

DENTAL HYGIENE EDUCATION ABOUT PATIENTS WITH INTELLECTUAL AND  
DEVELOPMENTAL DISABILITIES: A SURVEY OF U.S. DENTAL HYGIENE  
PROGRAMS

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## **ABSTRACT**

Hannah Cheung: Dental Hygiene Education About Patients with Intellectual and Developmental Disabilities: A Survey of U.S. Dental Hygiene Programs  
(Under the direction of Jane A. Weintraub)

In 2019, the Commission on Dental Accreditation (CODA) changed its standard from “assessing treatment needs” to require “providing dental hygiene care” for dental hygiene students to obtain competency in the treatment of patients with special needs. The study’s purpose was to evaluate accredited U.S. dental hygiene programs’ preparation of their students treating patients with intellectual and developmental disabilities (IDD). A 25-item Qualtrics® survey was sent to 325 dental hygiene directors. Survey topics included curriculum content and structure, curriculum changes in response to new CODA standards, didactic and clinical experiences in treatment of patients with IDD. Descriptive statistics were calculated and comparisons were made using chi-square tests. The response rate was 29.5% (n=89/301 delivered surveys). Results indicated the need for improving program directors’ understanding of the new accreditation requirement and increasing some programs’ clinical education for dental hygiene students in treating patients with IDD.

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## LIST OF ABBREVIATIONS

AADMD	American Academy of Developmental Medicine and Dentistry
CODA	Commission on Dental Accreditation
COVID-19	Coronavirus Disease 2019
DD	Developmental Disabilities
DH	Dental Hygiene
IDD	Intellectual and Developmental Disabilities
NICHD	National Institute of Child Health and Human Development
US	United States



## **CHAPTER 1: INTRODUCTION AND REVIEW OF THE LITERATURE**

### **Introduction**

Intellectual and developmental disabilities (IDD) are a group of special needs disorders that typically originate at birth and negatively affect the course of an individual's physical, intellectual, and/or emotional development.<sup>1</sup> In the United States (U.S.), there are 7.38 million people who have an IDD, which is about 3% of the total population.<sup>2</sup> In the past 20 years since the Americans with Disabilities Act was passed, major improvements in accessibility have been made to support those with IDD.<sup>3</sup> However, there are still barriers that individuals with IDD face regarding accessing oral health providers for treatment.<sup>4</sup> These barriers often stem from inadequate training and education of oral health providers specific to treating patients with IDD.<sup>5</sup> In 2019, The Commission on Dental Accreditation (CODA) adopted a revised definition and new standards for special needs patients in dental hygiene curricula.<sup>6</sup> The definition changed to include students to "consider a wide range of assessment and care options" while Standard 2-12 changed from having graduates be competent in "assessing treatment needs" to ensuring that graduates are competent in "providing dental hygiene care" for patients with special needs.<sup>6,7</sup> With education standards changing to improve access to oral health providers, it is important that accredited dental hygiene programs adjust their curricula by providing students with the necessary education and experience to treat patients with IDD.

The purpose of this study was to evaluate the current accredited U.S. dental hygiene programs' education on treating patients with IDD. Programs were evaluated through their

response to CODA's new standards, current curriculum content and structure, and didactic and clinical experiences related to the treatment of patients with IDD.

## **Review of the Literature**

### **Intellectual and Developmental Disabilities**

Patients with IDD have largely been an underserved population in the U.S. Some people are born with a disability while others acquire a disability in their lifetime.<sup>8</sup> Defining disability has historically been a challenge due to different definitions used in federal agencies, national data systems, and international frameworks.<sup>8</sup> In 2003, there were at least 67 U.S. federal statutory definitions of what constitutes a disability.<sup>9</sup> The *Healthy People 2010* was the first to include a disability objective, which called for the use of a standard set of questions to identify individuals with disabilities in surveys.<sup>10</sup> This objective was met in 2011 when the Department of Health and Human Services established a set of standardized questions for data collection in public health surveys.<sup>11</sup>

### **Oral Health Barriers and IDD**

Over the past few decades, significant efforts have been made to provide health benefits to people with special needs to increase their overall quality of life. However, there still remains the existence of health inequalities between those with IDD and those without.<sup>12,13</sup> Even more alarming is the evidence that continually reports poorer oral health in those with IDD compared to those without IDD.<sup>14,15</sup> Evidence suggests that higher plaque indexes in populations with severe IDD can lead to increased rates and greater severity of periodontal disease and caries.<sup>14,16</sup> A 2010 systematic review from Anders & Davis found overwhelming evidence that people with intellectual disabilities have higher plaque levels than the general population. Unfortunately,

many of those with IDD are non-verbal or have difficulty in communicating dental pain discomfort, resulting in neglected or delayed dental care.

