The incidence of different removable partial denture cases related to age, gender and arch in a distinct population in Iraq


1Assistant Lecturer, Prosthetic dentistry, College of Dentistry, University of Basrah, Basrah, Iraq.
2Assistant Lecturer, Pedodontics, Orthodontics and Preventive dentistry, College of Dentistry, University of Basrah, Basrah, Iraq.
3Assistant Lecturer, Restorative and aesthetic dentistry, College of Dentistry, University of Basrah, Basrah, Iraq.

*Corresponding author: abdullah.hussain@uobasrah.edu.iq (Hussain)

Abstract:

Background: The classification of partially dentate cases allow identification the relation of teeth to edentulous ridges combinations, it investigate the partially edentulism pattern. Kennedy’s classification system permit immediate visualization and recognition of different edentulous spaces in the dental arch.

Aims of the study: Assessment the prevalence of the partially edentulous patients in Basrah city/south of Iraq and determines the correlation with age, arches and gender.

Materials and Methods: A cross-sectional study is applied for 1000 partially edentulous male and female patients above 20 years age. Data collection based on face to face interview and clinical examination.

Results: According to the collected data, Kennedy’s cases of Class III were the most popular for both genders. The least was Class IV being less common pattern, its prevalence for males more than females. Maxilla is more than mandible in partially edentulism cases.

Conclusion: Kennedy most common classification for both maxilla and mandible dental arches was Class III. The various classes prevalence not affected by gender, while patient age had a significant effect.

Keywords: Missing teeth, Kennedy classification, tooth-tissue supported

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Introduction:

Natural teeth considered the main functional element inside the oral cavity. Missing teeth in the oral cavity lead to chewing difficulty, poor esthetics and speech alteration. The major cause for teeth loss in various ages was due to caries 83% then periodontal disease 17%. Adult normally have 32 teeth, WHO illustrated that adult must have at least twenty oneteeth being functional to maintain ability of good chewing. Appropriately designed removable partial denture (RPD) should restore speech, function of mastication, deglutition, improve esthetic, remaining tissues preservation and generally contribute to the health of the patient. Modern dentistry focused on the preservation of natural teeth, which leads to decrease the complete denture numbers and rise the partial ones.

The tooth loss prevalence decreased significantly in many countries through the recent decades. The relation of the remaining teeth with various pattern of the edentulous space in the arch necessitates the classification of the partially dentate arches.

There are many classifications for partially edentulism, the common are Cummer, Neurohr, Kennedy, Applegates, Skinner and Bailyn, all of them have advantages and disadvantages.

Kennedy’s classification proposed by Edward Kennedy in 1925 universally used since it provides visualization of the case immediately and permits differentiation among teeth supported and teeth-tissue supported RPDs.

Kennedy divides partially edentulous arches into 4 main categories:

Class I: area of bilateral edentulous spaces situated posterior to remaining functional teeth.
Class II: area of unilateral edentulous spaces situated posterior to remaining functional teeth.
Class III: area of unilateral edentulous space with functional teeth anterior and posterior to it.
Class IV: area of single but bilateral edentulous space situated anterior to remaining functional teeth.

Eight additional rules provided to Kennedy’s system by Applegate in 1960.

The classification facilitates understanding and learning the RPD fundamentals design. It also improve the communication between dentists, dental students and laboratory technicians for the purpose of treatment planning.

Various RPD patterns that fabricated must be periodically reviewed to give us guidelines for teaching.

**Objectives:**

- Find the predominance of Kennedy’s classification types based on age, gender and arch among the patients attending the dental collage in Basrah city/Iraq during one year period.
- Establish databases about the frequencies of partially edentulism cases.

**Materials and methods:**

The current study was carried out among patients visited department of Prosthodontics inside the college of dentistry/university of Basrah from October 2018 to June 2019.

One thousand patients were included (521 male and 479 female) they were categorized depend on their age into 5 groups: (20-29, 30-39, 40-49, 50-59, 60-70 years).

Pretested sheet includes details of missing teeth, name, age and sex was used. To prevent inter examiner bias, the same investigator examined all the patients using a probe and mouth mirror in sufficient light condition.

The missing teeth patterns were identified based on the Kennedy's classification. The third molars, fixed dental restoration and spaces being closed were not deemed as lost teeth. Congenitally missing, unerupted, loose teeth and retained roots that were indicated for extraction were excluded.

The collected data were inserted in a computerized spreadsheet (Microsoft Excel 2013) and analyzed by SPSS version 20.

**Results:**

A total of 1000 male and female patients were examined for the partially edentulousness incidence among both mandibular and maxillary arches, mean patients age was 45 years (ranging 20-70).
The study findings are expressed via descriptive statistic pattern. RPDs distribution according to gender in different age groups showed at Table 1. The obtained results indicated more gender variances, the male subjects revealed more examined frequent cases in the current study than the female subjects.

Highest male and female RPDs percentage was at age ranging from 30 to 39 years (23.1%), while the least removable frequency partial edentulous cases was at age 20 to 29 years for female and male patients (14.6%).

The majority of the RPDs were fabricated for the maxillary arch compared to the mandibular arch. Few patients seeking both maxillary and mandibular RPDs. The distributions of various Kennedy classes in maxillary arch (table 2 and figure 1) and mandibular arch (table 3 and figure 2) were summarized.

