



Knowledge and Perception of Flexible Dentures among Dental Private practitioners in Klang Valley, Malaysia

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ABSTRACT

Prescription of flexible denture (FD) is non preference by the clinician in Ministry of Health Malaysia and it was not included in the curriculum of public university. However, among private dental practitioner (PDP) this treatment modality is highly favourable. Therefore, this study was conducted to assess the level of knowledge and perception on the flexible dentures by the PDP. The level of perception and knowledge on FD was analysed using validated questionnaire. 42 PDP had participated. An independent t-test was employed to determine the statistical difference between genders. One Way ANOVA was used to evaluate the statistical difference between their years of experience in private sector on knowledge and perception of flexible denture. There was no significant different in knowledge between female and male ($p=0.892$) and years of experience ($p=0.617$). Perceptions of flexible denture, was not significantly influence by genders ($p=0.068$) but by year of experiences between group A and B ($p=0.039$), and between group B and group C ($p=0.039$). P value was set at 0.05. In conclusion, there is a correlation between perceptions of flexible denture and years of experience of private dental practitioner.

Keywords: flexible denture, knowledge, perceptions, private dental practitioners

INTRODUCTION

Over the years, development of base material, e.g. Polymethyl methacrylate (PMMA) and metal framework, e.g. cobalt chromium has been progressive with various improvement in strength, appearance, ease of processing to name a few. However, some shortcomings of the materials particularly the popular PMMA, for example weaker flexural and impact strength compared to cobalt chromium which lead to fracture of the base plate (1); the difficulty in insertion of the denture constructed by these material when there is presence of undercut areas on the residual ridges and allergy to methyl methacrylate monomer (2). Therefore, thermoplastic resins were introduced in 1950s and has become a popular choice among dentist and patient in denture construction as it offers twin advantages of aesthetic and flexibility. Thus, flexible dentures have become an alternative denture that aid retention by ensuring

seal around the entire border of the denture. It is also referred as hypoallergenic denture especially for those who allergic to methyl methacrylate monomer and metal. It exhibits lower flexural modulus than conventional baseplate material denture that makes it nearly unbreakable. Flexible denture also allows prostheses to follow the contour of the mouth without interrupting the denture retention. However, flexible dentures are intended for provisional and temporary applications and not for long term usage (3). Patients' selection is rather important before prescribing flexible dentures.

Flexible denture is not taught extensively in the dental school in Malaysia. Therefore the level of knowledge of private dental practitioners regarding flexible denture is crucial to ensure a successful treatment outcome. Differences were shown between Greece and Croatia in terms of dentist providing removable partial dentures (RPDs). Although they

were not taught in their schools about flexible RPDs, almost one third of them offer this treatment to their patients (4).

Knowledge and perception of effectiveness in prescribing flexible denture by PDPs in Malaysia are based solely on experiences, or patient personal oral feedbacks. Currently, knowledge and perceptions of dental practitioners on effectiveness of prescribing flexible denture in Malaysia is not known yet. Hence, the objectives of the present study were to assess the knowledge on flexible denture among PDPs, to evaluate their perceptions on the effectiveness of flexible denture, and to evaluate the gender and year of experience among PDPs with knowledge and perception on flexible denture.

MATERIALS AND METHOD

Data collection

A questionnaire was prepared with reference to Afridi *et al.*, 2014 (5). The questionnaire was validated using a pilot study on fourteen private dental practitioners in Klang Valley. The final self-administered questionnaire were then distributed among the participants and collected after two weeks. This study was approved by Faculty of Dentistry University of Malaya ethics committee (DF RD1601/0011(U)).

Participants

This study was conducted among PDP who were from different races, gender, years of experience and currently practicing dentistry around Klang Valley (Petaling Jaya and Shah Alam), Selangor, Malaysia. These regions were chosen as they have large population of PDPs. Only PDPs (n=50) with experience in prescribing flexible denture were included in this study. The PDPs who were practicing in other districts were excluded.

Contents of the Questionnaire

Background of Participant: participants were required to fill in their sociodemographic particulars.