Multiple variables contribute to the challenges people with IDD face in receiving proper dental care. Factors can include financial, caregiver, and provider complications.<sup>17</sup> Additionally, the physical setting at the dental office can be overstimulating to patients with IDD who are sensitive to light and/or sound. Even if the environment is adjusted, provider deficiencies on treating patients with IDD still persists and remains a barrier to care. These barriers can ultimately result in oral health professionals providing subpar, deferred, or no treatment.<sup>18</sup>

### **Existing Dental Hygiene Curricula and Patients with IDD**

The American Academy of Developmental Medicine and Dentistry (AADMD) states that individuals with IDD regularly encounter challenges with finding clinicians that are adequately trained to treat them.<sup>19</sup> These have been attributed to the history of inadequate specialized education and training for both dental and dental hygiene students.<sup>18</sup> A 2009 study found that 53% of U.S dental school deans surveyed stated that their graduates were not competent to treat patients with IDD at the time of graduation.<sup>20</sup>

A 2008 national survey of dental hygiene directors from accredited U.S. programs found that less than half (42%) of the programs surveyed required their students to treat patients with special needs while 56.7% of the programs had no such requirement for their students to graduate.<sup>21</sup> In the same study, 57% of the programs surveyed reported no clinical experience for treating patients with special needs. Those surveyed included both community college and university programs, which may provide differing responses in the level of didactic and clinical training for their students in treating patients with IDD. The opportunity for clinical treatment of

patients with special needs is likely less for DH programs who are not within a dental school and even less if the dental school doesn't have a dedicated special care clinic or center.<sup>22</sup>

While there have been several studies regarding educational models and attitudes of dental students in treating patients with IDD, there have been fewer studies examining educational models for dental hygiene students.<sup>21,23-25,30</sup> With CODA's latest adoption and implementation of new terms and standards of special needs, it will be imperative to study how program directors around the U.S. will respond and if their curricula will change as a result of the updated accreditation standards.

### **Specific Aims**

The specific aims of the study were to evaluate the current accredited U.S. dental hygiene programs' education on treating patients with IDD by:

1. Assessing how DH programs have changed their curriculum in response to CODA's new accreditation standards.
2. Assessing current curriculum structure and content.
3. Examining how didactic and clinical IDD experiences are provided to students.

## **CHAPTER II: DENTAL HYGIENE CURRICULA: TREATING PATIENTS WITH INTELLECTUAL AND DEVELOPMENTAL DISABILITIES**

### **Introduction**

Intellectual and developmental disabilities (IDD) are a group of special needs disorders that typically originate at birth and negatively affect the course of an individual's physical, intellectual, and/or emotional development.<sup>1</sup> In the United States (U.S.), there are 7.38 million people who have an IDD, which is about 3% of the total population.<sup>2</sup> Despite the passage of the Americans with Disabilities Act over 20 years ago, individuals with IDD still face barriers with accessing oral health providers for treatment. Recent changes to the Commission on Dental Accreditation (CODA) standards called for a revised definition and Standard 2-12 specifically for patients with special needs.<sup>6</sup> These changes resulted in a more comprehensive definition for students to consider a wide range of assessment and care options for patients with special needs, including those with IDD, and an update to Standard 2-12, which requires graduates to be competent with dental hygiene treatment for patients with special needs. The previous standard only required students to be competent in assessment rather than treatment.<sup>7</sup> With education standards changing, it is important that accredited dental hygiene programs adjust their curricula by providing students with the necessary education and experience to treat patients with IDD. The purpose of this study was to evaluate the current accredited U.S. dental hygiene programs' education on treating patients with IDD.

## **Background**

The *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (NICHD) defines intellectual and developmental disabilities as “disorders that are usually present at birth and that negatively affect the trajectory of the individual’s physical, intellectual, and/or emotional development.”<sup>1</sup> Many of these disorders affect multiple areas of the body and/or systems. IDD can be categorized into developmental disability and intellectual disability components. Often, the term developmental disabilities are used as a broad category that encompasses intellectual disabilities.<sup>1</sup> For the purpose of this research, both components will be studied, and IDD will be used to discuss disorders in which both intellectual and developmental disabilities are present. Examples of IDD may include Autism Spectrum Disorder, Cerebral Palsy, Down Syndrome, developmental delays, Fragile X Syndrome, brain injuries, and Fetal Alcohol Spectrum Disorders.<sup>1</sup>

Using the 2014-2016 data from the National Health Interview Survey, researchers found that the prevalence of children who had ever been diagnosed with a developmental disability (DD) increased from 5.76% in 2014 to 6.99% in 2016, showing an upward trend in the number of diagnosed individuals with a DD in the United States.<sup>26</sup> According to data presented during a Public Health Grand Rounds session from the Center for Disease Control and Prevention, approximately 6.5 million in the United States have an intellectual disability, which includes but is not limited to Autism Spectrum Disorder and Cerebral Palsy.<sup>27</sup>