It is clear that Class III of Kennedy classification was the most frequent RPDs pattern in the maxilla (39.27%) and the mandible (37.11%), while Class IV of Kennedy classification was the least frequent RPD pattern in the maxilla (7.72%) and the mandible (7.13%).

The Class I percentages were 24.13% for maxilla and 27.71% for mandible while the percent of Class II was 28.86% for maxilla and 28.03% for mandible.

The maxillary RPD distribution patterns (Fig. 3) and mandibular RPD distribution patterns (Fig. 4).

Table 1
Distribution of gender at various ages

<table>
<thead>
<tr>
<th>Gender</th>
<th>20-29</th>
<th>30-39</th>
<th>40-49</th>
<th>50-59</th>
<th>60-70</th>
<th>Total</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>71</td>
<td>118</td>
<td>122</td>
<td>112</td>
<td>98</td>
<td>521</td>
<td>52.1%</td>
</tr>
<tr>
<td>Female</td>
<td>75</td>
<td>113</td>
<td>94</td>
<td>107</td>
<td>90</td>
<td>479</td>
<td>47.9%</td>
</tr>
<tr>
<td>Total</td>
<td>146</td>
<td>231</td>
<td>216</td>
<td>219</td>
<td>188</td>
<td>1000</td>
<td>100</td>
</tr>
<tr>
<td>Percentage</td>
<td>14.6%</td>
<td>23.1%</td>
<td>21.6%</td>
<td>21.9%</td>
<td>18.8%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2
Distribution of gender at various maxilla classifications

<table>
<thead>
<tr>
<th>Gender</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Male</td>
<td>92</td>
<td>14.51</td>
<td>104</td>
<td>16.4</td>
<td>133</td>
</tr>
<tr>
<td>Female</td>
<td>61</td>
<td>9.62</td>
<td>79</td>
<td>12.46</td>
<td>116</td>
</tr>
<tr>
<td>Total</td>
<td>153</td>
<td>24.13</td>
<td>183</td>
<td>28.86</td>
<td>249</td>
</tr>
</tbody>
</table>

Table 3
Distribution of gender at various mandibular classifications

<table>
<thead>
<tr>
<th>Gender</th>
<th>Class I</th>
<th>Class II</th>
<th>Class III</th>
<th>Class IV</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td>Male</td>
<td>99</td>
<td>16.04</td>
<td>95</td>
<td>15.39</td>
<td>128</td>
</tr>
<tr>
<td>Female</td>
<td>72</td>
<td>11.66</td>
<td>78</td>
<td>12.64</td>
<td>101</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>27.71</td>
<td>173</td>
<td>28.03</td>
<td>229</td>
</tr>
</tbody>
</table>
Discussion:

Figure 1: Distribution of maxillary Kenned’s classification according to gender

Figure 2: Distribution of mandibular Kenned’s classification according to gender

Figure 3: Various types of Kennedy’s classification in maxilla

Figure 4: Various types of Kennedy’s classification in mandible
Lost teeth associated with local factors like smoking, caries, pulpal diseases and poor oral hygiene measure. Ide et al., proved an intense correlation between extracted teeth number and the impact of oral health\textsuperscript{17}.

The fundamental objective in utilizing RPDs categorization is for simplifying teeth description to combination of ridges. In our study reaching to this purpose obtained by Kennedy classification\textsuperscript{18}.

In this paper, the men express higher edentulousness proportion than women which agreed with Hoover’s study\textsuperscript{19}. Nevertheless, various previous papers proved higher edentulousness proportion in women than men\textsuperscript{20}. Such might attributed to different psychological factors, smoking and high sugars utilization.

The females RPDs count was more pronounced between 30–39 years of age, while for males RPDs count was more pronounced between 40–49 years of age, this results may be due to the low calcium level for the pregnant female between 30 and 39 year, or it may be attributed to the oral hygiene measure.

This study shows increased awareness among 30–49 years age group with big numbers of younger patients reporting to the department of prosthodontics for replacing their missing teeth. The early lost of teeth among young aged patients may be related to their poorer oral hygiene and low socioeconomic status.

The present study results mention that maxillary edentulism frequency was more compared to mandibular edentulism among population study, possibly due to the general tooth loss pattern.

RPDs of Class III pattern was detected being mostly predominant design among males and females in our study, this edentulism pattern most commonly located in both maxilla (39.27\%) and mandible (37.11\%) which is agreed with of Shah et al\textsuperscript{21}. This findings may be related to the higher frequency of younger age groups was included, whereas higher frequency of older age was noticed in other studies. Also the present study agrees with Abdel-Rahman HK et al, 2013 for the least common mandibular class IV Kennedy’s classification\textsuperscript{22}. The limited use of class IV RPDs could be due to the fact of using implants or fixed prosthesis for anterior teeth when they are missing to give more natural and esthetic appearance. It was observed that mostly encountered Class I in mandibular arch and Class IV in maxillary arch (Khalil A et al.).\textsuperscript{23} The fabrication of free end RPDs could be attributed to masticatory purpose. Class I RPDs most commonly seen in lower arch than upper arch, which related to that lower teeth erupt earlier and prone for higher caries rate and higher teeth extraction chance.

Conclusion:

1. The upper jaws are more partially edentulous compared to the lower jaws.
2. More male patients are asking for treatment in prosthodontics department compared to females.
3. Class III pattern was the most frequently cases observed whereas class IV pattern was the least partially edentulous cases.
4. Prevalence of different RPDs cases is a reflection of teeth loss pattern and also patients demand.

References:


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