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치의학석사학위논문

Dental Education About Patients with
Special Needs:

A Survey of Korean Dental Schools
and Regional Dental Centers for the
Patients with Special Needs

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ABSTRACT

Dental Education About Patients with Special Needs: A Survey of Korean Dental Schools and Regional Dental Centers for the Special Needs

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The objective of this study was to explore how Korean dental schools educate students about patients with special needs and which difficulties educational administrators' have. Data were collected from eleven dental schools and eight regional dental centers (RDCs) in Korea for the special needs with a web-based survey. While six schools among eleven covered this topic in their clinical education, only six schools among eleven offered a separate course about special needs patients. The clinical education varied widely. Most programs have taught the treatment of patients with developmental delays or intellectual disabilities such as cerebral palsy (100.0%), intellectual disabilities (77.8%), autism spectrum disorder (77.8%). Written exams were the most common outcome assessment (87.5%). The commonly reported challenges were lack of educational resources, and curriculum already overloaded. Respondents also indicated lack of special needs dentistry trained faculty members. Average

number of hours for special needs clinical education was ‘less than a day’ (37.5%), ‘a day or two’ (37.5%) and ‘three to five days’ (25.0%).

Patients were visiting at RDC more than 200 patients per month. Four RDCs were located in dental school hospitals. RDC provided oral home care and oral disease prevention programs to caregivers regularly and it operated a mobile dental services. Respondents in RDC preferred students observing dental treatment (74.2%) or assisting the treatment (74.2%) provided by dental practitioners in RDC. The perceived challenges of students being primary treatment providers for the special needs in RDC were ‘patient behavior management (83.9%) and ‘obtaining informed consent’ from parents or legal guardians (64.3%). Respondents in RDC agreed on program development for post graduate fellowship program for the special needs dentistry.

Key words: special needs dentistry, regional dental center for patients with special needs

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I. INTRODUCTION

The number of individuals with special health care needs in Korea has been steadily increased.¹ Based on the government registered data, special needs population in 2006 was 1,967,326. It has increased to 2,490,406 in 2015 consisting almost five percent of the total population in Korea.¹ Not only the number has increased, but their living styles also have changed. Nowadays, people with disabilities reside with non-disabled people within our communities due to the expansion of deinstitutionalization.¹ Even though people with disabilities experience many obstacles living in our communities, one of the most difficult challenges is accessing to dental care services. According to 2015 national report by the ministry of health and welfare, DMFT index of disabled children for age 9 was 3.67 (+/-3.05), and 4.20 (+/-3.83) for age 12, and these values were higher than DMFT index of non-disabled individuals². DMFT index of age 15 at the special needs education institution was 5.4, which was higher than 3.6 of the national average value based on the survey completed in 2010.² DMFT index of ages from 35 to 44 at living facilities was 8.4, which was higher than 5.2 of the national average value based on the survey completed in 2008.² Without having any extra help from guardians or caregivers, individuals with disabilities are not able to maintain oral health. Dentists were called upon to take care the oral health of these individuals.

Understanding the need and urgency of special needs dental education, many institutions around the world endeavor to reform curriculums for dental students. In 2013, the Commission on Dental Accreditation adopted a new standard, and it stated “graduates must be competent in addressing the treatment needs of patients with special needs”.³ In other words, the new standard from CODA includes new graduates should be able to properly

diagnose and treat individuals with the special needs. As the CODA standard has been reformed, dental schools at US have recognized the importance of special needs dental education and started revising its curriculum especially including more clinical education.⁴ A new curriculum for pre-doctoral students by International Association for Disability and Oral Health also emphasizes the clinical aspects of dental education for dental students.⁵

In Korea, many studies have promoted the needs of the reformation of dental school curriculums, especially emphasizing on clinical education of treating the special needs.⁶⁻⁹ Based on the opinions of Korean dental graduates, they reported they did not have enough didactic knowledge and clinical experience of the special health care needs when they were graduated from dental schools.⁶ 93 percent of Korean dental graduates reported special needs dental clinical training must be included within dental school curriculum.⁶ Lee *et al.* in their survey of Korean dental students in 2015 reported that students who have volunteer experiences or friends with the special needs have more favorable attitudes when providing dental cares to these individuals.⁷ Dental education of the special needs at Korean dental schools is mostly provided by didactic lectures and limited clinical training. Clinical education is, specifically, limited to observation of treatments provided by dental faculties or post-doctoral residents. Not all dental schools have designated clinical area only for the special needs patients; therefore it is necessary to institute pre-doctoral programs to provide opportunities for dental students to learn how to properly diagnose and treat individuals with special needs.

In 2005, Regional Dental Center for the patients with special needs was first established at Seoul called Seoul Dental Hospital for the Disabled.² Subsequently, Chungnam,

Daegu, Gwangju, Jeonbuk, Jookjeon at Kyunggi, Busan, and Incheon centers have been followed and started their service since 2014, and Jeju and Kangwon centers recently have begun their services. As the number of people with disabilities has increased, the importance of oral health for the special needs has emerged and the necessities for making policies and developing dental welfare systems have emerged to a national level. The ministry of health and welfare proposed to build new dental care centers solely for the special needs and to hire competent dentists and staff members. Potentially, those dental centers could be served as educational places for both pre- and post-doctoral students acquiring profound clinical experience and building rapport with individuals with special needs population.

The objective of this study was to examine educational system about the special needs dentistry in Korean dental schools. Particularly, this study examined 1) which topics of special health care needs are addressed in didactic courses, 2) who are the instructors providing special needs dentistry education for dental students, and 3) how instructors evaluate their current education and its challenges. This study also examined 4) whether RDC can be used as special needs dentistry clinical educational centers for pre-doctoral dental students.

II. MATERIALS AND METHODS

The institutional review board of Seoul National University approved this study (IRB #S-D20170017). In June 2017, forty dental school faculty members at the division of pediatrics were asked to complete a survey which was sent through emails. Twelve completed surveys out of forty (30.0%) were received. In 2017 from June to August, four regional dental centers, which are located in Seoul, Kyung-gi, Chungnam, and Daegu, were visited, and surveys were sent through mailing services to other four more regional dental centers, which are located in Gwangju, Busan, Jeonbuk, and Incheon. Fifty-nine surveys were given, and fifty-five completed surveys (93.0%) were received from RDCs, and the respondents were including dentists, hygienist, doctors, and nurses.

Surveys consisted of purpose of the study, a consent, and questionnaires. With reference to the studies completed by Dehaitem *et al.* and Krause *et al.*, questionnaires were assembled.^{10,11}

Surveys, which were completed by dental faculty members, consisted of twenty questions and lasted about four minutes to be completed. The contents of the questions were related to topics of a didactic portion of the curriculum, educational backgrounds of teaching subjects, the presence of clinics for the special needs within the schools, percentages of special needs clinical education among the entire curriculum, any interactions with regional dental centers, and opinions from faculties about assessment, challenges, and satisfaction about the curriculum for the special needs.

Surveys, which were completed by health professionals at regional dental centers, were constituted of twenty-six questions and lasted about five minutes. The contents of the

questions were related to job descriptions, interactions with dental schools or hospitals, the operation of mobile dental clinics, dental hygiene educations for caregivers, details about the special needs patients, the possibility of clinical educational places for pre and post-doctoral programs, and any potential challenges for dental students treating patients as primary caregivers. Data was collected and analyzed with SPSS (IBM SPSS statistics 21 USA).

III. RESULT

Dental school survey results

Regarding to Korean dental schools' educational system, the data showed that all schools incorporated didactic courses about the special needs patient in their pediatric courses. Specifically, six out of eleven dental schools provided a separate didactic course to teach dental cares of the special needs patients. In addition, four schools out of the seven that providing independent courses provided as a mandatory course, and other two as electives. In addition to the didactic course within curriculum, the clinical education of the special patient care was asked. Even though six schools responded they have clinical education programs, the education was only limited to "observation of treating special needs patients or assisting providers who are treating special needs patients". There were no programs providing opportunities for dental students serving as primary care providers who could design treatment plan, educate caregivers of maintaining healthy oral dentition, and provide dental treatments. Unlike the dental schools that did not provide clinical education, those six schools had a designated clinic area for special needs cares.

Table 1. Special Needs Education in Korean Dental Schools

Schools	Special Needs Dentistry as independent course	Providing Clinical Education
Seoul National Univ.	Elective course	Yes
Kyunghee Univ.	Mandatory course	No
Yonsei Univ.	Mandatory course	Yes
Chosun Univ.	Not provided	No
Kyungbuk Univ.	Elective course	Yes
Pusan Univ.	Not provided	No
Chonnam Univ.	Not provided	Yes
Chonbuk Univ.	Not provided	Yes
Wonkang Univ.	Mandatory course	No

Dankuk Univ.	Not provided	Yes
Wonjoo Univ.	Mandatory course	No

Various topics related to different disabilities for education of dental students were examined. As shown in Table 2, programs reported they have didactic and clinical courses that expose their students to the treatments of patients with various forms of physical and sensory impairments, such as cerebral palsy (100.0%), intellectual disabilities (88.9%), autism spectrum disorder (77.8%), mental impairments (77.8%), and hearing impairment (77.8%), and vision impairment (66.7%).

Table 2. Responses/percentages of programs that educate their students about patients with various special needs

Patients with	Response	Percentage
Cerebral palsy	9	100.0%
Intellectual disability	8	88.9%
Mental impairment	7	77.8%
Autism spectrum disorder	7	77.8%
Speech impairment	7	77.8%
Hearing impairment	7	77.8%
Visual impairment	6	66.7%
Facial expression impairment	5	55.6%
Kidney function impairment	5	55.6%
Liver function disorder	5	55.6%
Intestinal function disorder	5	55.6%

Table 3 provides specific topics that were presented during classes in terms of discussing how to provide effective cares for patients with different disabilities. All programs discussed with dental students how to communicate with the special needs patients along with different types of disabilities (100.0%). All but three programs covered the oral manifestations of various impairments (88.9%) and related specific patient managements.