Over the past few decades, significant efforts have been made to provide health benefits to people with special needs to increase their overall quality of life. Individuals with specialized needs include those who may have any physical, developmental, or cognitive limitation or impairment that requires medical management.<sup>28</sup> However, poor oral health continues to be an

issue for those with IDD.<sup>14,16</sup> In 2005, the Surgeon General, Dr. Richard Carmona, identified gaps in training and education of health care providers as a major issue contributing to inadequate access to care for those with disabilities.<sup>29</sup> In his Call to Action, he proposed strategies to improve the health and wellness of individuals with disabilities, which include ongoing efforts to promote education and training for health care professionals and promoting a uniform definition of the term “disability.” In 2008, researchers from the University of Michigan School of Dentistry sent surveys to 240 accredited DH programs in the U.S. on their student education of treating patients with special needs. With a response rate of 49% (n=102/210 programs), the authors found that only 42% (n=43/102) of DH programs in the U.S. required students to gain clinical experiences for patients with special needs while 56.9% of surveyed programs did not have this requirement. Of their respondents, 29.4% supported an increase in student clinical experiences for treating patients with special needs.<sup>21</sup>

In July 2019, the Commission on Dental Accreditation (CODA) adopted a revised definition of terms and set of standards (2-12) for patients with special needs for Dental Hygiene Curricula which were implemented in July 2020.<sup>6</sup> Specifically, the definition of terms for special needs was changed from students having to “modify normal dental routines” to now needing to “consider a wide range of assessment and care options.” Additionally, the language for Standard 2-12 was changed from “assessing the treatment needs” to “providing dental hygiene care” for student competency in the treatment of patients with special needs.<sup>6,30</sup> The adoption of new language in the definition and standard provides a more inclusive approach to caring for patients with special needs, including those with IDD. As a result of these changes, accredited dental hygiene programs across the U.S. should be revising their curricula to include more didactic and clinical student experiences in treating individuals with IDD. This study evaluated the current

state of dental hygiene curricula as it responds to accreditation changes by identifying how programs are educating their students on the treatment of patients with IDD.

## **Methods**

### *Research Design*

This study employed a mixed methods study design using a Qualtrics® survey evaluating accredited dental hygiene programs in the U.S. Quantitative data was obtained through participants selecting specific responses, and qualitative data was obtained through open-ended responses in the survey questionnaire.

### *Data Collection*

The study target population consisted of 325 dental hygiene program directors from all accredited dental hygiene programs in the U.S. Directors were identified through CODA's website, which displayed the names of each program director. Email addresses were subsequently searched electronically by program website in order to send the Qualtrics® survey.

For participants to meet the inclusion criteria, they were required to be dental hygiene program directors at an accredited dental hygiene program in the U.S. Exclusion criteria consisted of non-program directors, directors from non-accredited dental hygiene program in the U.S., and individuals with inactive or unretrievable email address.

The survey was pilot tested by past dental hygiene directors from various types of programs. These past directors were asked if any of the questions or response options needed clarification and if any questions should be added or deleted. Participants in the pilot test were also asked to provide the time it took to complete the questionnaire and any additional feedback in order to strengthen the survey design prior to being disseminated to current program directors.



The information and feedback obtained from the pilot test were not included in the study data but were used in improving the original survey design.

The final survey consisted of 25 questions with a mix of close-ended and open-ended questions, with an estimated 15 minutes for participant completion. Survey topics included the following domains: demographic questions, curriculum content and structure, curriculum changes in response to new CODA standards, and didactic and clinical experiences regarding treatment. Question format consisted of multiple choice, fill in the blank, and Likert scale-type questions. Additionally, some questions in this survey were based on prior questions used in the 2008 Dehaitem study in order to observe similarities or differences in results.<sup>21</sup> From the list of program directors available on CODA's website, 307 emails were obtained through a search on corresponding DH program websites and surveys were sent in June 2020. Only 301 surveys were successfully delivered through Qualtrics®. Two reminder emails were sent following the initial distribution: one in July 2020 and the second reminder was sent in September 2020. Figure 1 depicts a flow chart of the timeline of data collection with inclusion criteria, exclusion criteria, and the dates of when the initial and reminder emails were sent.

### *Data Analysis*

Univariate and bivariate analyses were performed using the software SAS 9.4 (SAS Institute Inc., Cary, NC, USA). Chi-square tests were performed on variables of interest to compare curriculum and program structure to CODA understanding. Alpha level was set at  $p=0.05$ .

### *Ethical Considerations*

This study was reviewed by the University of North Carolina at Chapel Hill Office of Human Research Ethics and was determined to be exempt (IRB# 20-0445).

## Results

The response rate was 29.5% with 89 out of 301 surveys fully or partially completed at the end of the data collection period. Most participants were program directors at their institution for a duration of 1-5 years (47.4%). The most common institution their program was housed in was in a community or junior college (44.7%). Survey results showed that nearly all respondents (98.9%) reported that their students received some education on treating patients with IDD.

