

# Level of Awareness towards Orthodontic Treatment for Medically Compromised Patients among Dental Practitioners in Saudi Arabia

## Research Article

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## Abstract

**Objectives:** Orthodontic treatment can improve the patients overall well-being and self-esteem [1]. Some patients have systemic disorders that require certain precautions before and/or during and/or after treatment. With increasing demand many of these medically compromised patients are seeking orthodontic therapy [2] and it should not be abstain because of presence of medical disorder [3]. Therefore all dental practitioners required to be mindful of the potential clinical implication of these diseases [4].

**Methods:** This cross-sectional study included 371 randomly selected dental practitioners (senior dental students, interns, general practitioners, orthodontists and other specialists in dentistry) in Saudi Arabia. Online questionnaire was distributed through network and collected over a period of 3 months. Data collected, entered and analyzed using appropriate different tests with significance level set at  $P < 0.05$ .

**Result:** The overall knowledge of senior dental students and dental interns were low. And for dentists and other specialists they were aware to some situations. While the orthodontists were aware of most of the situations. There was no significant difference between males and females ( $P < 0.05$ ). But a significant difference in knowledge between the different specialties was found in the following conditions: the need of prophylactic treatment before orthodontic treatment before orthodontic treatment, patients with bacteremia, infective endocarditis, renal failure and patients on corticosteroid therapy, NSAID, rheumatoid arthritis drugs, drugs for asthma.

**Conclusion:** we can conclude that the awareness toward orthodontic management was overall acceptable but need improvements. More lectures and seminars are highly recommended.

## Introduction

Orthodontic treatment can improve the patients overall well-being and self-esteem [1]. Some patients have systemic disorders that require certain precautions before and/or during and/or after treatment. With increasing demand many of these medically compromised patients are seeking orthodontic therapy [2] and it should not be abstain because of presence of medical disorder [3]. The noticeable advancement in health sciences has contributed to a reduction in mortality rates, which in return results in increase in the average age of the population and higher numbers of people living with chronic health conditions. In many countries, general dentists have been mostly involved in the care of people with special health care needs (SHCN) by providing preventative care and dental treatment. As dentists play an important role in provision of care for people with SHCN, it is therefore essential for dentists to be adequately trained and acquire a strong basis in delivery of care, taught within the scope of Special Needs Dentistry (SND) [4]. Therefore all dental practitioners required to be mindful of the potential clinical implication of these diseases

[5]. The major goal of orthodontic treatment are improving the quality of life, increasing the self-confidence and protection of the soft and hard tissues from any injures in addition to other benefit [6] Thus, it is necessary to identify the understanding level of dental practitioners towards this type of patients as long as they induce patients to embrace a healthy life style. Orthodontics is the branch of dentistry, dealing with the correction of teeth and jaws which were caused by malformation during development [4]. Orthodontic treatment is important for every individual having Dentofacial abnormalities or malocclusion to improve the quality of life by enhancing dental and jaw function and Dentofacial appearance. It also plays an important role in self-esteem, social and psychological changes [6]. According to a survey led by Becker et al., the primary goal for parents to have their children with SHCNs undergo orthodontic therapy was to increase their facial attractiveness [7]. This study aimed to evaluate the awareness regarding orthodontic treatment for medically compromised patients among senior dental students, interns, general practitioners, orthodontists and other dental specialists in Saudi Arabia.

## Material and Methods

This study was done as a part of our SRW 623 research course. It is a cross-sectional study involving dental practitioner (senior dental students, interns, general practitioners, orthodontists and other specialists in dentistry) in the Kingdom of Saudi Arabia. The sample will include dental practitioner in the kingdom randomly selected by simple random sampling technique (convenient sample).