Seven programs indicated they address instructions for parents and caregivers how to maintain healthy dentition (77.8%). Six programs indicated that they teach the prevention of prevalent oral diseases (66.7%) and usage of fluoride treatments (66.7%). Four programs addressed ethical issues (44.5%) and three programs teach legal issues (33.3%) and instructions of wheelchair usages and patients transfer (33.3%).

Table 3. Topics included in special needs dentistry didactic course material

	Response	Percentage
Communication	9	100.0%
Oral manifestations	8	88.9%
Patient management	8	88.9%
Instructions to parents and caregivers	7	77.8%
Oral disease prevention	6	66.7%
Use of fluoride	6	66.7%
Ethical issues	4	44.4%
Legal issues	3	33.3%
Wheelchair transfer	3	33.3%

Special Needs Dentistry Education in Korean Dental Schools

● Who teaches special needs dentistry courses?

Pediatric faculty members were the primary instructors who teach special needs dentistry courses for pre-doctoral students (100.0%). It was found that there were no faculties who only involved in the special needs dentistry education.

● In what year dental students start taking courses related to special needs dentistry?

Dental students were first introduced about special needs dentistry 55.5% on their third year, 22.2% on fourth year, 11.1% on second year, and 11.1% on their first year. The majority of responding schools start teaching dental students on their third year within their curriculum.

- How many hours being spent for the special needs dentistry clinical education?

Table 4 provides an overview of duration of clinical rotation by dental students at special needs dental clinics. Three out of eleven schools reported the duration was less than a day (37.5%); three out of eleven schools reported about a day or two (37.5%); two schools reported three to five days (25.0%). Clinical education within the Korean dental school curriculum were referring to “observation or assisting of special needs patient being treated by faculty members or postgraduate students”.

Table 4. Average number of hours for special needs clinical education

	Response	Percentage
Less than a day	3	37.5%
A day or two	3	37.5%
Three to five days	2	25.0%
Two to four weeks	0	0.0%
More than one month	0	0.0%

- What are the methods of assessment?

The methods of assessments how to evaluate students’ didactic and clinical competencies for the care of special needs patients were evaluated. 87.5% dental schools reported they utilize written exams including multiple choices and short answer types of questions. 12.5% asked

dental students to present a case in which a special needs patient was treated, and other 12.5% dental schools requested students to write articles related to issues about dental cares or oral disease prevention of the special needs patients.

Dental School Faculty's Response: Difficulties and Satisfaction with the Special Needs Dentistry Education

It seemed important to explore the educational administrators' overall difficulties and satisfaction concerning special needs dental education. As shown in Table 5, a first question evaluated the difficulties when teaching about these issues. The respondents indicated that there were lack of teaching resources, and curriculums were already overloaded (on a five-point scale from 1=not at all a problem: 5= serious problem). Also, they were lack of faculty members. Issues such as the lack of patients was rated as rather less important concerns. The lack of special needs treating clinics varied among schools.

Table 5. Current educational challenges by educational administrators

	1 = not at all	2	3	4	5 = very much	Median
Teaching resources	1	1	2	4	1	4
Special needs clinic	1	1	3	3	1	3
Qualified instructors	1	0	6	2	0	3
Curriculum overload	1	1	2	4	1	4
Number of patients	2	0	5	2	0	3

Concerning these differences in the difficulties perceived when teaching about these issues, it seemed necessary to consider the respondents' satisfaction of their educational efforts (see table 6). The respondents also asked to rate their satisfaction with six different characteristics of their program's efforts on a scale from (1=very dissatisfied to 5= very satisfied). A high level of satisfaction was reported concerning "expertise knowledge and experience with the faculty". Also satisfaction with "enough patients" was relatively high. Satisfaction with "enough special needs clinic area" was varied among schools. They had low satisfaction with "enough educational resources and oral disease prevention".

Given this difficulties and satisfaction with educational effort, it is meaningful to see whether the different respondents agree with increasing clinical education hours. The respondents were therefore asked whether they anticipate increase of these clinical experiences, all respondents responded that they anticipate increase in clinical education.

Table 6. Satisfaction with educational efforts by educational administrators

	1 = not at all	2	3	4	5 = very much	Median
Oral disease prevention	2	3	3	0	1	2
Educational resources	0	3	3	2	1	3
Special needs clinic area	2	1	1	3	2	4
Number of patients	0	1	3	3	2	4
Experienced and qualified faculties	0	1	3	1	4	4

Regional Dental Centers for the Special Needs

● Average number of patient visits per month at RDC

Concerning how many patients in average visits RDC for a month, 94.9% respondents reported more than 200 patients visit the clinic. 2.56% responded 150 patient visits and the rest of 2.56% reported about 100 patient visits.

● Types of disabilities of patients who visit RDC for dental treatments

Table 7 shows an overview of types disabilities that RDC visiting special needs patients have. Most of the centers responded that patients with mental impairment, cerebral palsy, mental retardation, and intellectual disability visit RDC (100.0%). High percentage of patients with vision and language impairment (80.4%), kidney disorder (76.6%), liver disease (71.4%) and respiratory disturbance (67.9%) visited RDC for dental treatments. It was also found that patients with intestinal disabilities (58.9%) have been seeking treatments at RDC as well.

Table 7. Experience of RDC respondents: Types of disabilities RDC visiting special needs patients have

	Response	Percentage
Cerebral palsy	56	100.0%
Mental impairment	56	100.0%
Intellectual disability	56	100.0%
Autism spectrum disorder	54	96.4%
Hearing impairment	54	96.4%
Speech impairment	45	80.4%
Visual impairment	45	80.4%
Kidney function disorder	43	76.8%

Facial expression disorder	35	75.6%
Heart disease	35	75.6%
Liver function disorder	32	71.4%
Respiratory impairment	30	67.9%
Intestinal disorder	27	59.0%

● **Physical Distance between Dental School and RDC**

According to the survey results, 62.5% responded that RDC was located within dental school hospitals. These centers were Chungnam RDC, Daegu RDC, Gwangju RDC, Jeonbuk RDC. In contrast, 37.5% of dental schools responded that they were not affiliated with RDCs.

● **RDC affiliation with group homes or nursing homes**

Concerning whether RDC has been affiliated with group homes or nursing homes, 75.0% of RDC responded that they made memorandum of understanding with these group homes or nursing homes, and patients from these centers made regular visits to their RDC.

● **Mobile dental clinic operated by RDC**

Concerning whether RDCs have been operating mobile dental clinics, 85.0% RDC have been running mobile dental clinic and they have been visiting group homes and special needs community centers to provide dental treatment and oral hygiene cares. 76.9% of RDC had educational sessions with parents or caregivers regularly.

● Different modalities of treating special needs patients at RDC

RDC has been providing different treatment venues for special needs patients to serve them under best treatment conditions. Many different behavioral management methods ranging from conscious sedation to general anesthesia implemented while providing dental treatments. Types of behavioral managements that utilized at RDC were examined (see Table 8). High percentage of RDC responded they treat patients under general anesthesia (96.5%) and protective immobilization (85.7%). Lower percentages of RDC utilized IV sedation (58.9%), nitrous oxide (30.4%), inhalation anesthesia (30.7%), and oral sedation (28.6%).

Table 8. How to treat special needs patient

	Response	Percentage
Under general anesthesia	54	96.5%
Protective immobilization	48	85.7%
Under intravenous (IV) sedation	33	59.0%
Under Nitrous Oxide	17	30.4%
Under oral sedatives	16	28.6%

● RDC respondents' perception of scopes of dentistry provided by dental students

Concerning whether RDC being used as clinical education venues of special care dentistry for pre-doctoral students, 90.0% of RDC respondents thought pre-doctoral students could have their clinical rotation for special needs dental treatments at RDC. Most of RDC respondents agreed upon narrow scopes of clinical education for dental students, such as limited observation of treatments (74.3%) and assisting the treatment being provided by

center employed dentists (74.3%). Respondents agreed that dental students were not able to provide dental treatments as primary care providers for the special needs patients (37.4%).

Table 9. Difficulties of dental students clinical education at RDC

	Response	Percentage
observation	26	74.3%
Assistance	26	74.3%
Treatment	13	37.1%

● Challenges of dental students' clinical education at RDC

Even under the supervision of special needs specialists at RDC, Table 10 shows potential difficulties and obstacles for dental students in terms of providing dental treatments as primary care providers for special needs patients. RDC respondents thought most often dental students would face challenges such as behavior management (83.9%) and obtaining consent forms from caregivers (58.9%). Another essential difficulty of having dental students at RDC was the lack of supervising instructors (60.0%). Other minor potential obstacles RDC respondents indicated were the lack of follow-up treatments (30.4%), inadequate equipment (25.0%), and high treatment costs (10.7%). One RDC respondent advocated his opinion that a dentist whose clinical experience is up to at least five years or longer should participate treatment at RDC, otherwise serious consequences could arise due to inadequate understanding of special needs dental cares.

Table 10. Challenges of dental students' clinical education at RDC

	Response	Percentage
Patient management	47	84.0%

Difficulty obtaining consent from parent/legal guardian	36	64.3%
Difficulty in supervision	33	58.9%
Difficulty in regular treatment	17	30.4%
Lack of equipment	14	25.0%
Treatment cost	6	10.7%

● **RDC as a postgraduate program development**

Concerning RDC being a postgraduate program development for resident or fellow, 82.5% of respondent agreed on the postgraduate program development. 71.9% responded on special needs dentistry internship program, 71.9% responded on special needs dentistry residency program. 75.0% responded on special needs dentistry fellowship program. 65.6% responded on special needs dentistry dental anesthesia program. 75.0% responded that special care dentistry should become board certified specialty.