Over half (59.5%) of directors reported that they completely understood the new CODA updates for patients with special needs. When asked if the CODA updates influenced a change in the curriculum for their program, 59.5% (n=50) reported no changes. Additionally, 26.2% (n=22) of directors stated that curriculum changes were already implemented, and 14.3% (n=12) stated that changes were in progress at the time of the survey.

Table 1 illustrates the comparison of curriculum change and requirement by DH program directors' extent of CODA understanding. For CODA understanding, there were two categories: those that "completely understood" the changes and others, which were defined as those who responded in the categories of "I do not understand at all," "I somewhat understand," and "I mostly understand." When comparing the group who completely understood versus the others, there was no significant difference in implementing curriculum changes in response to new CODA guidelines ( $p=0.21$ ) and in the student treatment of at least 1 patient with IDD ( $p=0.38$ ). More than two-thirds, 69.7% (n=53), of participants reported that students are required to provide clinical care for patients with IDD. When comparing the group who completely understood versus the others, there was a positive significant association in CODA understanding and program requiring clinical care ( $p=0.02$ ).

Table 2 illustrates the comparison of curriculum change in response to CODA by student clinical experience requirement of treating patients with IDD. Even with new CODA guidelines that are aimed to improve student competence in treating patients with special needs, 30.3% (n=23) of respondents still did not require students to provide clinical care for patients specifically with IDD. Results showed that there was no significant difference ( $p=0.51$ ) with requiring student clinical experience and curriculum changes.

More than two-thirds, 73.7% (n=56), of directors reported that each student provided care for at least one patient. Table 3 shows the frequency distribution of program requirement by student clinical treatment of at least one patient with IDD. There was a positive significant association ( $p<0.001$ ) in program requirement and student treatment of patients with IDD. Figure 2 shows that of the 73.7% (n=56) who reported student treatment of at least 1 patient with IDD, 80.4% indicated that their students have 1-5 such experiences, a relatively low number.

## **Discussion**

As dental hygiene students graduate and begin their careers as clinicians, it is crucial that they are well-trained and competent in handling the complexities of treating patients with IDD that have specialized needs in an array of settings. The updated CODA standards in 2019 called for students to be competent in *providing* dental hygiene care as opposed to *assessing* treatment needs of special needs populations.<sup>6,7</sup> In this revision, the ultimate goal is to have more properly trained clinicians who are more confident and willing to provide the necessary dental care for patients with different forms of special needs. This study aimed to evaluate the current accredited U.S. dental hygiene programs' education on treating patients with IDD by assessing program response to CODA's new changes, curriculum structure and content, and the provision of didactic and clinical IDD patient experiences for students.

Even though 60% of program directors understood the new CODA changes, almost 60% of respondents still stated that the new changes did not influence any curriculum change. Furthermore, about 30% of directors reported that they still didn't require students to provide clinical care specifically for patients with IDD even though the majority (99%) indicated that students receive some education on this material. These findings draw some similarities to the 2008 study, where authors reported that 57% of DH programs did not require students to gain clinical experience with patients that have special needs while nearly 98% of their respondents educated students about patients with special needs in the classroom.<sup>21</sup> Research shows that while didactic education on treating patients with special needs, including those with IDD, are present in almost all accredited dental and dental hygiene programs, clinical education in the form of patient experiences is harder to achieve due to various barriers.<sup>21,30</sup>

Survey results showed that directors reported the largest barrier to the students' education on treating patients with IDD was a lack of patients available in clinics. This result differs from the 2008 Dehaitem study, where they cited "curriculum overload" as the largest challenge to the education of students about the treatment of patients with special needs. The 2008 study reported challenges with broad special needs education while our study focused specifically on curricula as it pertains to patients with IDD.<sup>21</sup> The clinical site can also be identified as a challenge for students to treat patients with IDD. Dental hygiene students are beginner and novice learners that have longer clinical treatment times compared to practicing clinicians. With these extended appointment hours, there may be patients with IDD or caregivers of those with IDD that do not want long appointment times because it may bring additional stressors. While there are 325 accredited DH programs in the U.S., there are few that are housed inside dental schools and even fewer programs who have direct access to special care clinics within the school. The limitation of

these settings does not afford many opportunities for the provision of student clinical experiences.<sup>31</sup>

Physical barriers may also reflect a problem with patient accessibility of dental hygiene clinical facilities. Two studies reported physical challenges of dental buildings that limited the access of patients with disabilities.<sup>32,33</sup> Other perceived barriers to take into consideration for the lack of patients available in dental hygiene clinics would be transportation accessibility, cost of services, and availability of dental services in the location.