Knowledge on Flexible Denture: The second section of this questionnaire consisted of fourteen multiple choice questions with 'yes', 'no' or 'not sure' answer. These questions were related with participant's knowledge regarding to properties, features, indications, advantages and disadvantages of flexible denture. The total score was then

determined based on number of correct answers. The questions are:

1. Flexible denture is known to be flexible and almost unbreakable
2. Flexible denture material is only made up from Nylon
3. Minimum/no mouth preparation is needed to fabricate flexible denture
4. In ectodermal dysplasia patient, flexible denture may be an option in treatment plan.
5. Staining by various ingredient of food, tea and coffee is unlikely to happen
6. Flexible denture can be an alternative for patient that allergic to acrylic denture
7. Flexible denture displaced more soft tissue due to its flexibility
8. Flexible denture is generally used as temporary prosthesis only.
9. If patient having limited mouth opening, flexible denture is indicated
10. Undercuts associated with teeth did not pose any problem in insertion or removal of prosthesis
11. Patient with history of repeated denture fractures is indicated to use this prosthesis
12. Patient with lingual tori can use flexible denture without undergoing surgery
13. Flexible partial denture use undercuts in the ridge for retention
14. Technique for insertion and adjustment is same as acrylic partial denture
15. Patient with knife-edge ridges is indicated to use flexible denture

Perceptions on Flexible Denture: The last section of this questionnaire was made up of seventeen questions with regard to their thought and belief on the benefits of flexible denture to patient. Their perception were assessed with 'strongly disagree', 'disagree', 'agree' or 'strongly agree' options given. The questions are:

1. Do you think flexible denture improves digestion?
2. Do you think flexible denture provides more stability during mastication?
3. Do you think flexible denture is lighter compared with conventional denture?
4. Do you think flexible denture is more reliable for elderly people?
5. Do you think flexible denture is easier to wear and remove from mouth compared to conventional denture?

6. Do you think your patient will be more comfortable to use flexible denture?
7. Do you think flexible denture causes less oral irritation and pain?
8. Do you think flexible denture is easier to clean?
9. Do you think the cost of constructing a flexible denture is more expensive than conventional denture?
10. Do you think flexible denture is easy to construct compared with conventional denture?
11. Do you think flexible denture is easy to repair?
12. Do you think flexible denture provides more cosmetic solution?
13. Do you think flexible denture causes less stress to the remaining teeth and gum?
14. Do you think flexible denture will improves general health?
15. Do you think flexible denture will improves quality of life?
16. Do you think flexible denture is suitable for everyone?
17. Do you think flexible denture can be used as permanent prosthesis?

experience (Group A), five (11.9%) had 10-19 years (Group B), and 21.4% had more than twenty years of work experience in the private sector (Group C).

Figure 1 shows there was no significance difference in the knowledge on flexible denture between genders for all questions. However for both question No. 3 and No. 6, it shows substantial difference in the knowledge between genders with 24 correct answers for female and 11 for male (Question No. 3); 24 answered correctly for female and 13 for male (Question No. 6) respectively.

Knowledge on flexible denture

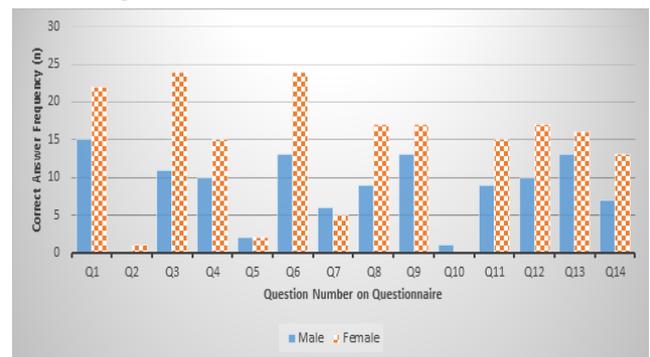


Figure 1: Gender based differences in knowledge of private dental practitioners on flexible denture.