IV. DISCUSSION

As it was proven by the national report, the condition of oral health of the disabled individuals has been rather poor than the non-disabled ones². Even though much effort was attempted to improve their oral health, there has been some obstacles in terms of accessing dental services for the special needs, such as having few dentists who could manage their behaviors and able to provide treatments. Inadequate didactic and clinical trainings of providing dental treatments for the special needs patients have been a deficient area in the curriculums for the dental schools in Korea. As the importance of special needs dental education has emerged⁶⁻⁹, the government funded Regional Dental Centers (RDC) were started to be established nationwide in 2005 satisfying the increased needs for caring the oral health of the disabled.² The objective of this study is to provide baseline data about special needs education in Korean dental school and to find out whether RDC can be used as a clinical education venue for dental students. Our finding could provide insight into implementing a new curriculum, which could prepare students to be more confident at providing dental cares to the special needs patients.

Special Needs Education in Korean Dental Schools

Topics of the special needs dentistry were introduced occasionally during pediatric lectures in all dental schools in Korea. Only seven out of eleven schools provided an independent special needs dentistry course. Some were offered as required courses, and the others as elective courses. In 2010, Sherman *et al.* reported most of Canadian dental schools did not provide a devoted special needs dentistry course and rather these materials were presented in other modules within various courses.¹⁶ Clemetson *et al.* reported that more than

half of U.S. dental schools provide fewer than five hours of didactic lectures during an academic year.¹⁴ Regarding to the numbers of hours devoted to the special needs dentistry by worldwide dental schools, the special needs dental education was underestimated within dental schools curriculum. Lee *et al.* mentioned that there is a need to develop a common special needs dentistry curriculum in all eleven Korean dental schools to improve their students' competences.⁷

International Association for Disability and Oral Health have developed of predoctoral special needs dentistry core curriculum.^{5,23} This curriculum includes educational material and evaluation, created to improve critical thinking related to special needs patient care and to enhance understanding of the lives of special needs people. This curriculum is based on concept of international classification of functioning, disability and health.

According to the faculty members about the perceived challenges and satisfaction of current curriculums about special needs dentistry, they mentioned that they do not have enough educational resources. Second, some schools need more clinical designated areas for treating the patients with special health care needs. They also need to revise their curriculum because it is already full of teaching materials for board certification. Although they were satisfied with faculties' didactic knowledge and clinical abilities, they needed more instructors when supervising students' qualities of dental cares for the special needs patients. In 2008, Dehaitem's study reported faculty members, who teach special needs dentistry at dental hygiene programs in U.S., were satisfied with faculty expertise, number of patients, and educational resource, but their challenges were "curriculum overload".¹¹ Difficulties in Korean dental schools were similar with ones in U.S. dental schools regarding special needs patient dental education. To overcome the challenges in Korean dental schools, it is necessary to develop course materials such as common textbooks and educational materials such as

DVDs and case models. Schools need to hire more instructors who could supervise dental students providing dental care to the special needs patients. Regarding the necessity of clinic area to treat the special health needs, RDC could be used as a clinical education.

Clinical education offered to the students in Korean dental school was limited to one or two days of treatment observation provided by faculty members or post-graduate students. Respondents in dental school reported only 6 schools among 11 dental schools offer their students with clinical experiences in terms of the clinical cares of the special needs patients. Those schools had a designated clinic area for the dental care of special needs patients. 66.7 percent respondents in dental school indicated that current clinical education is not adequate, and 100 percent respondents reported clinical education of special needs care should be reformed. Students at West Virginia school of dentistry treat patients in affiliated hospitals for two-hour biweekly sessions total of fifteen sessions.¹⁴ Students at University of Toronto treat special needs patients at Mount Sinai Hospital for five or six rotations during fourth year dental school and treat five patients per session.¹³ Students at Stony Brook University treat special needs patients in Dental Center for Developmentally Disabled inside dental school. They have four hour weekly sessions for 18 weeks.¹⁷ Ferguson, a faculty member at Stony Brook conducted a survey to the graduates from Stony Brook dental school, 68.1 percent respondents reported they treat special needs patients in their private practice, and some of them are serving as clinic instructors at special needs clinics associated with dental schools.¹⁷

RDC as a venue for special needs clinical education

Regional Dental Centers for the special needs were started in 2005 with government fundings.² Seoul RDC was started first, and the other regional centers were followed. More than two hundreds of patients per month regularly were visiting on each center. Four of eight

centers were located inside of dental school hospitals. During clinic hours, medical staffs at RDC regularly provided caregivers and parents of the special needs about oral home cares and prevention of oral diseases. Another attempt of improving dental care access for the special needs was to run mobile dental bus, and many RDCs own those mobile clinics and have been regularly visiting places near RDCs. Park and Kim in their journal encouraged students to participate in providing treatments at mobile dental clinics because participation in these clinical education could provide how to interact and communicate with the special needs patients, and to treat them as well.⁸ Lee *et al.* in their studies mentioned students with volunteer experiences involving with the special needs showed more favorable attitudes and confidence when treating the special needs at dental clinics.⁷

Even though there are many advantages for dental students having rotation at RDCs, the perceptions of respondents at RDCs are considered as a potential challenge. Respondents at RDC showed skepticism whether students are able to handle managing behaviors and providing treatments for them as primary providers, and there are two main concerns: 1) 'behavior management of a special needs patients' (83.9 percent) and 2) 'obtaining treatment consents by parents or legal guardians' (64.3 percent). One respondent reported "without having enough understanding and preparation, providing actual dental treatment by students to special health care needs patient can cause disastrous problems". He asserted only the providers with at least five years of experience are allowed to treat those patients. Perusini *et al.* reported students were able to provide adequate treatment to behavior-wise difficult patients with help of trained dental assistants at Mount Sinai Hospital. Students reported they can provide dental treatment and do not need any further education other than dental school.¹³ Marinelli *et al.* reported that they have difficulty in obtaining agreement from parents and legal guardians of students dentally treating their dependents.¹⁸ They offered several

discussions with parents, and convinced that their children would be provided with best and complete treatment of care under supervision of qualified clinic instructors. They have built rapport each other, and when the center was being jeopardized of financial reasons, the parent group became supporter of the program. Third year of Seoul National University dental students are required of three weeks of rotation in Seoul RDC. Park in 2015 conducted a survey to students.⁸ After rotation, students reported that they are not willing to provide treatment to special health care needs. The reason might be originated unorganized educational experience might build students with negative reinforcement.⁸ The results were also contraindicated with other evidence from various literatures of special needs education.¹⁰⁻¹⁸ These provide us with more structured clinical curriculum is needed. Also qualified supervising instructors and patient coordinators are needed to be hired.

A follow-up research should explore how well dental school students can be prepared clinically if their training takes place in RDC. Considering how to develop the desirable clinical training opportunities in RDC includes hiring more staff members involved in student education. The result from our study show that schools and RDCs need collaborative effort to develop interdisciplinary special needs dental education curriculum.

V. CONCLUSION

1. All dental schools made special needs dental education as required courses; however, clinical observatory rotation was less than a day or two.
2. For all the RDCs in Korea, regularly visiting patient population was more than two hundreds per month. Four of RDCs are located within dental school facilities.
3. Medical staffs at RDC had positive opinions toward having dental students not only at their RDC facility, but also at their mobile dental clinic. In contrast, they had skepticism about dental students being as primary care providers, and they preferred dental students observing treatments and assisting medical staffs at RDCs.
4. Regarding to the difficulty of obtaining an informed consent from caregivers or the guardians, a protocol, which explains the safety and the quality of providing dental cares by dental students under the supervision of dental faculties, should be carefully designed and applied.
5. More faculty members for supervising students' treatments and clinical education program coordinators who can coordinate students' clinical experience are needed to be hired.
6. Not only special needs dentistry should be recognized as one of the specialty programs, but also compensation for dentists who treat the special needs should be increased.

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Table 1. Special Needs Education in Korean Dental Schools

Schools	Special Needs Dentistry as independent course	Providing Clinical Education
Seoul National Univ.	Elective course	Yes
Kyunghee Univ.	Required course	No
Yonsei Univ.	Required course	Yes
Chosun Univ.	Not provided	No
Kyungbuk Univ.	Elective course	Yes
Pusan Univ.	Not provided	No
Chonnam Univ.	Not provided	Yes
Chonbuk Univ.	Not provided	yes
Wonkang Univ.	Required course	No
Dankuk Univ.	Not provided	Yes
Wonjoo Univ.	Required course	No

Table 2. Responses/percentages of programs that educate their students about patients with various special needs

Patients with	Response	Percentage
Cerebral palsy	9	100.0%
Intellectual disability	8	88.9%
Mental impairment	7	77.8%
Autism spectrum disorder	7	77.8%
Speech impairment	7	77.8%
Hearing impairment	7	77.8%
Visual impairment	6	66.7%
Facial expression impairment	5	55.6%
Kidney function impairment	5	55.6%
Liver function disorder	5	55.6%
Intestinal function disorder	5	55.6%

Table 3. Topics included in special needs dentistry didactic course material

	Response	Percentage
Communication	9	100.0%
Oral manifestations	8	88.9%
patient management	8	88.9%
Instructions to parents and caregivers	7	77.8%
Oral disease prevention	6	66.7%
Use of fluoride	6	66.7%
Ethical issues	4	44.4%
Legal issues	3	33.3%
Wheelchair transfer	3	33.3%

Table 4. Average number of hours for special needs clinical education

	Response	Percentage
Less than a day	3	37.5%
A day or two	3	37.5%
Three to five days	2	25.0%
Two to four weeks	0	0.0%
More than one month	0	0.0%