There were limitations identified in this study. The first is the relatively low response rate (29.5%) of the web-based survey. The survey was initially sent out in June 2020 during the Coronavirus Disease 2019 (COVID-19) pandemic. June is typically a time used to plan for the next academic year. However, in 2020, faculty were likely occupied in preparing for an alternative return to student education. The challenges of pivoting in-person education to hybrid and online education were also present during the height of the COVID-19 pandemic. While it is unclear if this directly caused a lower response rate, it could have contributed to program directors choosing not to respond to the survey in lieu of program planning. However, research shows that response rates for web-based surveys still tend to be lower than that of mailed questionnaires.<sup>34</sup> A larger sample size would have allowed for more sophisticated statistical analyses to better predict program content and structure regarding treating patients with IDD. Another limitation to consider in the study are the inclusion of partially completed surveys. This led to areas of missing data for some survey questions, which had to be adjusted for in the data analysis. Response bias from program directors could have possibly affected survey data as directors may provide misleading answers in order to deliver responses that are socially acceptable.

To this date, there have been few studies that focus on DH curricula and patients with special needs, and there are even fewer that examine DH experiences for patients with IDD. Since this study was conducted soon after the new CODA updates, a factor to consider is that programs have not started to implement programmatic changes for accreditation. Future studies should examine the long-term effects of the CODA change and compare the results to this study to provide a clearer understanding of whether the update truly influenced a change. Additional studies on dental hygiene students' experiences should also be conducted to gauge their self-reported confidence and competence in providing care for patients with IDD after graduation.

### **Conclusion**

This study investigated the current dental hygiene program content and structure after the implementation of updated CODA guidelines calling for improvements in student competence in treating patients with special needs. Even with new standards in place, there is still a lack of educational clinical experiences available to dental hygiene students specifically in treating patients with IDD. Recommendations to increase program directors' understanding of the new accreditation requirements and clinical education for dental hygiene students in treating patients with IDD are still needed to improve the access and quality of care to this population. Further research is required to determine the long-term outcomes of this recent CODA change and to identify additional areas of improvement in dental hygiene curricula.

## APPENDIX A: TABLES AND FIGURES OF DATA FINDINGS

**Table 1.** Comparisons of curriculum change and requirement by DH program directors' extent of CODA understanding

Curriculum Change and Requirement	CODA Understanding				Chi-square tests of independence		
	Completely Understand		Others <sup>1</sup>				
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	df <sup>2</sup>	Value (X <sup>2</sup> )	Probability (p)
<b>Program Requirement</b>							
Yes	38	50.0%	15	19.7%	1	5.49	p=0.02
No	10	13.2%	13	17.1%			
<b>Curriculum Change</b>							
Yes	23	27.4%	11	13.1%	1	1.56	p=0.21
No	27	32.1%	23	27.4%			
<b>Treatment Requirement (≥ 1 patient)</b>							
Yes	37	48.7%	19	25.0%	1	0.78	p=0.38
No	11	14.5%	9	11.8%			

<sup>1</sup>Others is defined as those who responded in these categories: I do not understand at all; I somewhat understand; I mostly understand. <sup>2</sup>df= degrees of freedom

**Table 2.** Frequency distribution of curriculum change status by program requirement for treating patients with IDD

Curriculum Change	Program Requirement						
	Yes		No		Chi-square tests of independence		
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	df <sup>1</sup>	Value (X <sup>2</sup> )	Probability (p)
<b>Yes</b>	21	27.6%	11	14.5%	1	0.44	p=0.51
<b>No</b>	32	42.1%	12	15.8%			