Sample Size Determination

Sample size was calculated using Power and Sample Size program. According to Afridi *et al.*, 2014, the ratio between genders which was m-value was taken. $P_0 = 0.292$ and $P_1 = 0.708$, at which the P_0 was the 'Yes' answer for male and P_1 was the 'Yes' answer for female for Question 1 of the journal. The exact sample size was needed to produce accurate results, accurate to a specified confidence and margin of error.

Statistical Analysis

Data were recorded, processed and analyzed by using IBM SPSS version 24 software for descriptive statistical analysis, independent t-test and ONE way ANOVA. P-value was set at 0.05.

RESULTS

Sociodemographic of participants

The participants consisted of more female (59.5%) than male (40.5%) dentists. Twenty-eight of the participants (66.7%) had less than ten years of work

Figure 2 shows there was significant difference in the knowledge of private dental practitioners on flexible denture based on years of practice ($p=0.023$) with 21 correct answer for group A while 3 for group B and 2 for group C.

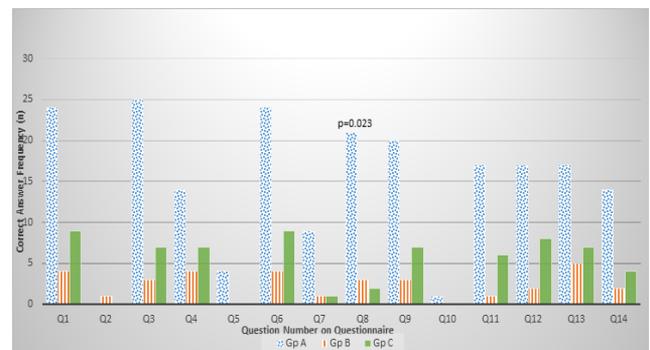


Figure 2: Knowledge of private dental practitioners on flexible denture based on years of practice.

Figure 3 shows no significance difference in perception of private dental practitioners on flexible denture based on gender. However in Figure 4, there

is significant different in perception of private dental practitioners on flexible denture based on years of practice on Question No. 8, No. 10 and No. 15.

Perceptions of flexible denture

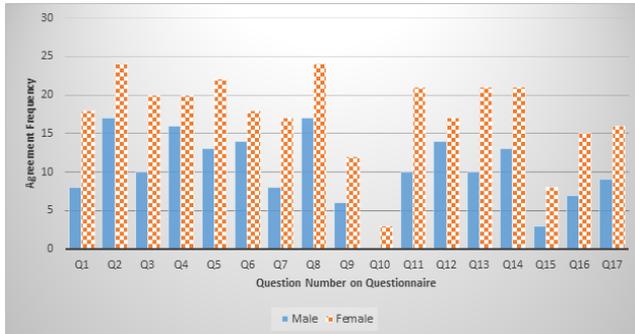


Figure 3: Perception of private dental practitioners on flexible denture based on gender (t-test).

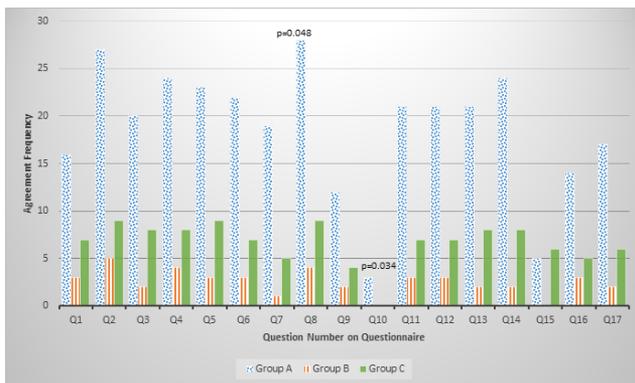


Figure 4: Perception of private dental practitioners on flexible denture based on years of practice.

Superscript letters showed significant difference between groups (post hoc analysis using one way ANOVA in conjunction with Tukey’s HSD (honest significant difference) test).

DISCUSSION

Knowledge on flexible denture

This study revealed that most of the PDP exhibited equal knowledge on flexible denture regardless of genders and years of experiences however there is significant difference in terms of given correct answer for the question (Q3) ‘minimum or no mouth preparation needed to fabricate this flexible denture’.