### Data collection methods

These were online questionnaire (survey monkey), containing 19 closed ended questions which was designed to provide demographic information including gender and specialty. Other information was measuring the self-knowledge and awareness concerning orthodontic treatment for medically compromised patients including prophylactic treatment before orthodontic treatment, common disorders based on literature review such as Bacteraemia, infective Endocarditis, Bleeding disorder, Diabetes, Haematological malignancy, Rheumatoid Arthritis, Renal failure, Cystic Fibrosis. In addition to drugs for cancer, asthma, seizure, rheumatoid arthritis, muscle relaxant, NSAIDs, drugs which related to Corticosteroid therapy and psychiatric patient that require special precautions before providing orthodontic treatment. E-mails were sent to the dentist to welcome their participation using Riyadh Colleges for Dentistry and Pharmacy (RCSDP) official communication system. While other dentists were invited randomly across Saudi Arabia to participate in this study through E-mail and Twitter. The estimated time to complete the questionnaire 2-3 minutes and collected over a period of 3 months.

### Ethical consideration

- The informed consent was clear and indicates the purpose of the study and the right of the participant to withdraw at any time without any obligation towards the study team and we will assure the anonymity of each participants and the confidentiality of collected information.
- We didn't apply any interventional procedure for participants when we collected the information.
- No incentives or rewards were given to participants.

### Statistical analysis

Data were extracted from Survey Monkey and were entered into a coded SPSS data entry sheet checked and analyzed using SPSS software version 21. Parametric test was performed. Additionally, chi square test and cross tab were applied when appropriate with significance level set at  $P < 0.05$ .

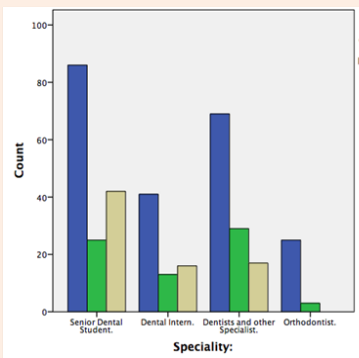
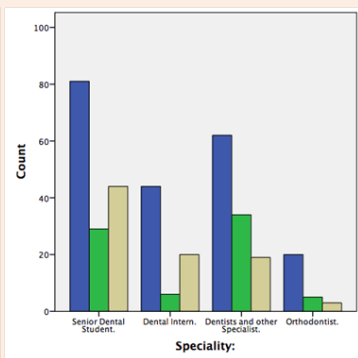
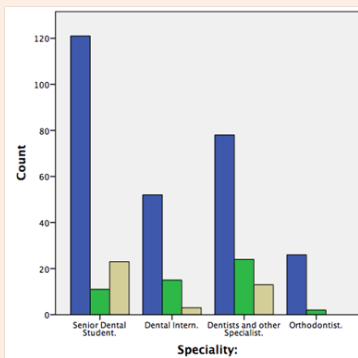
## Result

Out of the total responses 371, 371 were completed, response rate of 100%. Respondent consist of 67% females and 33% males. Majority 42% were senior dental students, 19% were dental interns, 31% were dentists and other specialists while only 8% were orthodontists. We found the overall knowledge

of senior dental students and dental interns were low. And for dentists and other specialists they were aware to some situations while the orthodontists were aware of most of the situations. There was no significant difference between males and females ( $P \leq 0.05$ ). But a significant difference in knowledge between the different specialties was found in the following conditions: the need of prophylactic treatment before orthodontic treatment, patients with bacteremia, infective endocarditis, renal failure and patients on corticosteroid therapy, NSAID, rheumatoid arthritis drugs, drugs for asthma. As the statistical analysis revealed that the orthodontists showed higher knowledge in almost all the conditions mentioned except for muscle relaxant drugs were the senior dental students showed higher knowledge (Table 1).