<sup>1</sup>df= degrees of freedom

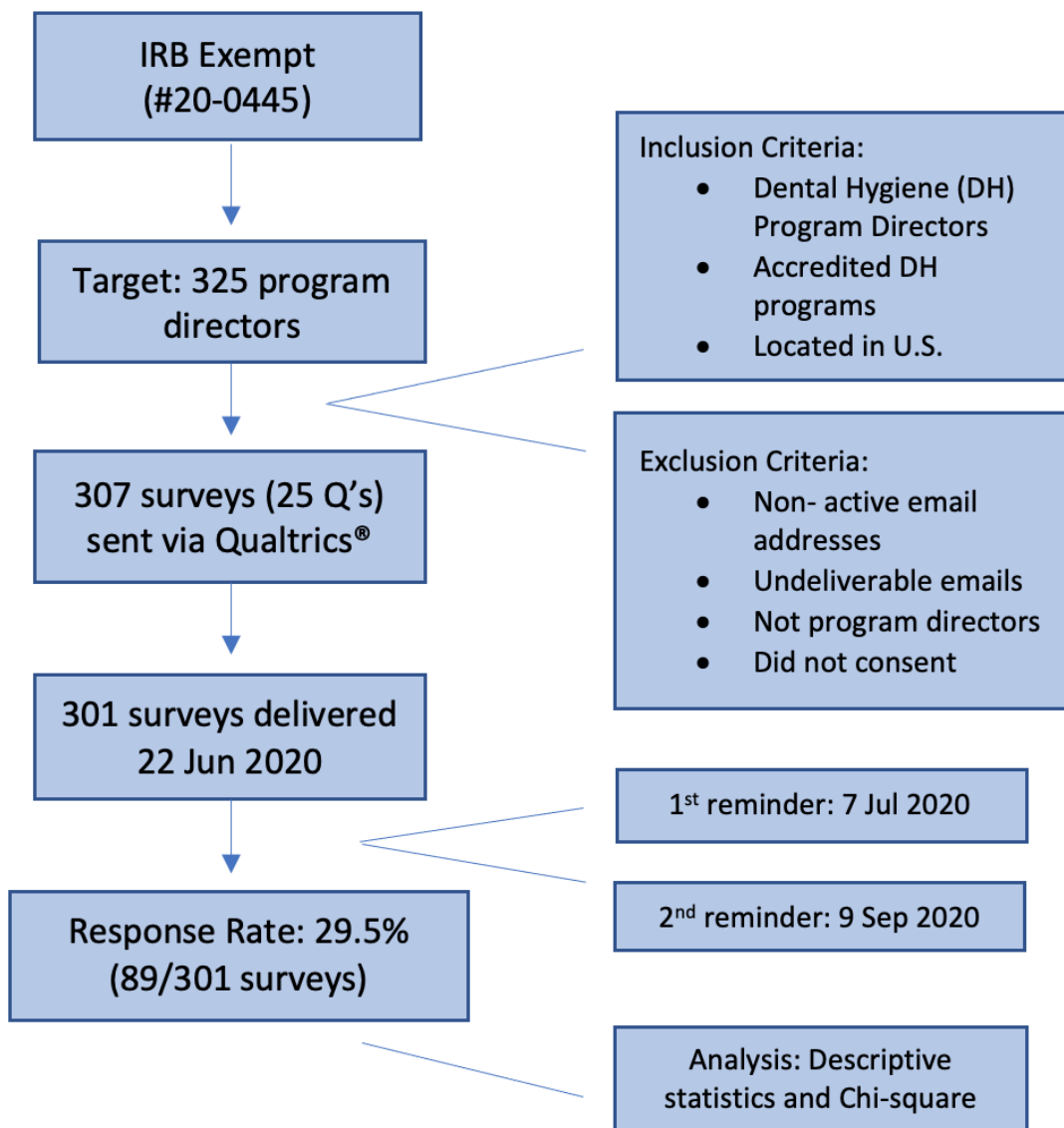


**Table 3.** Frequency distribution of program requirement for treating patients with IDD by student requirement for treating at least one patient with IDD

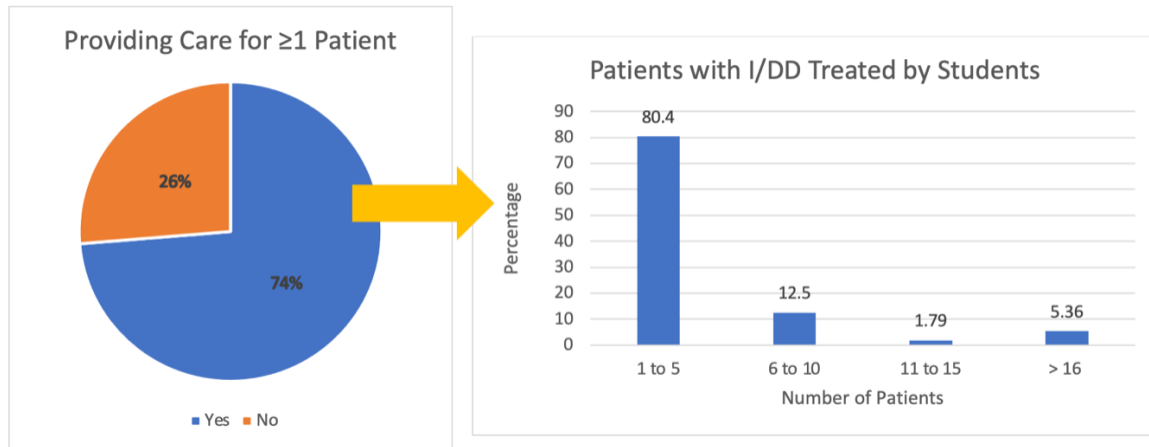
Program Requirement	Treatment of at least 1 patient with IDD						
	Yes		No		Chi-square tests of independence		
	Frequency (n)	Percent (%)	Frequency (n)	Percent (%)	df <sup>1</sup>	Value (X <sup>2</sup> )	Probability (p)
<b>Yes</b>	49	64.5%	4	5.3%	1	31.82	p<0.0001
<b>No</b>	7	9.2%	16	21.1%			

<sup>1</sup>df= degrees of freedom

**Figure 1.** Flow chart of methods for data collection



**Figure 2.** Percentage of students who provide care for at least one patient with IDD in the program and distribution of the number of such patient experiences



## **APPENDIX B: CONSENT LANGUAGE AND QUALTRICS® SURVEY**

### **DH Program Director Survey**

**University of North Carolina at Chapel Hill**

**IRB Study #: 20-0445**

**Principal Investigator: Hannah Cheung**

The purpose of this study is to evaluate how accredited dental hygiene programs in the United States educate their students about treating patients with intellectual and developmental disabilities (IDD) such as autism, behavior disorders, brain injuries, cerebral palsy, Down syndrome, and spina bifida. This research project is being conducted by Ms. Hannah Cheung, Dr. Jessica Lee, Dr. Jane Weintraub, and Prof. Rebecca Wilder at the University of North Carolina at Chapel Hill Adams School of Dentistry. Your participation in this research study is voluntary.

