Preparedness and willingness of dental care providers to treat patients with special needs

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Abstract: This study aimed to review the available literature about special needs dentistry, factors affecting treatment of patients with special needs, dental education, and the preparedness and willingness of dental care providers to treat patients with special needs. The study also aimed to assess the validity and reliability of available scales that measure the preparedness of dental care providers to treat patients with special needs. Forty studies from esteemed refereed journals were reviewed in this article. The topics in the study were relevant to special needs dentistry, Saudi Arabia, and dental care providers’ perceptions of treating patients with special needs. Reviewed studies were extracted from several electronic databases, such as PubMed and Medline. Studies in Saudi Arabia about special needs dentistry and the preparedness of dental care providers to treat patients with special needs are scarce. Further research in this area needs to be conducted in Saudi Arabia.

Keywords: oral health, dental education, quality of healthcare, social determinants of health

Introduction

As reported by the United Nations, more than half of a billion people worldwide experience disabilities due to mental, physical, or sensory impairment. According to the American Dental Association (2017), people with disabilities – special needs – often require “special consideration when receiving dental treatments because of their developmental or cognitive conditions”. This can also include patients with Autism spectrum disorder, Alzheimer’s disease, Down syndrome, or any conditions that make dental procedures more difficult.

In fact, this complexity in treating patients with special needs had led to the evolution of special care dentistry. In the USA, special needs dentistry is defined as “a method of oral health management that is specially designed for patients with special needs who have a variety of medical conditions or disabilities that require more time or altered delivery methods than the routine delivery of dental care for the general population.” Also, special needs dentistry is defined by the Royal Australasian College of Dental Surgeons as a type of dentistry that focuses attention on oral health care for disabled patients who required special methods and techniques to treat their oral health conditions. According to Gallagher and Fiske, special care dentistry extends beyond health management to the improvement of oral health outcomes in patients with special needs who often have a combination of different disabling conditions.

Despite this remarkable progress in medicine and dentistry, studies have shown that individuals with special health care needs have more risk of developing dental
problems and untreated dental diseases compared with their healthier counterparts.\textsuperscript{5,6} In addition to the poorer oral health outcomes, patients with special needs are more likely to have limited access to dental care services, which can contribute to a major health disparity between people with special needs and the general population.

In fact, the lack of willingness and the competence of dental care providers to treat patients with special health care needs, as well as the hurdles these providers face themselves, remain barriers to provide access to dental care.\textsuperscript{6,7} Thus, dental care providers should be better educated, trained, and prepared to effectively manage patients with special needs in an effort to minimize oral health disparities within this population. Furthermore, all patients with special needs must have equal access and high-quality treatment that focuses on patient safety, patient-centered care, and treatment of all dental needs.

In Saudi Arabia alone, there are approximately one million individuals with a disability,\textsuperscript{4} which represents a pressing demand for special needs dentistry to be further explored on a national level. This study lays the foundation for understanding the factors that influence access to dental health services by people with special needs through a review of the literature concerning dental care providers’ perceptions of treating this population of patients.

The Iron Triangle of Health Care\textsuperscript{e} framework has been used to guide this literature review, where this framework suggests that health care relies on the following three major aspects: access, quality, and cost. An increase or a decrease in one aspect will have an effect on the other aspects someway.

**Methodology**

Studies about dental care providers and patients with special needs were reviewed from several electronic databases, such as PubMed and Medline. A total of 40 studies were reviewed from different countries around the world, including the USA, Malaysia, Taiwan, ROC, and Saudi Arabia. From the reviewed studies, 16 scales that measure the preparedness and willingness of dental care providers were assessed for their reliability and validity (Table 1).