Table 5. Current educational challenges by educational administrators

	1 = not at all	2	3	4	5 = very much	Median
Lack of teaching resources	1	1	2	4	1	4
Lack of special needs clinic	1	1	3	3	1	3
Lack of qualified instructors	1	0	6	2	0	3
Curriculum overload	1	1	2	4	1	4
Lack of patients	2	0	5	2	0	3

Table 6. Satisfaction with educational efforts by educational administrators

	1 = not at all	2	3	4	5 = very much	MEDIAN
Oral disease prevention	2	3	3	0	1	2
Enough educational resources	0	3	3	2	1	3
Enough special needs clinic area	2	1	1	3	2	4
Enough patients	0	1	3	3	2	4
Experienced and qualified faculties	0	1	3	1	4	4

Table 7. Experiences of RDC respondents: Types of disabilities that RDC visiting special needs patients have

	Response	Percentage
Cerebral palsy	56	100.0%
Mental impairment	56	100.0%
Intellectual disability	56	100.0%
Autism spectrum disorder	54	96.4%
Hearing impairment	54	96.4%
Speech impairment	45	80.4%
Visual impairment	45	80.4%
Kidney function disorder	43	76.8%
Facial expression disorder	35	75.6%
Heart disease	35	75.6%
Liver function disorder	32	71.4%
Respiratory impairment	30	67.9%
Intestinal disorder	27	59.0%

Table 8. How to treat special needs patient

	Response	Percentage
Under general anesthesia	54	96.5%
Protective immobilization	48	85.7%
Under intravenous (IV) sedation	33	58.9%
Under Nitrous Oxide	17	30.4%
Under oral sedatives	16	28.6%

Table 9. Difficulties of dental students clinical education at RDC		
	Response	Percentage
observation	26	74.3%
Assistance	26	74.3%
Treatment	13	37.1%

Table 10. Challenges of dental students' clinical education at RDC

	Response	Percentage
Patient management	47	84.0%
Difficulty obtaining consent from parent/legal guardian	36	64.3%
Difficulty in supervision	33	58.9%
Difficulty in regular treatment	17	30.4%
Lack of equipment	14	25.0%
Treatment cost	6	10.7%