You are being asked to participate in this survey because you are a program director of an accredited dental hygiene program in the United States. All dental hygiene directors from accredited programs are being asked to participate in the survey. Your responses will be confidential and reported in aggregate form.

Participating in a research study is completely voluntary. You may choose not to participate. If you decide to participate, you have the option to withdraw at any time. If you decide not to participate in this study or wish to withdraw at any time, you will not be penalized.

If you agree to take part in this research, you will be asked to complete a 25-question survey that will ask questions regarding your program's current curriculum of educational experiences that students receive on treating patients with IDD. Completion of this survey will take about 15 minutes.

The possible risks for taking part in this research are:

- Having someone else find out that you were in a research study
- Potential loss of confidentiality of data

The possible benefits for taking part in this research are:

- Understand the current status of dental hygiene education as it pertains to the treatment of patients with IDD
- Improved dental hygiene students' knowledge and treatment of patients with IDD

To protect your identity as a research subject, we will not share any survey responses by any party outside the investigating team. Responses will remain confidential by: 1) limiting access to

information, 2) by storing research data on an encrypted hard drive, 3) and by encrypting laptops that have access to the data. Additionally, IP addresses will be removed from the Excel file, data will be reported in aggregate form, and any hard copies of the survey results will be kept in a locked drawer. Neither you nor your program's identity will be identified in any report or publication about this research.

If you have any questions about this research, please contact the Principal Investigator, Hannah Cheung by emailing [hjcheung@email.unc.edu](mailto:hjcheung@email.unc.edu). If you have questions or concerns about your rights as a research subject, you may contact the UNC Institutional Review Board at 919-966-3113 or by email to [IRB\\_subjects@unc.edu](mailto:IRB_subjects@unc.edu). This research has been reviewed by the UNC IRB and determined to be exempt from federal human subjects' research regulations (IRB#20-0445).

**I have read this informed consent document. I understand each part of the document, and I am voluntarily choosing to participate in this study. By checking yes, I will be giving consent to participate.**

- **Yes, I consent**
- **No, I do not consent**

### **Background Information**

1. Do your dental hygiene students receive any education about treating patients with intellectual and developmental disabilities (IDD)?
  - a) Yes
  - b) No

**If yes, please continue with the survey. If no, please indicate and submit the survey. Thank you for your participation.**

In August 2019, the Commission on Dental Accreditation (CODA) adopted a revision to the Definition of Special Needs and to Standard 2-12. The definition now states that graduates should consider a wide range of assessment and care options for people with cognitive and/or developmental disabilities. Standard 2-12 has changed to indicate that graduates must be competent in providing dental hygiene care for special needs populations.

2. To what extent do you understand CODA's new accreditation standards for competence in care of patients with IDD?
  - a) I do not understand at all
  - b) I somewhat understand
  - c) I mostly understand
  - d) I completely understand

3. Has the new CODA accreditation standards for patients with patients with IDD influenced a curriculum change in your program?
  - a) Yes, change is implemented
  - b) Yes, change is in progress
  - c) No
  
4. When do your dental hygiene students receive education about treating patients with IDD? **Select all the apply**
  - a) First half of DH1 year
  - b) Second half of DH1 year
  - c) Summer between DH1 and DH2
  - d) First half of DH2 year
  - e) Second half of DH2 year
  - f) Other (please specify)
  
5. What is the professional training of the instructor(s) who teach DH students about treatment for patients with IDD? **Select all that apply**
  - a) Dental Hygienist
  - b) Dental Hygienist with training in the treatment of patients with special needs
  - c) Dentist with training in the treatment of patients with special needs
  - d) General Dentist (without special training)
  - e) Pediatric Dentist
  - f) Geriatric Dentist
  - g) Special Needs Teacher
  - h) Behavioral Scientist
  - i) Oral and Maxillofacial Surgeon
  - j) Nurse
  - k) Physician
  - l) Interprofessional team
  - m) Other (Please specify: )

### **Curriculum**

6. In each of the following didactic and clinical settings, how many total hours are spent on learning how to care for patients with IDD?
  - a) Classroom setting \_\_\_\_\_
  - b) Internal clinical setting \_\_\_\_\_
  - c) External clinical and/or community settings \_\_\_\_\_