**Literature review**

**Access to health care**

Various studies have indicated that individuals with special needs have limited access to dental clinics for many reasons, including their physical or mental disabilities.\textsuperscript{6} Their ability to physically access the dental clinics and offices, along with their ability to afford the cost of the treatment and inadequate financing for dental treatment, may hinder their access to dental clinics.\textsuperscript{6,9–12} Moreover, the preparedness and willingness of dental care providers to treat patients with special needs may impact access and thus their oral health.\textsuperscript{1,3,13}

One of the studies that investigated dentists’ knowledge and attitudes toward treating patients with special needs found that majority of the studied dentists reported having difficulty treating such patients. The study also highlighted those dentists did not have training or special education to handle this type of patients.\textsuperscript{14} Another study that was conducted in Poland in 2014 assessed the access of special needs schoolchildren to dental care services based on parents’ perception and found that the level of intellectual disability can play a role in the accessibility of individuals with special needs to dental care services. In that study, parents with children with mild disability reported facing fewer barriers to access dental health care. This was contrary to the parents of children with severe disability, who reported encountering more access problems. This can indicate the degree to which the level of training and education of dentists can influence the access to dental care services of patients with special needs, who will have different levels of disability.\textsuperscript{15}

The lack of preparedness of dentists to treat patients with special needs can influence their degree of willingness to treat those patients. However, this is not always the case since sometimes dentists are willing to treat patients with special needs to help reduce the inequality in accessing dental health care services. Nonetheless, their willingness to treat special needs patients is hampered by their perceived level of preparedness to provide dental services to this population.\textsuperscript{10,14}

**Quality of care**

**Dental education**

Attempts to promote the education of undergraduate dental students with regard to treating patients with special needs and making them more prepared date back to the 1970s, when Robert Wood Johnson provided large grants to 11 dental colleges in the USA to develop teaching programs for patients with special needs or disabling conditions.\textsuperscript{13,14} One study found that in Saudi Arabia, dentists who treat patients with special needs are dental pediatrics; there are no dental specialists to manage patients who are adults with special needs, and there are no structured dental programs or courses for undergraduate dental students.\textsuperscript{5} Lack of training and experience of undergraduate dental students in dealing with patients with special needs was one of the most reported issues that inhibits the treatment of these patients.\textsuperscript{5} Moreover, most dental educators are specialists in their field and have little or no interest in other dentistry fields.\textsuperscript{15}
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Target population</th>
<th>Development and validation of instrument</th>
<th>Implementation</th>
<th>Reliability of instrument</th>
