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Evaluation of Mental Health and Perception of Patients with Conventional and Self Ligating Brackets in Chennai during Covid Pandemic

Abstract: Background: The total appearance of the teeth and the face can have an impact on an individual’s mental image contributing to personal satisfaction. Orthodontics can enhance the health of the teeth and the gums. Aim: To assess the mental health and perception of patients undergoing orthodontic treatment during the COVID outbreak. The current study was aimed at comparing the psychological status of patients wearing, conventional brackets and self-ligation brackets during the covid pandemic. Methodology: A questionnaire containing 7 multiple choice questions were virtually given to patients bonded with conventional and self-ligation brackets were given to 100 patients respectively and the scores were assessed using Kessler’s Psychological Distress Scale (K10) during the COVID outbreak. Results: In accordance to Kessler’s Psychological Distress Scale (K10), patients with conventional brackets are more inclined towards score 4 (feel depressed most of the time), patients with self-ligation brackets are more inclined towards score 3 (feel depressed for a little time) Conclusion: It is essential to strengthen the mental health of the patients undergoing orthodontic treatment during the pandemic. More awareness must be created on mental health of patients undergoing treatment. Clinical significance: Studies have shown greater level of patient’s satisfaction after orthodontic treatment. Patients who had been comprehensively informed about their treatment had greatest levels of satisfaction and compliance with treatment.

Keywords: anxiety, brackets, esthetics, malocclusion, mental health, psychological status.

INTRODUCTION

On account of coronavirus outbreak, most dentists are not opening their clinics. Virtual mobile consultations, telephonic conversations and antibiotic prescriptions are provided to the patients during the pandemic.

Mental health and esthetics is one of the pivotal health problems in the world (Choobineh, A. et al., 2012). Mental health and social well-being of the patient is of utmost importance in the field of dentistry (Asgari, I. et al., 2012; & Khadem, P. et al., 2011).

The position of teeth in the bone, the competency of the lips and the position of tongue are the major contributors, that affects the psychological health and well-being of the individuals (Edward H. Angle, stated malocclusion as a significant deviation from normal occlusion. Some studies have assessed the psychological status of patients have significantly improved after orthognathic surgery (De Baets, E. et al., 2011; Amnaie, A. et al., 2012; Danaee, S. M. et al., 2015; de Couto Nascimento, V. et al., 2016; Reisine, S. T. et al., 1989; Sayers, M. S., & Newton, J. T. 2006; & Cunningham, S. J. et al., 2002).

Orthodontics can influence the soft and hard tissues of the oral cavity for better function and esthetics of the individual (Danaee, S. M. et al., 2015). Studies show patient and parents expectations during orthodontic treatment, thus resulting in bias in the results (de Couto Nascimento, V. et al., 2016; Reisine, S. T. et al., 1989; Sayers, M. S., & Newton, J. T. 2006; & Sergl, H. G., & Zentner, A. 1997). Oral diseases seriously impair quality of life in a large number of individuals and they may affect various aspects of life, including function, appearance, interpersonal relationships and even career opportunities (Reisine, S. T. et al., 1989).

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Studies revealed a lack of information on the patient experiences and some patients also showed signs of anxiety after orthodontic procedure (Sayers, M. S., & Newton, J. T. 2006). Studies measured patient’s expectations of pain resulting from wearing fixed orthodontic appliances but the general expectations of patients after orthodontic treatment did not significantly improve (Cunningham, S. J. et al., 2002; Cunningham, S. J. et al., 2000; & Sayers, M. S., & Newton, J. T. 2007). It helps to determine patient’s level of satisfaction after orthodontic treatment (Stewart, F. N. et al., 1997). Patients who had been comprehensively informed about their treatment had greatest levels of satisfaction and compliance with treatment (Stewart, F. N. et al., 1997; & Mandall, N. A. et al., 2006).

The aim of the study is to comparatively evaluate the mental health status and perception of patients with conventional and self-ligating brackets during the corona virus outbreak.