Lack of teaching resources

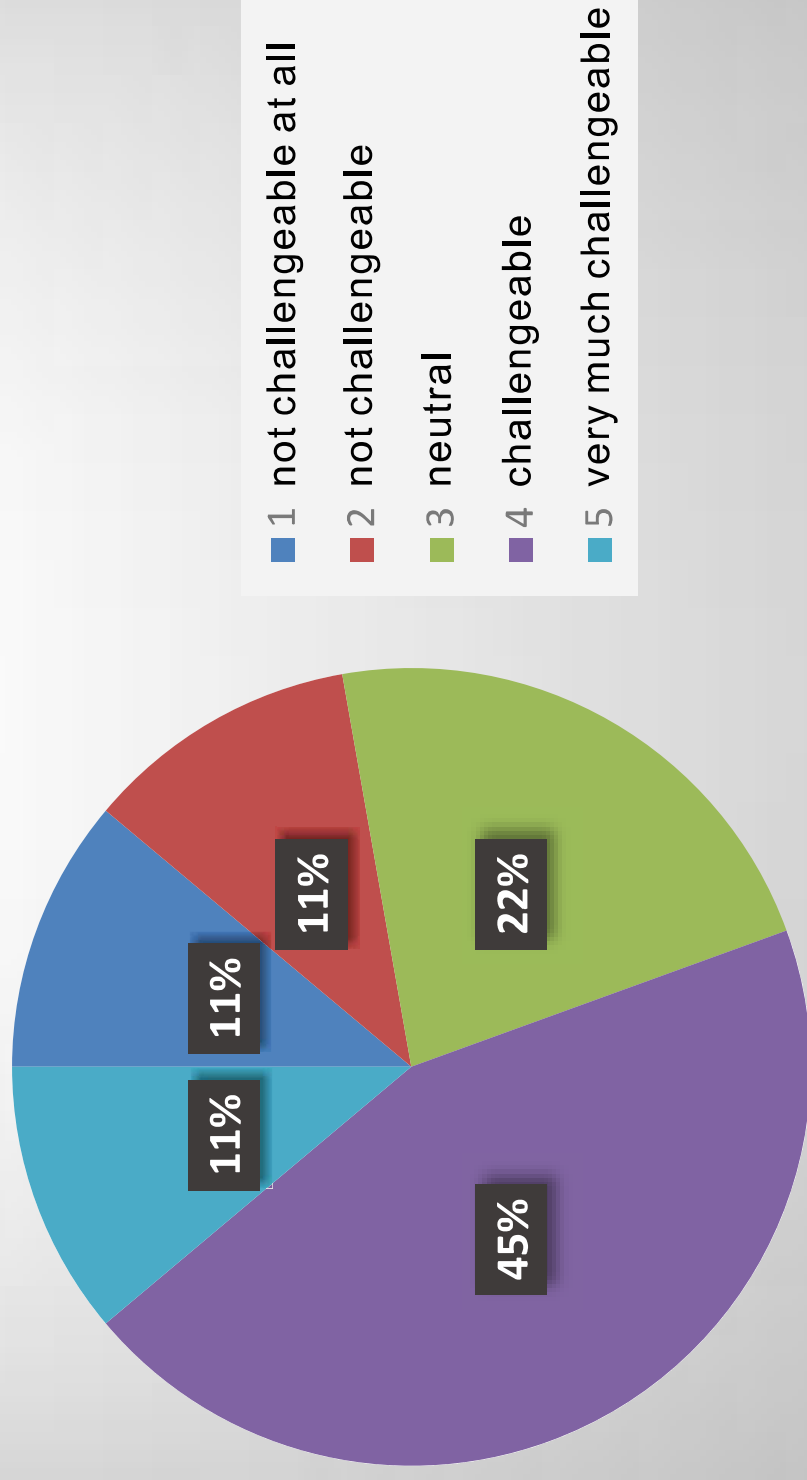


Figure 1-A. educational challenge: lack of teaching resources

Lack of special needs clinic

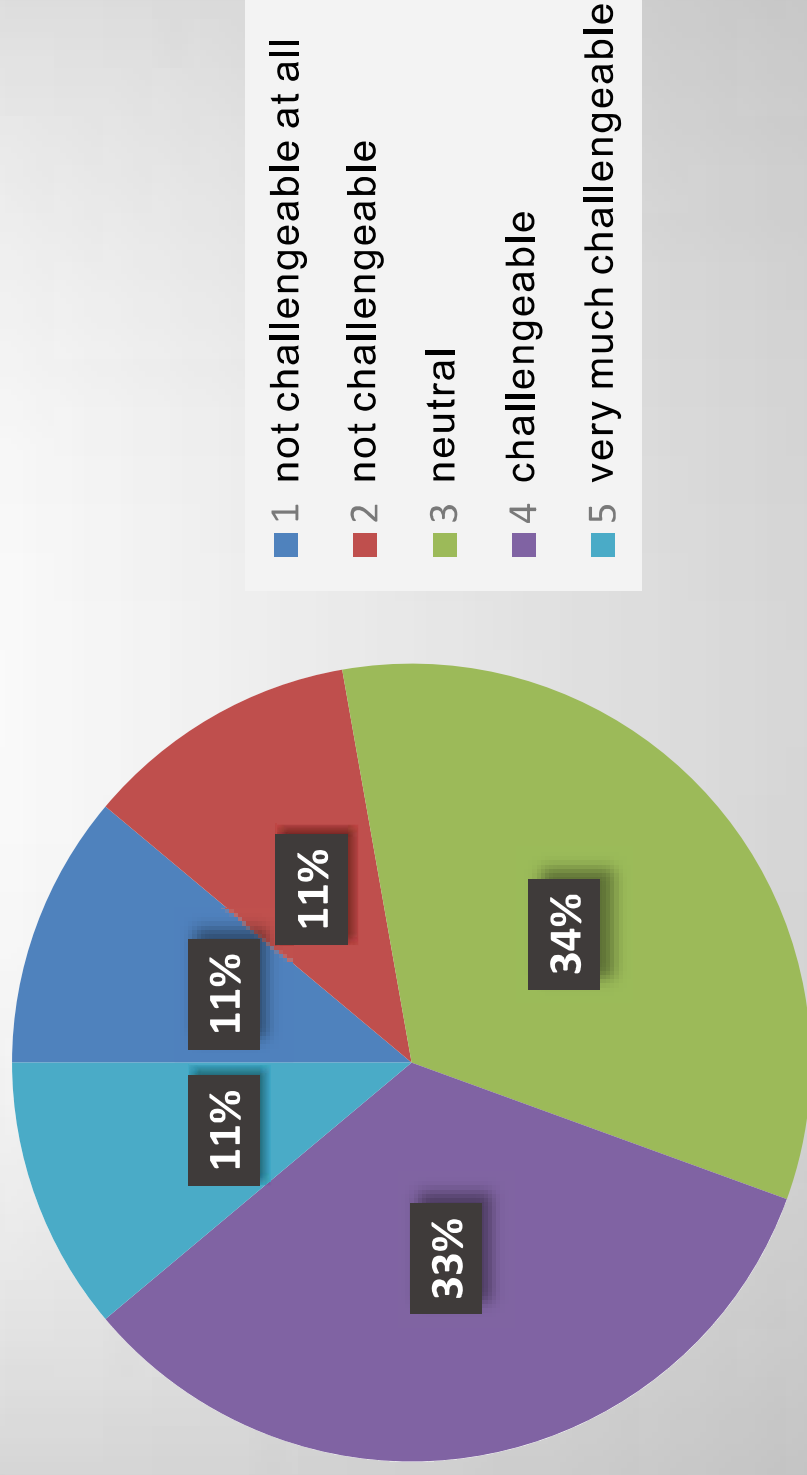


Figure 1-B. educational challenge: lack of special needs clinic

Lack of qualified instructors

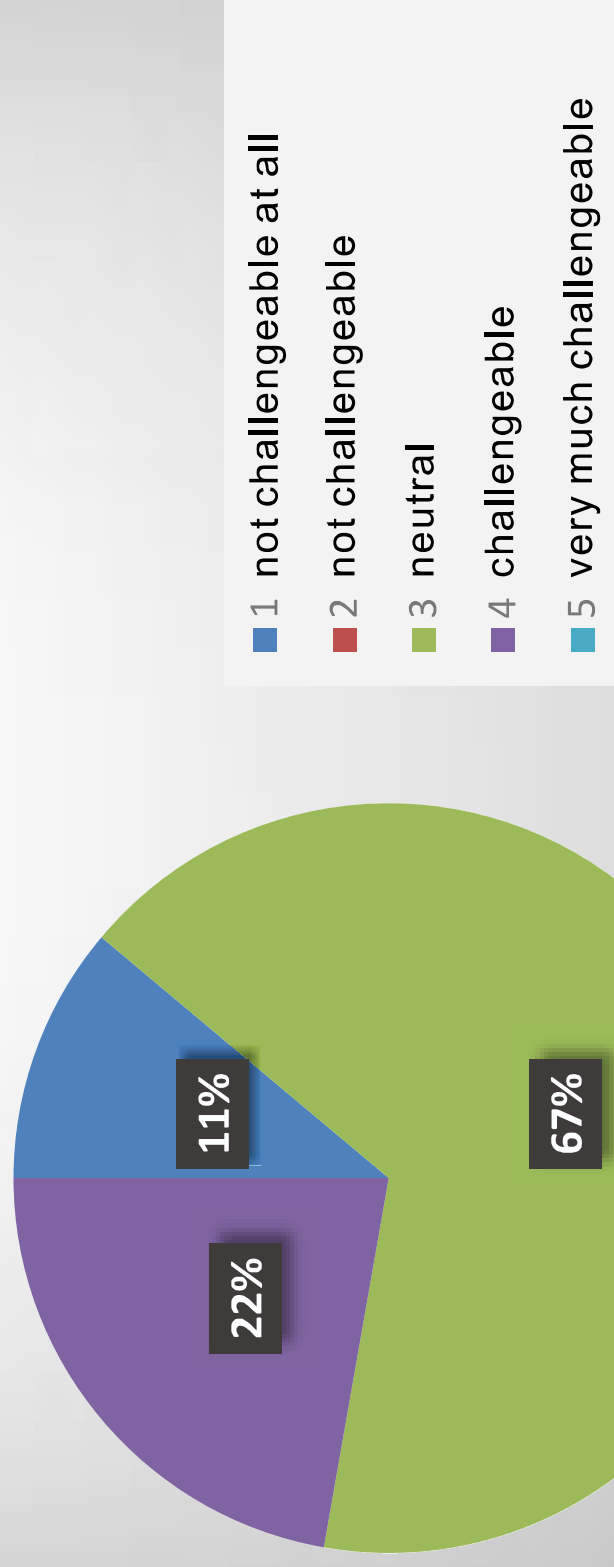


Figure 1-C. educational challenge: lack of qualified instructors

Curriculum overload

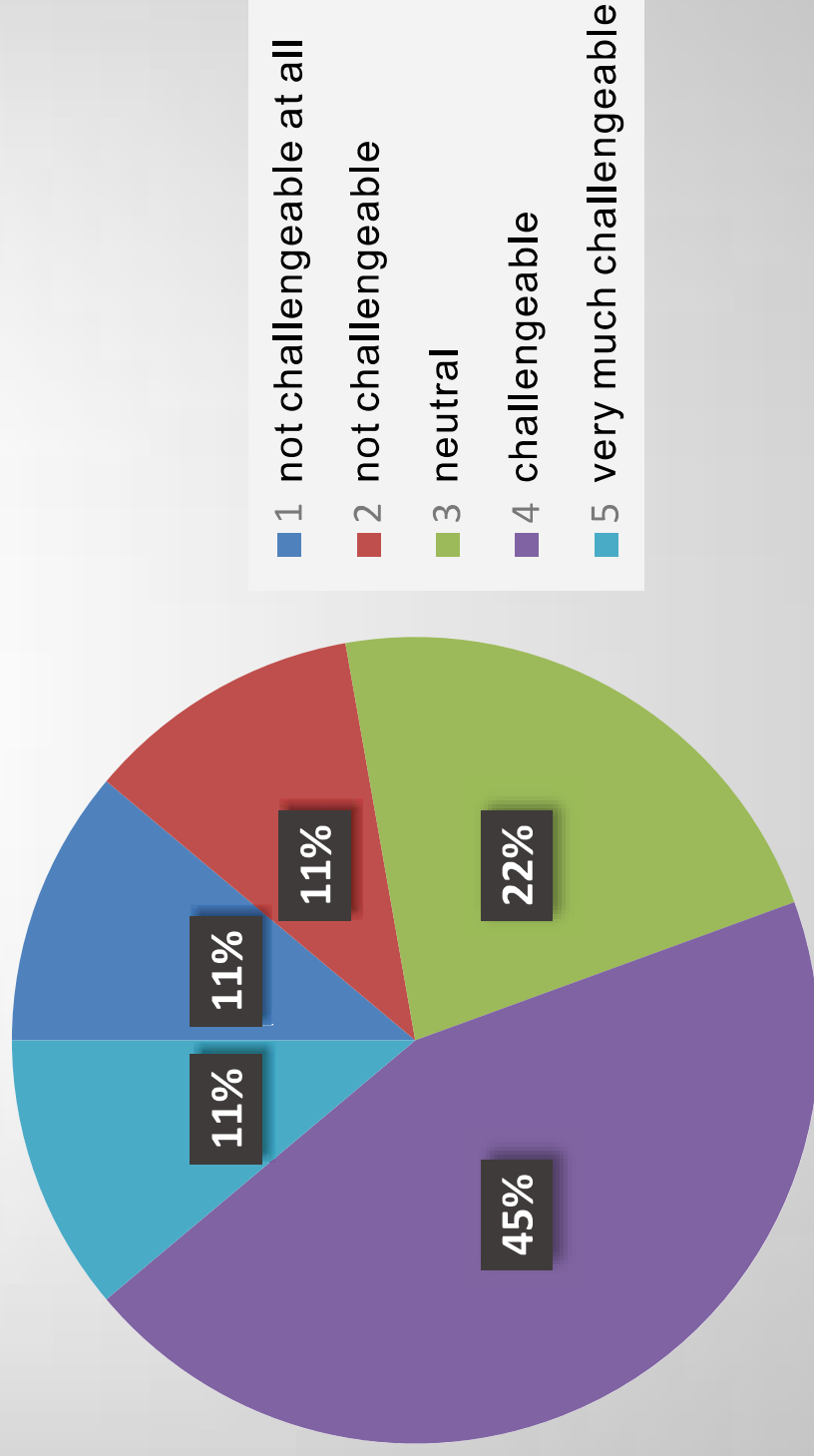


Figure 1-D. educational challenge: curriculum overload

Lack of patients

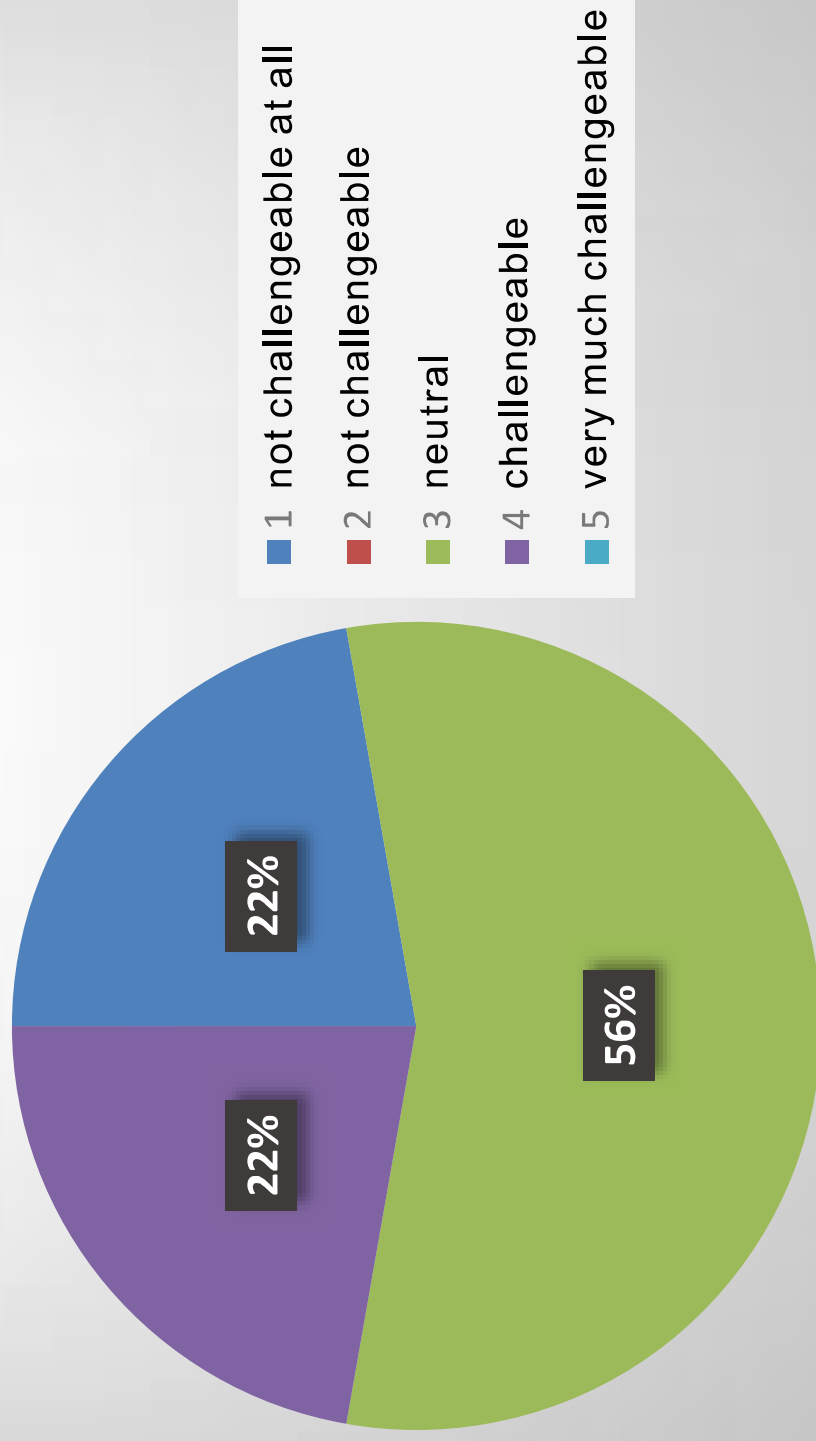


Figure 1-E. educational challenge: lack of patients

Oral disease prevention

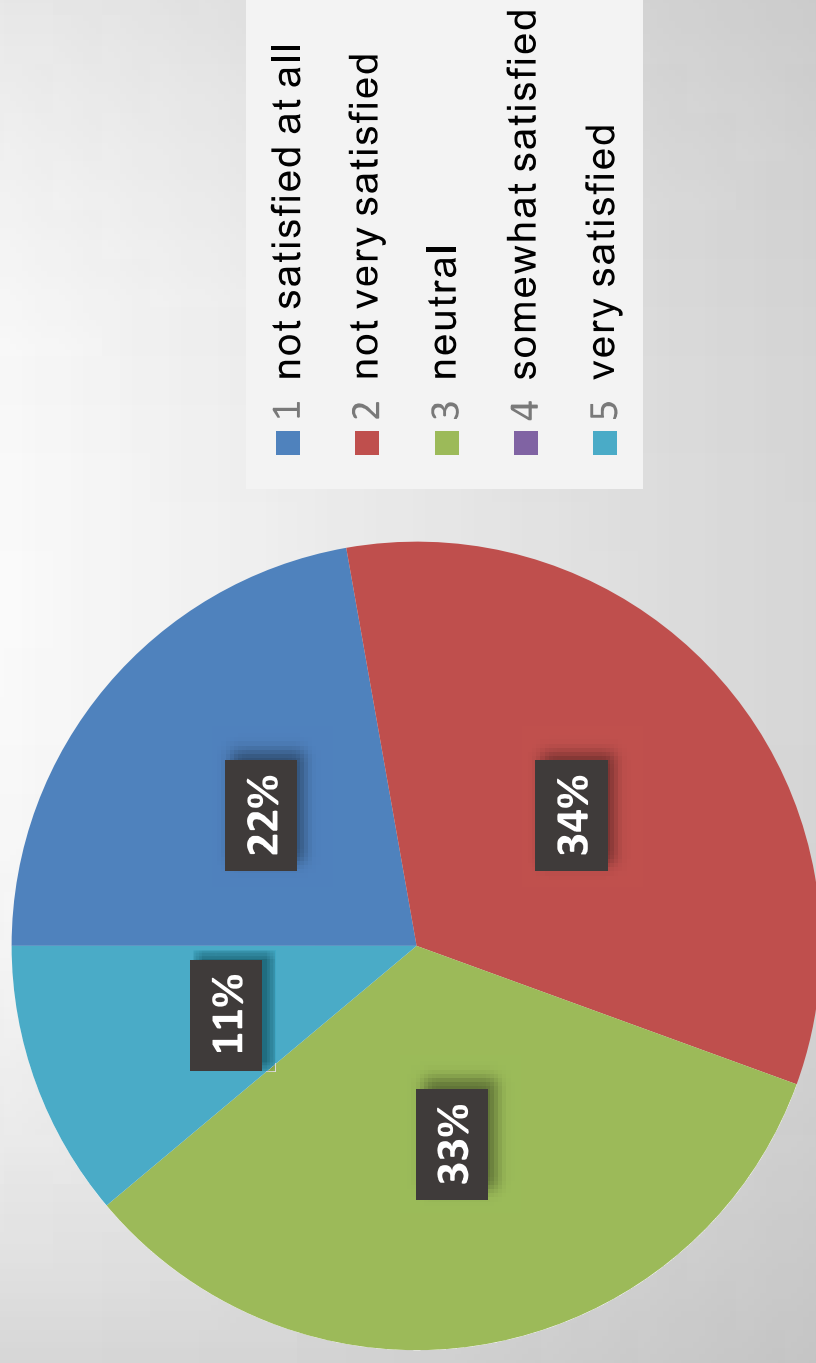