There was no significant difference found based on years of experiences on their knowledge regarding flexible denture. However, according to Nursalam *et al.* (2001) and Nadeak *et al.*, (2015) age and experience were few factors that had large influence against knowledge (6-7). Lack of clinical

evidence for the use of flexible denture, promotional literature may affect more general practitioners to adopt using flexible denture (8) regardless of their years of experience.

Perceptions on flexible denture

This study suggests that perception was not affected by gender but by year of work experience. However, the result has shown significant difference on the price of flexible denture (Q9), difficulty in repairing flexible denture (Q11) and suitability for everyone (Q19). Thakral *et al.* showed that the construction of flexible denture required high temperatures and mold injection technique which caused it to be more expensive (9). In addition, the fact that there was no addition that could be made onto nylon. This made it hard for flexible denture to be repaired. The only recommended solution to repair flexible denture was by rebasing. Furthermore, the findings on previous study showed that not everyone was indicated for flexible denture. Flexible denture was contraindicated in patients for the following:- patients with deep overbites where anterior teeth could be dislodged in excursive movements; patients with little remaining dentition; minimal undercuts for retention; where there was less than 4 mm of inter-occlusal space in the posterior area; cases with bilateral free-end distal extensions with knife edge ridges or lingual tori in the mandible as well as cases with bilateral free-end distal extension on maxilla with extremely atrophied alveolar ridges (9).

More than 90% of PDPs agreed that flexible denture provides more stability during mastication (Q2). This is agreeable with Thakral *et al.*, (2012) and Sharma *et al.*, (2014) which reported that patients felt more natural and comfortable to wear flexible denture compared with conventional denture (9-10). Most of the PDPs agreed that flexible denture is more aesthetic than conventional denture (Q12) as being suggested by Shamnur *et al.*, (2010) (11). Flexible denture provided a metal free prosthesis and translucency of the material which picked up underlying tissue tones. However, it might show staining and discoloration with time as it was chromatic instability. Most PDPs believed that flexible denture would cause lesser stress to the remaining teeth in the arch (Q13) as proven by Sharma *et al.*, (2014) (10), there was almost no load on the abutment tooth in flexible partial denture, thus no abutment tooth mobility observed as with conventional partial dentures. The flexibility of the major connector of the flexible denture itself may act as a stress breaker and leading to stress distribution (10). 80% of the PDPs agreed that flexible denture has improved general

health (Q14) but only 26% agreed it does improve quality of life (Q15). This result was contradicted with the previous study that showed nylon based material had given patients' hope for better quality of life (2).

Limitations and further research

There were several limitations to this study that must be addressed accordingly. Questions on Continuing Professional Development (CPD) should be included to assess the continuity of knowledge empowerment of the PDPs. Ministry of Health defined CPD as concept that learning continues throughout one's life, both through educational courses, working experience and practice. This CPD programs comprises of seminars, talks, hands-on workshops and conferences organized by private or governmental body. With emerging of technology and developments in dentistry daily, dental practitioners were required to obtain new skillsets to master these constant changes of development in dentistry. By attending those CPD programs, participants were exposed to the latest materials, technique and technology in dentistry.

Besides that, the distribution of private dental practitioner's years of experience was significantly imbalanced. For example, group B has five participants while group A has twenty eight participants. Thus, the result of this study more or less has been affected.

Lastly, the study was done in small sample size which had forty-two private dental practitioners as participants and in limited areas (Petaling Jaya and Shah Alam). In future studies, larger survey which recruits larger sample or subjects should be conducted in larger areas probably a state or country to achieve significant result of this study.

CONCLUSION

Within the limitation of this study, the following conclusion could be drawn:

1. Knowledge on flexible denture were almost the same between male and female dental private practitioner.
2. There was no difference between experienced private dental practitioner and the fresh graduates on knowledge of flexible denture.
3. Perceptions of male and female dental private practitioner on flexible denture were same.
4. There were differences on perception of flexible denture with years of experience.

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