**MATERIALS AND METHODS**

**Questionnaire**

A google forms questionnaire containing 5 multiple choice questions, about the difficulties faced by the patients, with conventional and self-ligating brackets were virtually sent through Whatsapp Messenger App (Whatsapp Inc) during the corona virus outbreak.

Patients were also asked to answer another set of 10 questions, to describe about their own mental health during the quarantine and social distancing period, on the basis of Kessler’s Psychologic Distress Scale (K10) which was sent through Whatsapp Messenger App (Whatsapp Inc) in July, 2020. pertaining to the same study and the mental health was compared between the two groups. The questionnaire was prepared in English.

**Study Population**

The link was forwarded to 200 patients (100 patients bonded with conventional brackets and 100 patients bonded with self-ligating brackets) and the 100 responses for both groups were recorded in a span of 3 weeks. A descriptive, cross sectional survey was carried out with a mean age of 13-30 years.

**The samples were divided into 3 groups**

**Group1**- patients bonded with twin bracket (MBT prescription, 0.022 inch slots) and 0.018 inch round NiTi wire

**Group2**- patients bonded with Self-ligating Damon 3MX brackets (Ormco Corporation, Orange, California, USA; 0.022 inch slots) with 0.018 inch round Copper NiTi wire.

**Inclusion criteria included**

- Patients undergoing active orthodontic treatment
- Patients irrespective of the type of malocclusion or ethnic origin
- Both male and female patients
- Patients with both extraction and Non-extraction treatment protocols
- Compliant patients

**Exclusion Criteria:**

- Patients with visible enamel defects or hypoplastic enamel such as fluorosis.
- Patients below the age of 12 or in mixed dentition stage without complete eruption of permanent dentition.

**RESULTS**

64% of male patients and 36% of female patients participated in the study, who were bonded with conventional brackets. 66% of male patients and 34% of female patients participated in the study, who were bonded with self-ligation brackets.

**Kessler ‘S Psychologic Distress Scale (K10)**

On basis of Kessler’s scale, it was reported that patients with conventional brackets, 52% of patients felt tired without any reason most of the time (score 4). We found that in the past 4 weeks, 40% of patients felt hopeless most of the time (score 4). We found that 44% of patients felt so helpless that nothing could cheer them up most of the time (score 4). Most of the patients bonded with conventional brackets were inclined towards score 4 (depressed most of the time). Insignificant number of patients were inclined towards score 1, score 2 and score 3. (Fig 7).
On the basis of Kessler’s scale, it was reported that patients with self-ligation brackets, 60% of patients felt tired without any reason little of the time (score 2). We found that in the past 4 weeks, 40% of patients felt hopeless some of the time (score 3), 90% of patients felt so helpless that nothing could cheer them up some of the time (score 3) and 83% of patients felt worthless some of the time (score 3). In contrary to conventional brackets, most of the patients with self-ligation brackets were inclined towards score 3 (Fig 8).

**Psychological Status of Patients with Conventional and Self-Ligating Brackets**

This study showed that 24% of patients with conventional brackets reported to the orthodontist 15 days ago, 25% of patients reported to the orthodontist a month ago, 35% of patients reported to the orthodontist 2 months ago and a 16% of patients reported to the orthodontist 3 months ago. In contrary, 52% of patients with self-ligation brackets visited the orthodontist 1 month ago, while a relatively 13% of the patients with self ligation brackets visited the orthodontist 2 months ago and a 10% of patients visited the orthodontist 3 months ago (Fig 1).
We found that 52% of patients with conventional brackets and 68% of patients with self ligation showed loose brackets respectively. With conventional brackets, 18% of the patients revealed elastic or metal ligatures poking in the mouth, 9% of patients showed food debris accumulation, 1% of the patients reported edema and loose implants were reported by 10% of patients. With self-ligating brackets, 12% of patients reported ends of wire irritating the oral cavity and 20% of patients reported loose implants (Fig 2).

