T H O D S**

It is a cross-sectional study conducted at the department of Prosthodontics, Bacha Khan medical college (Medical teaching institute), Mardan, Pakistan, between January 6th, 2020, and June 6th, 2020. The sample size was determined utilizing the WH0 sample size algorithms for contrasting means \[13\]. Taking into account a reference mean contrast in tooth mobility of 0.24 ± 0.43 mm, a 95% certainty stretch, and a 7% safety buffer, the determined example size was 145 \[18\]. A sequential, non-likelihood examining procedure was utilized because of the promptly accessible pool of patients in the department. Foundationally healthy participants of either gender, checked through history, assessment, and requests about any past therapy for ailments like diabetes, patients wearing RPDs for no less than a half year, matured somewhere in the range of 20 and 65 years and Pakistani patients ascertained through National Identity Card (NIC) were included. Patients who were pregnant, smokers, already on periodontal medications, with fixed partial dentures were excluded. Ethical endorsement was acquired from the hospital’s ethical committee prior to beginning the study. Potential members who met the consideration rules were welcome to partake in this study. Subsequent to getting an itemized clarification of the study’s motivation, techniques, dangers, and advantages, informed consent was gotten, guaranteeing understanding and intentional support. Furthermore, members were guaranteed of the privacy of their own data and any information gathered during the study. Following an exhaustive history taking, a far-reaching clinical assessment was performed under sufficient lighting utilizing a mouth reflect and a periodontal test. The essential clinical boundaries evaluated were probing depth and tooth mobility. All projection teeth were analyzed, and both probing depth and tooth mobility were estimated. Testing profundity was estimated at six destinations for every tooth (mesio-

**R E S U L T S**

A sum of 145 patients with removable halfway false teeth (RPDs) took part in the study. The age range of the participants was 40-64 years, with 28 females and 36 males. The pocket depth (PD) was found as 0.28± 0.04 mm, whereas tooth mobility was calculated as 0.26±0.03 mm. The average duration of RPD use was 3.37±1.21 months (Table 1). Straight (47.8%) and three-sided (22.8%) were the most regular sorts of dental replacement support, while quadrangular (6.5%) and one-point (4.3%) were the most un-normal. Kennedy Class I (counting modifications) was the most predominant edentulous pattern (over half), trailed by Class IIA (13.2%), Class II and Class IIB (11% and 4.4%, separately), with Class III and Class IV having a negligible presence.

| Table 1: Descriptive statistics of studied participants |
|-------------------|-------------------|-------------------|
| **Numerical Variables** | **Minimum** | **Maximum** | **Mean ±SD** |
| Age               | 25               | 66               | 48.83±11.067 |
| Pocket Depth      | .25              | .35              | .28±.03553   |
| Tooth Mobility    | .23              | .35              | .26±.03346   |
| Duration of RPD Use | 1                | 6                | 3.37±1.219   |

**buccal, buccal, disto-buccal, disto-lingual, lingual, and mesio-lingual** utilizing an aligned periodontal test (Michigan Inc. \[14\]. An examining profundity of 1 to 3 mm was viewed as ordinary. All estimations were taken immediately. Point by point functional means of all estimations were laid out to guarantee consistency and precision all through the information assortment process. Every single gathered dataset, including socioeconomics, clinical discoveries, and estimations, were kept in a pre-planned normalized information assortment structure for examination. The statistical investigation was led utilizing SPSS (Statistical Package for Social Sciences for Windows adaptation 20.0). For mathematical factors like age, pocket depth, tooth mobility, and span of RPD use, mean and standard deviation were determined. In the interim, for subjective factors like orientation, recurrence and rate appropriations were registered. To control frustrating variables, definition was performed in light old enough and span of RPD use utilizing the ANOVA test, while orientation and curve (maxilla and mandible) were delineated utilizing the student t-test. The importance level (p-value) was set at p < 0.05. The consequences of the examination will be introduced as outwardly educational charts and tables to work with a thorough comprehension of the connection between RPD qualities and periodontal wellbeing in projection teeth. This thorough statistical methodology guarantees powerful and solid experiences into the noticed patterns and contrasts inside the concentrated-on populace.
RPDs were put on maxillary arch (52.4%), and 50 on the mandibular arch (47.6%) as shown in Table 2.

Table 2: Type of Tooth (Arch) (n=145)

<table>
<thead>
<tr>
<th>Type of Tooth (Arch)</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandible</td>
<td>69 (47.6)</td>
</tr>
<tr>
<td>Maxilla</td>
<td>76 (52.4)</td>
</tr>
<tr>
<td>Total</td>
<td>145 (100)</td>
</tr>
</tbody>
</table>

Significant association was found between pocket depth and gender (p = 0.04) whereas no significant association was observed with age group and tooth arch (Table 3).