Figure 2-A. satisfaction: oral disease prevention

Enough educational resources

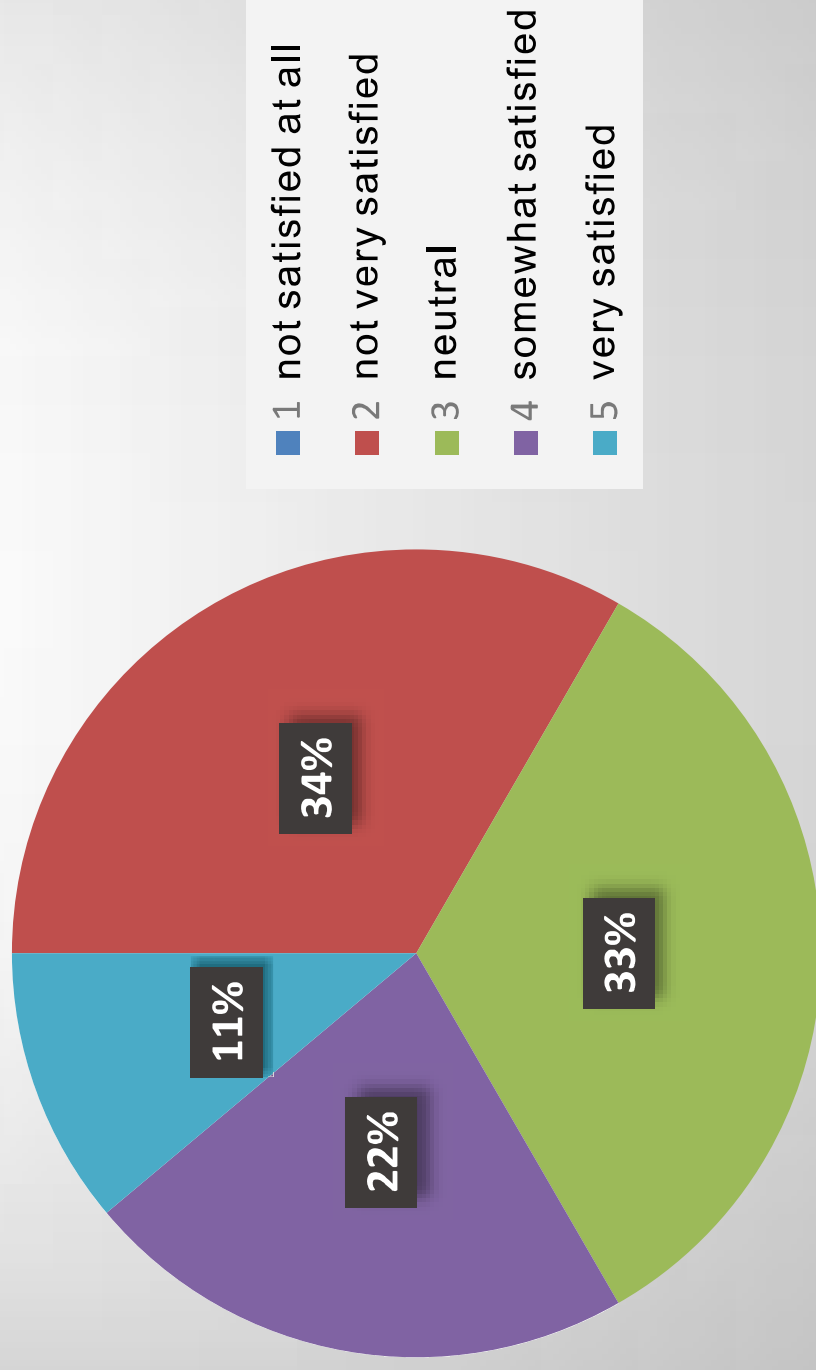


Figure 2-B. satisfaction: enough educational resources

Enough special needs clinic area

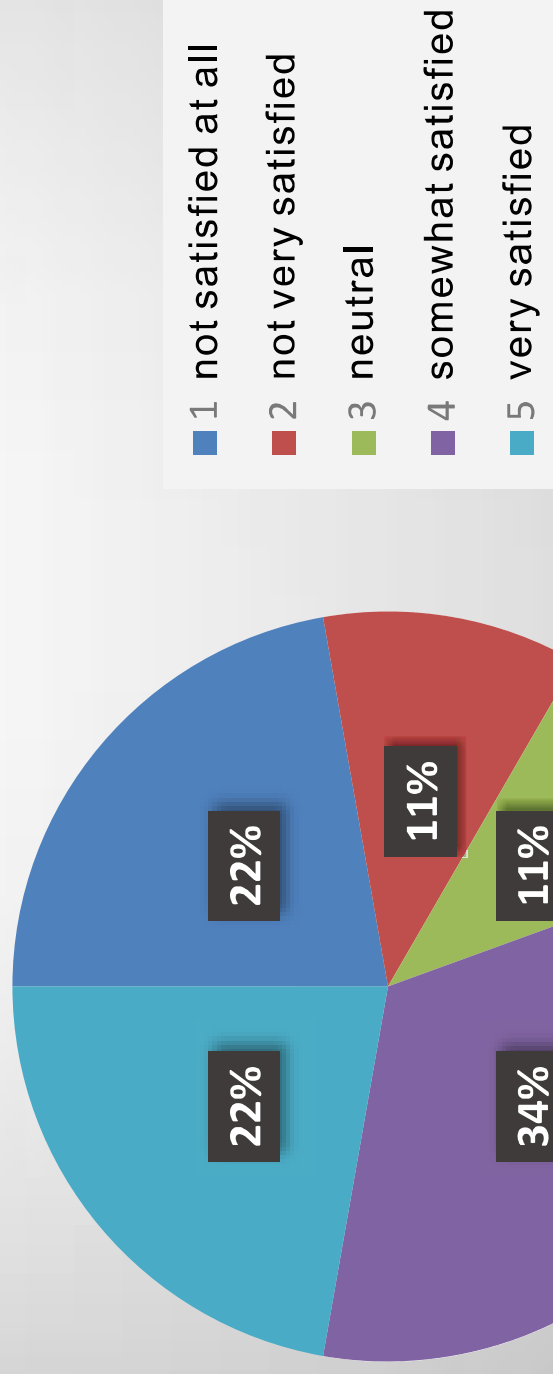


Figure 2-C. satisfaction: enough special needs clinic area

Enough patients

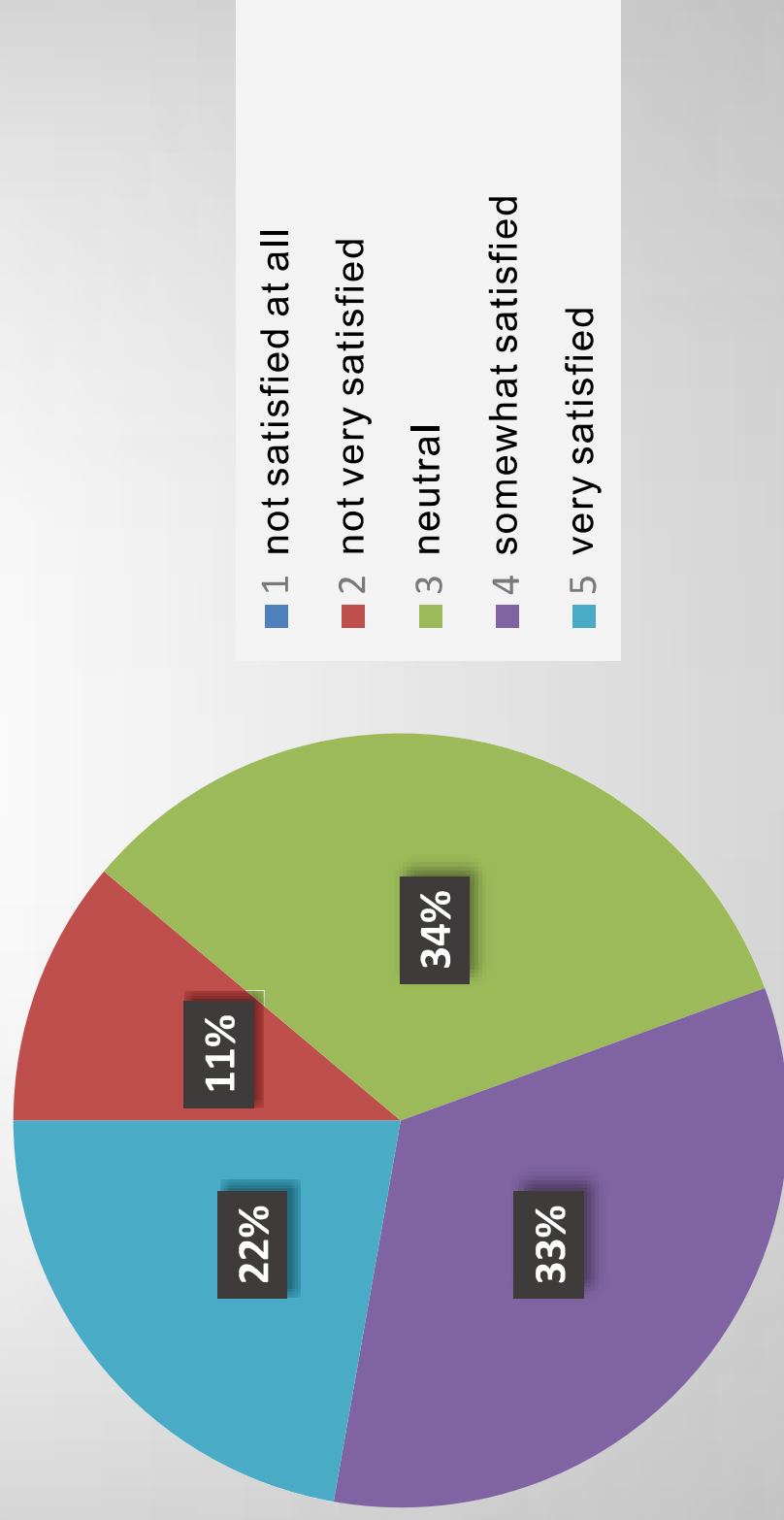


Figure 2-D. satisfaction: enough patients

Experienced and qualified faculties

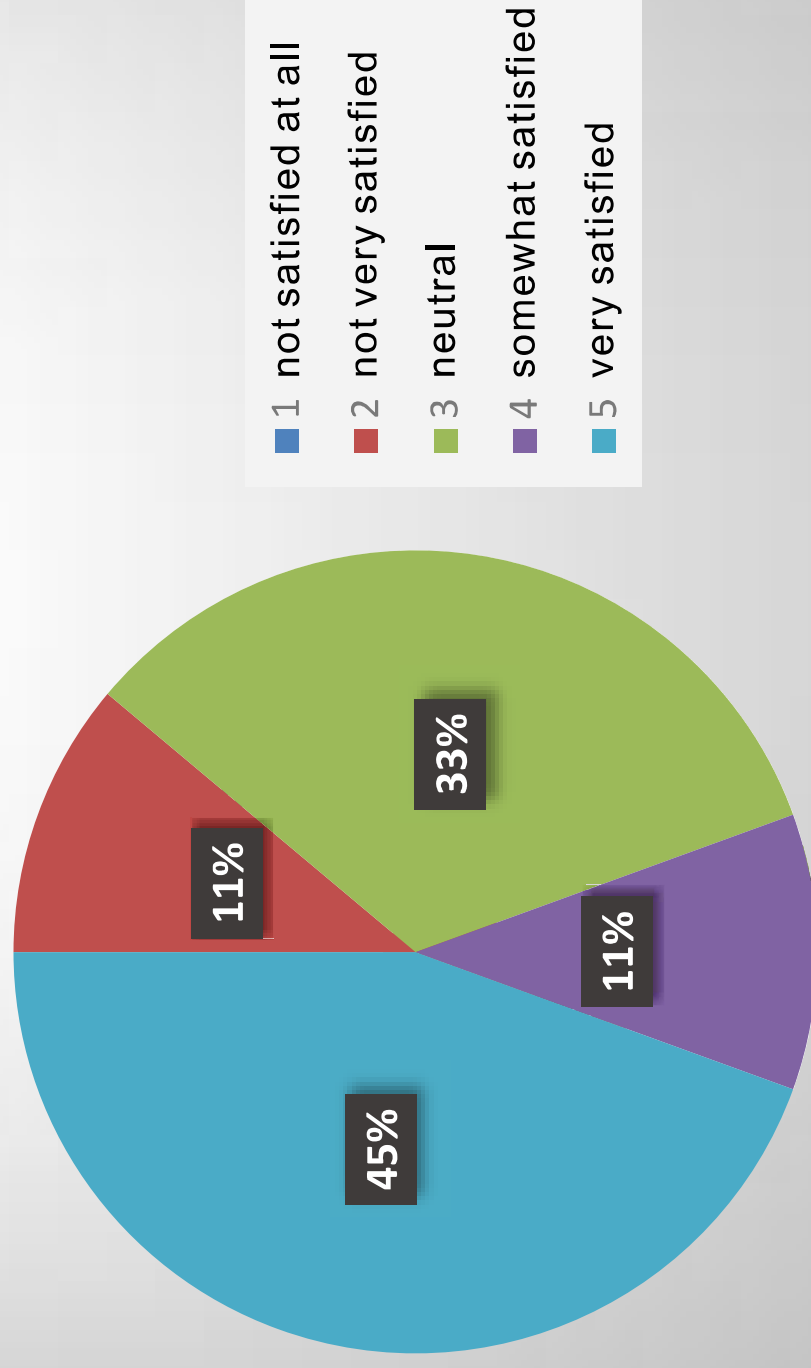


Figure 2-E. satisfaction: experienced and qualified faculties

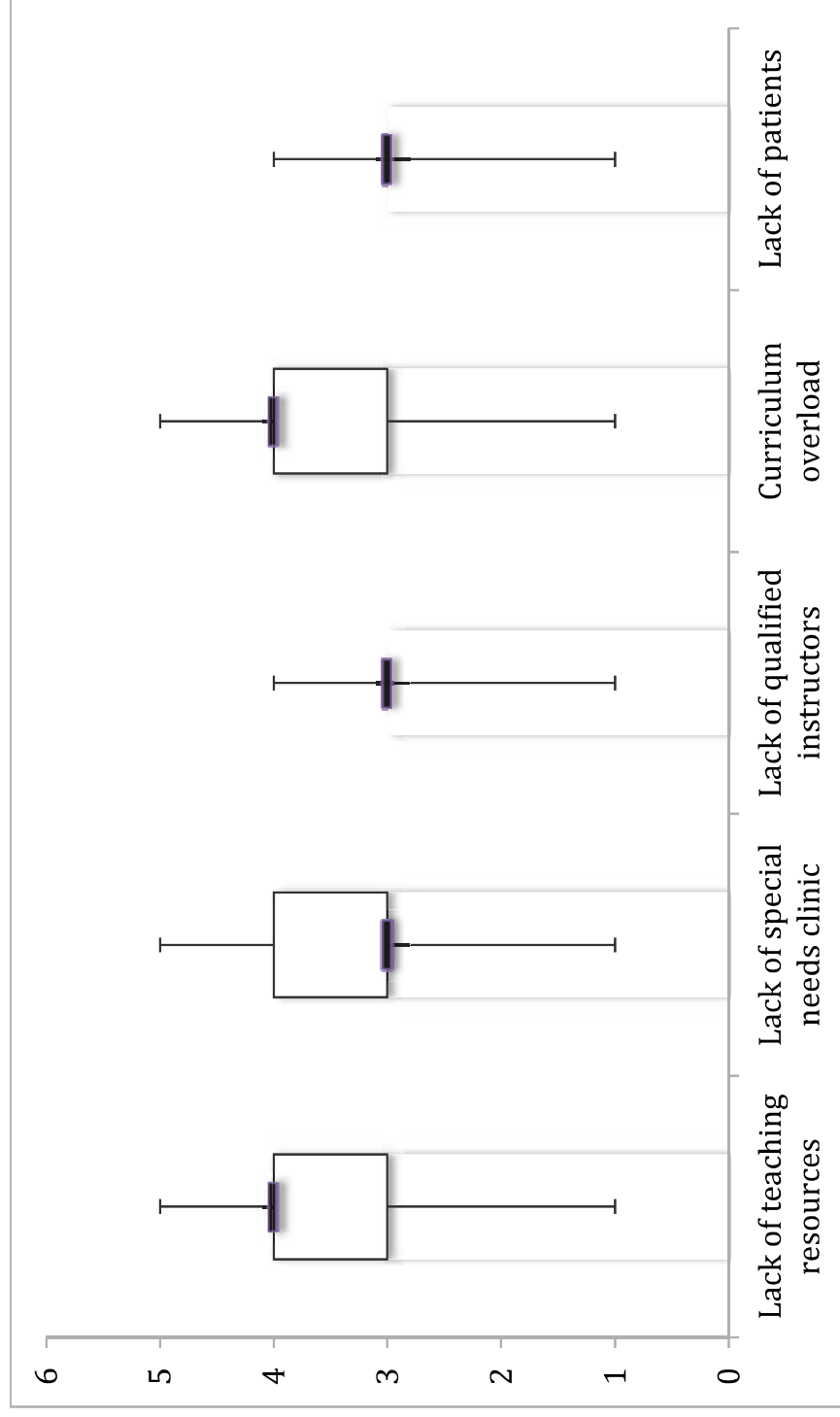


Figure3. box-and-whisker diagram of current educational challenges by educational administrators