7. In your curriculum, which *dental needs* are addressed through **didactic** education about the treatment of patients with IDD? **Select all that apply**
- a) Oral manifestations associated with a disability
  - b) Caries
  - c) Gingivitis
  - d) Periodontal disease
  - e) Plaque level
  - f) Oral hygiene
  - g) Malocclusion
  - h) Tooth development
  - i) Other (please specify: )
8. In your curriculum, which **clinical** aspects are taught regarding treating patients with IDD? **Select all the apply**
- a) Patient communication
  - b) Oral hygiene instruction
  - c) Behavioral management
  - d) Appointment scheduling
  - e) Barrier free environment
  - f) Oral disease prevention
  - g) Oral manifestations
  - h) Patient and/or caregiver instructions
  - i) Assessment and documentation of physical limitations
  - j) Assessment and documentation of cognitive limitations
  - k) Appropriate need for interprofessional consultations and/or referrals
  - l) Nutritional counselling
  - m) Wheelchair transfers
  - n) Fluoride application
  - o) Legal issues
  - p) Ethical issues
  - q) Other (please specify: )
9. Which of the following barriers are taught in relation to limiting access to care for patients with IDD? **Select all the apply**
- a) Financial barriers
  - b) Behavioral barriers
  - c) Parent and/or caregiver barriers
  - d) barriers
  - e) Legal barriers
  - f) Access to care barriers

g) Other (please specify: )

10. How does the program assess student competence of care for patients with IDD? **Select all that apply**

- a) Objective Structured Clinical Examinations (OSCE)
- b) Written exams
- c) Clinical competencies
- d) Student analysis of case studies
- e) Standardized patient interactions
- f) Other (Please specify: )
- g) Not applicable

### **Clinical Experience**

11. Does your program require students to provide clinical care for patients with IDD?

- a) Yes
- b) No

12. Does every student in your program get to provide care for **at least one** patient with an IDD?

- a) Yes
- b) No

**If no, skip Q13 and move to Q14.**

13. How many patients with an IDD do each of your students usually treat during their program?

- a) 1 to 5 patients
- b) 6 to 10 patients
- c) 11 to 15 patients
- d) > 16 patients

14. Does your institution have a clinic specifically designated for patients with special needs?

- a) Yes
- b) No

**If no, skip Q15 and move to Q16.**

15. What procedures do the students perform when treatment is provided in a clinic designated to treat special needs? **Select all that apply**

- a) They provide preventive services
- b) They provide periodontal care for patients



- c) They observe care being provided by other providers
- d) They do not have any of these types of experiences

16. Where do your students receive clinical experience treating patients with IDD? **Select all that apply**

- a) Internal DH clinical sessions
- b) Internal rotations where IDD patients are treated
- c) External rotations or practicums at dental clinics
- d) Non-dental settings (i.e. group homes)
- e) Other (Please specify: )
- f) Not applicable

17. On a scale of 1= “strongly disagree” to 5= “strongly agree,” how much do you agree with the following statement: My students are competent to treat patients with IDD at the time of graduation.

- 1) Strongly disagree
- 2) Disagree
- 3) Neither agree nor disagree
- 4) Agree
- 5) Strongly agree

18. On a scale of 1= “not at all” to 5= “very much,” how much do each of the following serve as a perceived barrier to the education of your students regarding treatment of patients with IDD?

<b><u>Perceived Barrier</u></b>	1= not at all	2= not very much	3= somewhat	4= very much
<b>Lack of faculty experience</b>	1	2	3	4
<b>Lack of clinical sites</b>	1	2	3	4
<b>Lack of patients available in clinics</b>	1	2	3	4
<b>Lack of educational resources</b>	1	2	3	4
<b>Curriculum overload</b>	1	2	3	4

## **Demographic**

19. How long have you been the director at your dental hygiene program?
- a) < 1 year
  - b) 1-5 years
  - c) 6-10 years
  - d) > 10 years
20. In what type of institution is your dental hygiene program located? **Select all that apply**
- a) Technical College
  - b) Community or Junior College
  - c) Allied Health Sciences School or College
  - d) Free-standing Program
  - e) Dental School
  - f) University or Four-year College without a dental school
  - g) Other (please specify: )
21. What degree/certificate is offered for completion of your program? **Select all that apply.**
- a) Bachelor Degree in Dental Hygiene
  - b) Associate Degree in Dental Hygiene
  - c) Certificate/Diploma in Dental Hygiene
22. How many students are accepted during each admission cycle?
- a) < 10 students
  - b) 10-20 students
  - c) 21-30 students
  - d) 31-40 students
  - e) 41-50 students
  - f) > 50 students
23. When was the last CODA accreditation site visit at your institution? **Fill in the last two numbers of the appropriate year.**
- a) 20 \_\_
24. What types of curriculum changes, *if any*, have been made to your program as a result of CODA's new accreditation standards for patients with special needs?
25. Please share any additional comments you have about this survey or the topic.

*Thank you for your participation in this survey!*

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