<th>Dimensions measured in the scale</th>
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</thead>
<tbody>
<tr>
<td>Holder, Waldman, and Hood, 2009&lt;sup&gt;9&lt;/sup&gt;</td>
<td>USA</td>
<td>Deans of dental/medical schools, directors of residency programs, and medical students</td>
<td>Development and validation were not mentioned</td>
<td>E-mailed questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Perceptions of preparation</td>
</tr>
<tr>
<td>Dao, Zwetchkenbaum, and Inglehart, 2005&lt;sup&gt;11&lt;/sup&gt;</td>
<td>USA</td>
<td>Dentists</td>
<td>Development and validation were not mentioned</td>
<td>Mailed questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Experience, attitudes</td>
</tr>
<tr>
<td>Clemetson et al, 2012&lt;sup&gt;14&lt;/sup&gt;</td>
<td>USA</td>
<td>Dentists</td>
<td>Self-developed, content and face validity conducted</td>
<td>Mailed questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Infrastructure at dental school, availability of services, and knowledge, and compliance with standards</td>
</tr>
<tr>
<td>Alkahtani et al, 2014&lt;sup&gt;24&lt;/sup&gt;</td>
<td>Saudi Arabia and USA</td>
<td>Dental school alumni</td>
<td>Self-developed using instruments from the literature. Face validity was done</td>
<td>Web-based questionnaire</td>
<td>Retest reliability</td>
<td>Attitudes, knowledge, and experience</td>
</tr>
<tr>
<td>Derbi and Borromeo, 2016&lt;sup&gt;30&lt;/sup&gt;</td>
<td>Australia</td>
<td>Dentists</td>
<td>Previously validated survey</td>
<td>Self-administered questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Perception, awareness of government programs, criteria for referral, teaching and training, consideration of postgraduate training</td>
</tr>
<tr>
<td>Casamassimo, Seale, and Ruehs, 2004&lt;sup&gt;11&lt;/sup&gt;</td>
<td>USA</td>
<td>General practitioners from the American Dental Association</td>
<td>Not mentioned</td>
<td>Mailed questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Experience, and educational preparation</td>
</tr>
<tr>
<td>Vainio, Krause, and Inglehart, 2013&lt;sup&gt;34&lt;/sup&gt;</td>
<td>USA</td>
<td>Deans at dental schools and pre-doctoral dental students</td>
<td>Self-developed using instruments from the literature. Content and face validity was done</td>
<td>Web-based questionnaire, and paper based</td>
<td>Reliability was not mentioned</td>
<td>Perceptions of education, attitudes, satisfaction, confidence, and future intentions</td>
</tr>
<tr>
<td>Ahmad, Razak, and Borromeo, 2014&lt;sup&gt;43&lt;/sup&gt;</td>
<td>Malaysia and Australia</td>
<td>The deans of Malaysian and Australian dental schools</td>
<td>Validated (type of validation was not mentioned)</td>
<td>Postal questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Education, and perception of education</td>
</tr>
<tr>
<td>Kleinert et al, 2007&lt;sup&gt;26&lt;/sup&gt;</td>
<td>USA</td>
<td>Dental students</td>
<td>Development and validation were not mentioned</td>
<td>Interactive, multimedia, virtual patient modules, with pre- and post-tests</td>
<td>Reliability was not mentioned</td>
<td>The difficulty of understanding Down syndrome</td>
</tr>
<tr>
<td>DeLucia and Davis, 2009&lt;sup&gt;37&lt;/sup&gt;</td>
<td>USA</td>
<td>Dental students</td>
<td>Development was not mentioned. Construct validity was done (inter-item correlation)</td>
<td>Self-administered questionnaire</td>
<td>Reliability (Cronbach’s alpha)</td>
<td>Prior experience, perceptions, and expectations</td>
</tr>
</tbody>
</table>