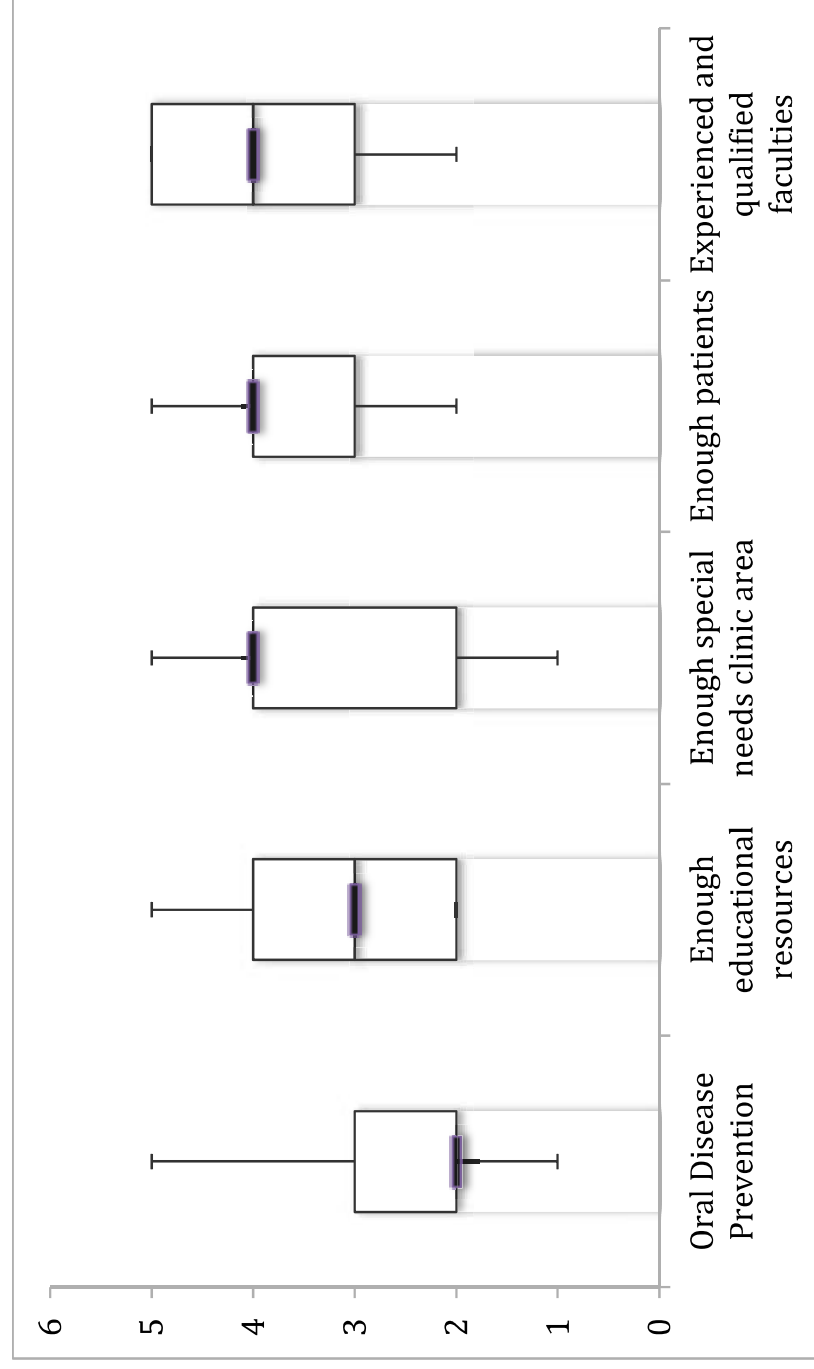


Figure 4. box-and-whisker diagram of satisfaction with educational efforts by educational administrators

장애인치과학 교육현황과 장애인구강진료센터에 대한 조사연구

서울대학교 대학원

치의과학과 소아치과학전공

문수경

본 연구의 목적은 치과대학생을 위한 장애인치과교육의 장(場)으로서 장애인구강진료센터가 기능할 수 있는지 가능성을 탐색하는 것이다. 환자 수와 진료기구 및 인력, 센터와 치과대학간 물리적 거리 등에 대한 현황파악 등 객관적 차원의 요소와 더불어 치과대학교수와 구강진료센터 의료진의 요구도 파악등 주관적 차원의 요소에 대한 조사가 필요하다.

전국치과대학 장애인치과학 담당교수 40명과 지역거점 장애인구강진료센터 의료진 58명을 대상으로 설문조사를 시행하였고 각각 9명과 56명의 답변을 분석, 객관적·주관적 가능성을 분석하여 다음과 같은 결론을 얻었다.

전국 치과대학의 장애인치과교육은 모든 치과대학 소아치과학강의에서 공통적으로 교육되었다. 전국 11곳의 치과대학중 6곳은 장애인치과학을 독립과목을 지정하여 교육하고 있었고, 장애인치과 임상교육은 6곳의 학교가 실시하고 있었으나 그 범위는 진료참관이나 진료보조등 이었다. 