Table 3: Pocket Depth with respect to age groups, gender and type of tooth

<table>
<thead>
<tr>
<th>Age Groups</th>
<th>Between Groups</th>
<th>Within Groups</th>
<th>Total</th>
<th>Mean + SD</th>
<th>Std. Error of Mean</th>
<th>95% Confidence Interval of the Difference</th>
<th>t</th>
<th>df</th>
<th>Sig.</th>
<th>Sig. *(2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Between Groups</td>
<td>2.039</td>
<td>3</td>
<td>.680</td>
<td></td>
<td></td>
<td>2.843</td>
<td>144</td>
<td>.040</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Within Groups</td>
<td>35.712</td>
<td>144</td>
<td>.239</td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>35.752</td>
<td>144</td>
<td>.253</td>
<td></td>
<td></td>
<td>1.158</td>
<td>.924</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ANOVA test

Paired sample t-test results showed a significant association between pocket depth and tooth mobility (p<0.05) (Table 4).

Table 4: Paired t test with respect to Pocket Depth and Tooth Mobility

<table>
<thead>
<tr>
<th>Paired Differences</th>
<th>Mean ± SD</th>
<th>Std. Error of Mean</th>
<th>95% Confidence Interval of the Difference Lower</th>
<th>Upper</th>
<th>t</th>
<th>df</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pocket Depth-Tooth Mobility</td>
<td>.0190 ± 0.04590</td>
<td>.00381</td>
<td>.01157</td>
<td>.02664</td>
<td>5.012</td>
<td>144</td>
<td>.000</td>
</tr>
</tbody>
</table>

*Paired Sample t-test

DISCUSSION

This study explored the effect of removable partial dentures on the periodontal soundness of abutment teeth. While the discoveries propose insignificant generally speaking adverse consequences, a more intensive look uncovers a few subtleties. The typical pocket depth (0.28 mm) and tooth mobility (0.26 mm) in this study fell inside clinically acceptable ranges. Age and sort of tooth didn't essentially impact these estimations. Orientation, in any case, showed a measurably huge relationship with pocket depth, with females having somewhat more deep pockets than males. Contrasted with past studies [15-18], this study found lower values for both pocket depth and tooth mobility in RPD wearers. This error may be because of contrasts in example size, socioeconomics, RPD plan, and oral cleanliness practice between studies. A study assessed periodontal status in Saudi adult females with fixed partial dentures, finding abutment teeth exhibited higher plaque, gingival indices, and probing pocket depth. Sub-gingivally placed crown margins showed lower periodontal parameters compared to supra-gingival margins [19]. Correia et al., found that abutment teeth of patients with removable partial dentures exhibited poorer periodontal status compared to non-abutment teeth, emphasizing the importance of regular follow-up appointments for RPD wearers [20]. Generally, the outcomes recommend that RPDs in this study adversely affected periodontal wellbeing. The noticed distinction in sexual orientation in pocket depth warrants further examination, and the slight expansion in tooth mobility contrasts with a few different examinations features the potential for concern. This study's cross-sectional plan limits decisions about circumstances and logical results connections between RPD use and periodontal wellbeing. Individual varieties in oral cleanliness habits and previous periodontal circumstances were not controlled for. In light of the discoveries, RPDs in this study appear to adversely affect by and large periodontal wellbeing. In any case, taking into account the slight expansion in tooth mobility and conflicting proof from different examinations, careful oral cleanliness and normal dental follow-ups are critical for RPD wearers to guarantee ideal periodontal wellbeing.

CONCLUSIONS

This study observed that removable partial dentures with clasps can add to expanded gum aggravation (gingival irritation) around the teeth they clasp and the regions covered by the base of denture. Notwithstanding, this hazard can be altogether diminished through cautious preparation and execution of the prosthetic treatment. RPDs design should be in that way that ensure proper functioning and proper resistance to dislodgement as well as in view of natural standards, limiting the effect on gum wellbeing. Keeping up with great oral cleanliness and cleaning the denture consistently are significant to avoid gum irritation around the teeth supporting the RPD. By following these proposals, dental experts can work on the drawn-out progress of RPD treatment and limit the gamble of gum irritation in patients.

AUTHORS CONTRIBUTION

Conceptualization: HU, AM
Methodology: HU, AM, SA
Formal analysis: AN
Writing-review and editing: MR, WN
All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest
The authors declare no conflict of interest.

Source of Funding
The authors received no financial support for the research, authorship and/or publication of this article.

REFERENCES