(Continued)
Preparedness and willingness of dental care providers

One of the challenges regarding dental care for special needs patients is whether dental care students are sufficiently prepared to treat patients with special needs. The Commission on Dental Accreditation (CODA) establishes new standards for dental care and dental hygiene education programs to ensure clinical opportunities to prepare future dental professionals to provide high-quality dental care to patients with special needs, stating that “graduates must be competent in assessing the treatment needs of patients with special needs” (p. 25). Because this issue has an impact on the oral health quality of patients with special needs, many studies have pointed out dental students’ lack of attempts to treat patients with special needs and have documented that the predoctoral curricula for treating patients with special needs are inadequate.

Cost of health care service

One of the major issues associated with the quality of clinical services provided to patients with special needs is the knowledge of the health care provider and his/her ability to deliver and prescribe effective treatment. The lack of preparedness due to inadequate education and training of dentists in treating patients with special needs can lead to the provision of ineffective treatment, which can bring about further complications of oral health problems, thereby increasing the cost burden.

Although oral health care is typically relatively inexpensive, it becomes costly when it is neglected due to the lack of timely access to dental care services. Dao et al pointed out that if patients with special needs have limited access to dental care

Table 1 (Continued)

<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Target population</th>
<th>Development and validation of instrument</th>
<th>Implementation</th>
<th>Reliability of instrument</th>
<th>Dimensions measured in the scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murshed, 2015</td>
<td>Saudi Arabia</td>
<td>Health care providers</td>
<td>A validated questionnaire from another published study was used. Content validity was done</td>
<td>Self-administered questionnaire</td>
<td>Reliability (Cronbach’s alpha)</td>
<td>Knowledge and experiences</td>
</tr>
<tr>
<td>Tsai et al, 2007</td>
<td>Taiwan, ROC</td>
<td>Dentists</td>
<td>Development was not mentioned. Content validity was done</td>
<td>Mailed questionnaire</td>
<td>No reliability test was done</td>
<td>Opinions and experiences</td>
</tr>
<tr>
<td>Moore et al, 2009</td>
<td>USA</td>
<td>Alumni</td>
<td>Self-developed, pilot-tested. Validation was not mentioned</td>
<td>Mailed questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Education, perceived preparedness, and experience</td>
</tr>
<tr>
<td>Chávez et al, 2011</td>
<td>USA</td>
<td>Alumni</td>
<td>Development and validation were not mentioned</td>
<td>Mailed questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Perceptions of education</td>
</tr>
<tr>
<td>Wolff et al, 2004</td>
<td>USA</td>
<td>Dental student</td>
<td>Previously developed survey. Not mentioned</td>
<td>Self-administered questionnaire</td>
<td>Reliability was not mentioned</td>
<td>Didactic and clinical preparation, attitudes, comfort levels, and experiences</td>
</tr>
<tr>
<td>Al-Abdulwahab and Al-Gain, 2003</td>
<td>Saudi Arabia</td>
<td>Health care professionals</td>
<td>Validity previously mentioned in another study</td>
<td>Self-administrative questionnaire</td>
<td>Reliability previously mentioned in another study</td>
<td>Attitudes</td>
</tr>
</tbody>
</table>

dental education programs to prepare undergraduate dental students for and to increase their willingness to treat patients with special needs now and throughout their careers. Obviously, there are many issues that influence dental care providers’ willingness and competence to treat patients with special needs. It may be valuable to better understand dental education programs with regard to the treatment of patients with special needs and the impact it has on dental care practitioners’ willingness to treat this population.
due to the lack of preparedness of dental care providers, it will lead to more oral complications for these patients that will be costly to the government and patients. Thus, this issue needs to be addressed thoroughly in the Saudi community.

In terms of willingness to treat patients with special needs, Tsai et al showed that reimbursement of dentists will affect their willingness to treat disabled patients; dentists under reward programs will be more willing in contrast with dentists from teaching hospitals. Nevertheless, the study pointed out that dental students who participate in programs to treat patients with special needs have more willingness and competence to treat these patients in the future.

Scales measuring preparedness and willingness
Several studies have been directed toward dental students and dental health care providers to measure the factors influencing their behaviors that may limit or improve the access of patients with special needs to dental clinics (Table 1). These studies attempted to measure the preparedness, experience, knowledge, attitudes, and perceptions of the dental care providers in regard to treating patients with special needs. The studies were directed at different target populations, where some targeted decision makers at dental teaching institutions, while others targeted clinical dental care providers and some studies targeted alumni and/or current students.

Some of the reviewed scales were self-developed by the authors, and most of the reviewed studies did not mention the development of their scales. Most of the reviewed studies either did not mention validation of their scale or conducted face and/or content validity. Only one study mentioned conducting construct validity by conducting inter-item correlation. None of the reviewed scales were fully validated.

Conclusion
The Iron Triangle of Health Care has been used as a framework for this study, where the following three major aspects are the core of any health care system: access to health care, the quality of health care, and the cost. Patients with special needs are likely to experience poor oral health and have limited access to dental care services. This leads to an increase in oral health disease of patients with special needs, and if it is not managed, it will be costly to the government and patients themselves. Equitable and timely health care are two of the six domains of quality health care identified by the Institute of Medicine. There were limited data in Saudi dental literature describing the effect of dental care providers’ training and willingness regarding treating individuals with special needs. Therefore, it is important to fill this gap of knowledge by studying dental care providers’ perceptions of treating patients with special needs and the issues affecting their treatment in Saudi Arabia.

Disclosure
The authors report no conflicts of interest in this work.

References
38. Tsai WC, Kung PT, Chiang HH, Chang WC. Changes and factors associated with dentists' willingness to treat patients with severe disabilities. Health Policy. 2007;83(2–3):363–374.