교육과정은 뇌병변장애 (100.0%)나 지적장애 (77.8%), 자폐성 장애 (77.8%)등을 더 높은 비중으로 교육하였고, 평가는 주로 객관식이나 주관식 시험 (87.5%)을 통하여 이루어졌다. 장애인치과 임상교육을 실시하는 학교에서도 교육은 하루미만 (37.5%)이거나, 하루나 이틀미만 (37.5%), 3-5일 (25.0%)이었다. 장애인치과교육에 있어서 어려운 점은 교육 자료의 부족과 교육할 시간 없음, 지도교수의 수 부족이었다.

지역거점 장애인구강진료센터는 8곳 모두 한 달에 200명 이상의 환자가 내원하였고, 그 중 대다수가 지체장애, 뇌병변장애, 정신장애, 지적장애, 자폐성장애 즉 치과적 장애인이었으며, 4곳은 치과대학교 치과대학병원 내에 위치하고 있었다. 센터의료진은 장애인구강진료센터가 학생들이 임상교육을 받을 수 있는 장소로 적합하다고 응답하였고, ‘장애인의 구강관리교육’과 ‘이동진료’에 적극적으로 참여할 수 있다고 답하였다. 하지만 직접 환자를 치료하는 것에는 회의적이라고 답하였고, 진료참관 (74.2%)이나 진료보조 (74.2%)등 덜 침습적인 임상교육을 선호하였다. 센터의료진은 치과대학생의 장애인진료에 대해 ‘장애인 환자 행동조절’ (83.9%)과 ‘보호자 동의 확보 어려움 (64.3%)을 난관으로 지적하였다. 장애인구강진료센터를 장애인진료 전문 치과의사 양성의 장으로 활용하는 방안에는 찬성의견을 나타내었다.

주요어: 장애인치과교육, 장애인 구강진료센터

학 번: 2015 - 22094