With conventional brackets, 28% of orthodontists recommended their patients to reposition the ends of wire with eyebrow tweezers, 32% recommended to use a cutter to cut the ends of the archwire, 40% of patients recommended paraffin or orthodontic wax in case of ends of the wire irritating the oral cavity. With self-ligating brackets, 9% of orthodontists recommended to reposition the ends of the wire with tweezers while a relatively 70% recommended to use a cutter (Fig 3).
Overall, 72% of patients with conventional brackets reported discomfort after breaking the appliance, while 88% of patients reported no discomfort even after breaking the appliance (Fig 4). 64% of patients with conventional brackets were taking medications because of pain with conventional brackets, and 72% of patients with self-ligation brackets reported no medications taking due to pain (Fig 5).
According to the results obtained, it is implied that the mental health of patients with self-ligating brackets responded more positively to the Kessler’s Psychological Distress scale (score 3), followed by conventional brackets (score 4) during the COVID outbreak. Also, the patients with self-ligating brackets reported less difficulty, discomfort, and pain, compared to conventional brackets, during the COVID outbreak.

DISCUSSION

Psychological intervention for patients infected with COVID-19 is needed for timely prevention of inestimable hazards from secondary mental health crisis. The aim of psychological crisis intervention helps in managing the disease and also helps to assess the psychosocial health of the individual (Reisine, S. T. et al., 1989).

In low and middle income countries with a low rate of mental health service, inaccessibility of digital technology and health service for individuals with low socioeconomic status online mental health service or virtual consultation should be considered (Kang, L. et al., 2020).

Experts have advised people to stay in self-isolation and quarantined but the lockdown restrictions could have short and long term detrimental impacts on mental health. Studies reveal social distancing and quarantine period has impacted the emotional, psychological and social well being of the individual (Yao, H. et al., 2020).

Psychiatric institutions should enlighten COVID-affected patients, families, and health-care workers in hospitals and laboratories to strengthen mental health initiatives and provide psychological guidance (Mukhtar, M. S. 2020).

Studies have shown that lockdown has significantly impacted orthodontic appointments and patients anxiety. Studies have shown that patients willing to start their orthodontic procedure, showed lower levels of anxiety (Banerjee, D. 2020).

Studies have shown females were more anxious than males about lockdown period, quarantine and impact on their orthodontic treatments. The main cause of concern was the delay in treatment during the pandemic (Banerjee, D. 2020).

Studies have shown that males were willing to attend their appointments, even in the lockdown period. Females felt safer to stay home during the pandemic, because of exposure to coronavirus on stepping outside. Studies have shown females were more anxious than males during the coronavirus outbreak (Banerjee, D. 2020; & Cotrin, P. P. et al., 2020).

Studies reported the anxiety levels during the COVID pandemic was about 34% in China. Recent literature shows that Brazilian people were more anxious and were significantly affected during the pandemic, owing to large amount of false information reported in the media (Cotrin, P. P. et al., 2020). Studies reveal patients showed an increase in their body mass index (BMI) during the pandemic significantly improved.

Studies reveal that there was no difference in the quality of life of the patient, after 6 months of orthodontic treatment. The results showed that correction of malposed tooth and crowded teeth significantly developed the mental health of the patients (Cotrin, P. P. et al., 2020).

Studies show mental health subscales of General Health Questionnaire (GHQ) was highly accelerated after orthodontics. An improved physical health, decreased psychological health problems and confidence levels of the patients were significantly improved after orthodontic procedure (Qiu, J. et al., 2020). Studies reveal an increased self-esteem was observed after debonding procedure (Johal, A. et al., 2015).

Limitations

The main limitations of this study are a small sample size and lack of awareness on mental health in the current COVID pandemic.

CONCLUSION

It is essential to strengthen the mental health of the patients undergoing orthodontic treatment during the pandemic. Only few studies have correlated the mental health of patients undergoing orthodontic treatment. Thus, more awareness must be created on mental health of patients undergoing treatment.

REFERENCES