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Research Article

Knowledge and Attitude Among Dentists Concerning Removable Partial Denture Design in Makkah, KSA

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Abstract

Background: Removable partial denture (RPD) is introduced as one of the most successful treatment options for partially edentulous patients at any age. Construction of RPD necessitates multiple clinical and laboratory steps. One of the most important steps is the design of RPD. Dentists should have a clear knowledge of the different designs and functions of RPD components. Proper contact between dental practitioners and dental technicians has long been recognized as another essential factor contributing to the development of high-quality removable prostheses.

Aim of the study: This study emerged to evaluate knowledge and attitude concerning removable partial dentures design among dentists in Makkah region, KSA.

Material and Methods: This descriptive cross-sectional study was conducted in Makkah region, KSA, on 246 participants. All participants were invited to the study via the social network to complete an online questionnaire form of 36 questions that was created through Google Form for Online Surveys to assess the knowledge and attitude of the dentist regarding RPD design

Results: 55.7%of the participants supposed that both the dentist and dental technician should be responsible for designing of RPD and 43.9% believe that it's the dentist responsibility. 36.6% believe that surveying is the job of both dentists and the dental laboratory technician and 13% of the participants reported that surveying is the dentist responsibility. More than half 73.2% of all study participants reported that they communicate with the laboratory by marking on the primary cast and laboratory form. Regarding RPD component design, the results revealed that more than half of the participants appeared having enough knowledge regarding principles of major connector, direct and indirect retainers' selection and rests location.

Conclusion: The majority of dentists in Makkah region, KSA participated in this study had sufficient knowledge and attitudes concerning RPD design.

Keywords: Removable Partial Denture; Design; Partial Edentulism; Knowledge; Attitude

Introduction

Despite the decline in the incidence of edentulism owing to increased awareness of the dental health, the number of edentulous individuals remains high due to the population increase [1]. According to World Health Organization (WHO) Edentulism is considered as disability, Therefore prosthetic reconstruction of completely or partially edentulous arches is still needed [2].

Recent trained in dentistry enforces the preservation of the remaining natural teeth which resulted in a progressive decrease in complete denture wearers and increase of partial denture wearers. Several studies have analyzed the treatment modalities of partial edentulism in various nations and populations. Removable partial denture, fixed partial prosthesis, and implant assisted prosthesis are accepted as proper treatment solutions for partially edentulous space worldwide in modern fields [2].

A removable partial denture is introduced as one of the most successful treatment options for partially edentulous patients. It's an economical and reversible treatment option recommended to restore function and esthetics [3].

It was documented that, proper construction of RPD requires multiple clinical and laboratory steps that include proper diagnosis and treatment planning, primary impression, survey of the primary cast, initial designing of the prosthesis on the cast, prosthetic mouth preparation, secondary impression, and secondary cast reorientation on the dental surveyor to check the amount of performed teeth modification. When the final design has been established, the design form is drawn up and submitted to the laboratory technician to follow the design instructions [4].

There are several components of an RPD each component has unique roles. Thus, dentists should have clear knowledge regarding design of the various components of the RPD structure [4]. Poorly designed RPDs are resulted in major biological and mechanical complications in addition to low patient satisfaction [5-7]. Therefore, RPDs should be designed following the biomechanical principle. Regarding mechanical principles support, retention and stability should be taken into consideration. On the other hand, the hygienic principles of design should be followed to minimize plaque accumulation and oral tissue damage [5].

Although, proper designing of RPD is the responsibility of dentist and is not the job of the technician, successful communication between dental practitioners and dental technicians is still mandatory to fabricate a proper prosthesis [8].

Even though many types of research were performed to assess RPDs designs, [3-5,9] there is lack of the available data regarding dentists attitude and knowledge about RPD design in Makkah region, KSA. Hence, this study was emerged to assess the knowledge and attitude of dentists in Makkah region regarding removable partial denture design, which can provide a database for further studies.

Materials and Methods

This descriptive cross-sectional study was conducted in Makkah region, KSA, on 246 participants from UQUDENT, King Abdulaziz University, Taif University, Ibn Sina National College, Batteries Medical College, Al-Farabi College and other. The study duration was four months starting from October 2020 to January 2021. After obtaining the ethical approval from the college ethical committee IRB (EQKW160221), an electronic questionnaire form was created through Google form for online surveys. Sample size was calculated using www.calculator.net/sample-size-calculator.html. The population size was inserted in the calculator as (600 dentists) with confidence level 95% and marginal error 5% the calculated sample size was (235) and response was of total (246) dentist which was added to data analysis increase the sample power. Participants were invited to the study through social media network after testing framed questions in 20 participants to confirm their clarity. The questionnaire contains closed-ended questions following technique modified from that designed by [4] The questionnaire begins with an introductory paragraph about the aim of the study and an authorization that it did not include any personal information, and so answering its questions is considered as acceptance to participate in the study. The questionnaire includes (36) questions consisted of four parts: first part covered demographic data of participant, the second part consist of 2 questions viewing the dentists responses to the RPD practices, the third part contained 10 questions about attitude of dentists toward RPD designing and the fourth part consist of 20 questions which evaluate dentists knowledge. Data were collected, tabulated, and statistically analyzed using Statistical Package for Social Science (SPSS v.21). P values ≤ 0.05 was considered as significant; chi-square tests were used for the analysis of categorical data.