## Discussion

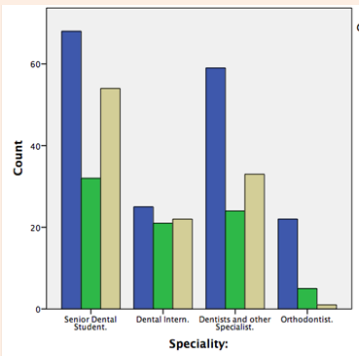
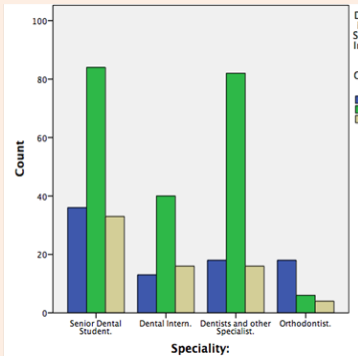
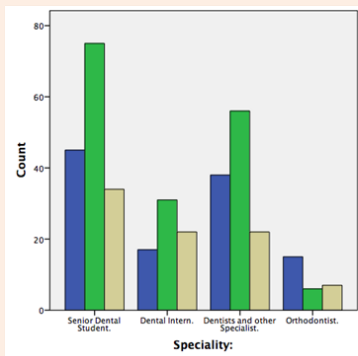
It is necessary to identify the understanding level of dental practitioners towards this type of patients as long as they induce patients to embrace a healthy life style. The result of this study illustrated that the overall awareness of orthodontists found to be higher in most of the conditions. Followed by the dentists and other specialists as they were aware of some of the conditions, while the others showed lower knowledge overall. We found there is statically significant difference in the awareness regarding the need of prophylactic treatment before orthodontic treatment and awareness towards the management of patients with Bacteremia, Infective Endocarditis, Renal failure and patients on Corticosteroid therapy, NSAID, Rheumatoid Arthritis drugs, drugs for asthma as it was especially high among orthodontists. In other hand, the awareness regarding the management of patients taking muscle relaxants drugs were higher among senior dental students (Graphs 1-9), though these differences were not significant across the females and males. Similar study was done by Thompson S et al. [8] to identify the understanding and educational needs among dentists (General dental practitioners, Hospital dental services, community dental services and other specialists) in Wales regarding congenital or acquired cardiac disease and the provision of antibiotic prophylaxis, they found that the GDPs had lower knowledge of children and adults cardiac risk factors requiring prophylactic measures. Moreover, the knowledge of prescribing antibiotic prophylaxis for patients with infective endocarditis was significantly higher in (HDS, CDS, and other dental specialists) than GDPs. Which result in agreement with our result. In general, there was a confusion to which cardiac conditions require prophylaxis. Specifically regarding orthodontic treatment two questions have been asked about the necessity of antibiotic prophylaxis for patients at risk of endocarditis during the orthodontic tooth separation and orthodontic bands/brackets placement, they found that more explanation is needed regarding antibiotic prophylaxis use in congenital, acquired and repaired cardiac conditions for the prevention of infective endocarditis. However, the latter question has caused some confusion. Another study was conducted by Schwenk DM et al. [9] indicates that the clinics provide orthodontic procedures to this patient group was the least among all other specialties which in our opinion could be correlates to this study as the practitioners might not have the confidence to offered the treatment to such patients.



Graph 1

Graph 2

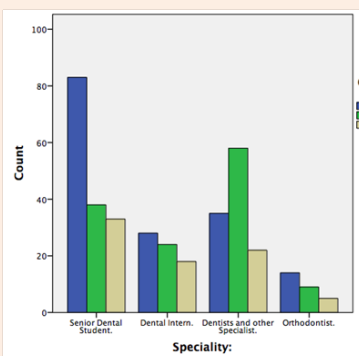
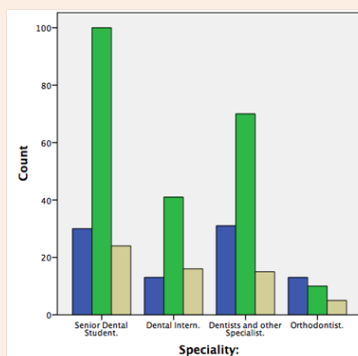
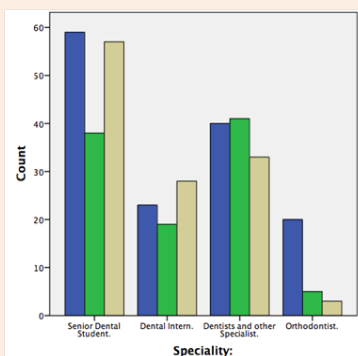
Graph 3



Graph 4

Graph 5

Graph 6



Graph 7

Graph 8

Graph 9

Graphs (1-9): Shows the answers of questions with statically significant difference.