Results

The distribution of the participants percentages of dental intern, general dentists, prosthodontists, and other specialties were displayed in Figure 1. The results of this study revealed that, the highest percent of response was from dental intern.

Practices

The results of this study also revealed that more than half (73.6%) of the participants provided RPD services to the patient who need it once to twice per year, where 51(20.7%) of the study participants unfortunately never dealt with such cases. This is evident in Table (1). Regarding bases on which the treatment options were decided, 38.2% of the participants based on the fixed is not possible while 1.2% is based on the patient's demand as evident in table 1.

Attitude

The attitude of the participants regarding the responsibility for the designing of RPD was half (55.7%) of the participants supposed that both the dentist and dental technician should be responsible while others (43.9%) believe that it's the dentist responsibility who should overseas the designing of RPD. This is evident in figure 2 and table 2.

Majority of the study participants (36.6%) believe that surveying is the job of both dentists and the dental laboratory technician. Unfortunately, 76(30.9%) of the participants believe that surveying is not required at all. More than half (73.2%) of the study participants reported that they communicate with the laboratory by marking on the primary cast and laboratory form. Only more interns (23%) communicate with the lab with only laboratory form. Unfortunately (5%) of general dentists doesn't communicate with the lab at all as shown in figure 3 and table 2.

Knowledge

Only 72 (29.3%) of the study participants were fully informed that the success of RPD depend on how well it designed, whereas 22.8% of the participant were a little bit informed of the required knowledge. Majority of participants 36.6% choose they follow stewart's as the reference that they will follow in designing RPD. More than half of the participants 155 (63%) reported that they are fully aware of the design sequence to develop RPD framework, unfortunately 19 (24.3%) of the dentists with other specialty reported that they are not informed of the required knowledge as seen in figure 4. 142 (57.7%) of the participants reported that there isn't a single way to design RPD, while 24 (9.8%) doesn't have enough knowledge for this question.

Regarding RPD components designs, the results revealed that more than half of the participants appeared having enough knowledge regarding principals of major connector, direct and indirect retainers' selection and rests location as shown in table 3.

Discussion

Several researchers have attempted to assess the knowledge and attitudes of dentists regarding RPD design [4,10-13] It has been observed that the proper RPD design process faces a problem that has appeared worldwide in both developed and developing countries [14-18] that has resulted in ineffective prosthetic rehabilitation for partially edentulous patients and adverse effects on the surrounding oral and dental tissues [18-21]. Many studies have linked this problem to educational reasons, but others have linked this problem to a lack of communication with the laboratory [11,13]. According to the author's information, there is lack of available data regarding dentists' attitude and knowledge of RPD design in the Makkah region, KSA. Hence this study came to assess the knowledge and attitude of dentists in Makkah region regarding the design of removable partial dentures.

This study participants were dental interns, general dentists, prosthodontists and other specialists, as all of whom provide removable partial denture services which is a simple method to rehabilitate the partially edentulous patients.

The positive attitude of most participants towards responsibility of RPDs design, surveying process and proper communication with the dental technician evidenced from the results of this study (Table 2), reflects the proper educational process for graduates of Makkah region, KSA.

In this study 108 (43.9%) of the participants were capable of designing RPD frameworks independently. According to the result of the present study table 2 when the clinicians were asked about who is the responsible of surveying process 32 (13%) of the clinicians agreed that it's the job of the dentist, and 90 (36.6%) of the participants reported that the process of surveying is the respon-

Figure 1: The percentage of different specialties in the study.

Figure 2: Distribution of attitude regarding the designing of RPD based on specialty.

Figure 3: Distribution of attitude regarding the designing of RPD based on specialty.

Figure 4: Distribution of knowledge regarding the designing of RPD based on specialty.

sibility of both dentist and technician. 240 of the participant communicate well with the lab.

This survey outcomes are in contrary with the findings of earlier national [11] and international investigations [4,18,20,22-24] who proved lack of responsibility toward design the RPDs and complete dependence on dental technician to design the RPDs. That resulted in poor RPD quality where Hummel et al. in 2002 proved that two third of the worn RPDs are inadequate [25].

Regarding RPD design sequence and components designs, the results revealed that more than half of the participants appeared having enough knowledge regarding principals of major connector, direct and indirect retainers selection and rests location as shown in table 3.

Conclusion

With the limitation of this study, it could be concluded that the majority of study participants had sufficient knowledge and attitudes concerning RPD design. In the same time more attention should be given to motivate the students for workshop attendance to cover more about treatment planning, mouth preparation, and survey and design principles written laboratory communication. It should be clear to the students before graduation to understand their responsibilities and know the role of dental technician's. Furthermore, continued dental education programs, workshops, and hands-on courses should be periodically conducted for the interns, general practitioners and specialists are recommended to reinforce the knowledge, attitude and practices related to RPD.

Conflict of Interest

The authors declared that there is no conflict of interest.

Ethical Statement

- Ethical approval was taken from the college ethical committee IRB (EQKW160221)
- The questionnaire used for data collection in this study was self-structured, with an opening paragraph stating the study's goal and an assurance that it did not contain any personal information, and answering its questions was regarded as consent to participate in the study.
- The manuscript is not being considered for publication in any other journal.

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