A study has done by Parry J et al. [10] shows high confidence of general dental practitioners to provide dental treatment for children with Congenital heart disease, Diabetes and Epilepsy. In contrast, they were least confident to treat hemophiliac children. whereas our study showed acceptable knowledge about management of patients with bleeding disorders and diabetes also a study that was conducted by Gill Y et al. [11] shows that the knowledge of final year dental students towards management of medically compromised patients were moderate to good. In contrast, our result demonstrated low level of knowledge of senior dental students. In study was done in Nigeria measuring the knowledge and behavior of Nigerian dentists in regard to the treatment of children with special needs [12]. More than

half of respondents in their study reported that they had fairly adequate knowledge of the management of children with special needs. In contrast, our study shows that the knowledge of dental practitioner in the kingdom was acceptable to low targeting children and adult in general. In a study done by Mirzaie K et al. [13], a 72 questionnaires were distributed to all dentists who worked in Bushehr Province, 59 questionnaires were completed. (Response rate: 81.9%). They found that in overall, the level of awareness of dentists towards the use of antibiotic prophylaxis in prevention of infective endocarditis was poor, and that the frequency of correct answer towards cardiac conditions that need antibiotic prophylaxis is less than 43%. Also their findings suggest that promotion of knowledge of dentists regarding prevention of

IE is important, although the frequency of cases encountered by dentists is extremely low. In another descriptive cross-sectional study done to measure the knowledge of dentist in regard to antibiotic prescription they found that most of the respondents (84%) prescribe prophylactic antibiotics for patients at risk of infective endocarditis and also for diabetic patients undergoing dental intervention (58.7%). And More than half (53.1%) of the participating dentist prescribe prophylactic antibiotics for patient on immunosuppressant medications and nearly one half (47%) of GDPs prescribe prophylactic antibiotics for the coronary by-pass cases undergoing dental procedures as compared to only one fifth (21%) of oral surgeons [14]. In a study done in Malaysia, Students reported the need for increased attention in didactic teaching and clinical preparation in the care of individuals with special health care needs at undergraduate level [5].

The high level of knowledge of orthodontists could be attributed to their daily practice in the clinic also the amount of advanced information and seminars which fit in their field of specialty. Regarding the high knowledge of senior dental students in regard to the use of muscle relaxant there is no scientific justification but it could be attributed to their updated and more comprehensive curriculum or due to newly obtained information. The advancement in health care has contributed to a reduction in mortality rates, which in return results in increase in the average age of the population and higher numbers of people living with chronic health conditions. Worldwide general dentists have been mostly involved in the care of people with medically compromised conditions by providing preventative care and dental treatment. As dentists play an important role in provision of care for medically compromised patients, therefore it is essential for dentists to be well trained and obtain an adequate basis in delivery of care, taught within the scope of medically compromised patients. Our study had several limitations. First, the sample size is small and was not representative to the practice in Saudi Arabia. Second, no similar previous studies were specifically directed to measure the knowledge of dental practitioners towards orthodontic treatment of medically compromised patients which made it more challenging to construct the questionnaire and compare the results. Future research is suggested to measure the willingness of dental practitioners to provide the treatment to this group of patients and to identify the level of knowledge of each specialty individually. Low level of confidence among dental students to deliver care for medically compromised patients after graduation could be attributed to the lack of clinical experience in treating this patient cohort. So early education with a well-revised curriculum and training with adequate facilities is recommended to encourage their interest and therefore improve care for medically compromised patients.

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