Community and Population Health: 2023 APHA Oral Health Section Student Awardees

CareQuest Institute Continuing Education Webinar

February 28, 2024

CareQuest Institute for Oral Health®

APHA ORAL HEALTH SECTION

Housekeeping

- We will keep all lines muted to avoid background noise.
- We will send a copy of the slides and a link to the recording via email after the live program.
- We'll also make the slides and recording available on carequest.org.

To receive CE Credits:

- Look for the evaluation form, which we'll send via email within 24 hours.
- Complete the evaluation by **Friday, March 8.**
- Eligible participants will receive a certificate soon after via email.

We appreciate your feedback to help us improve future programs!

ADA C·E·R·P® | Continuing Education Recognition Program

The CareQuest Institute for Oral Health is an ADA CERP Recognized Provider. This presentation has been planned and implemented in accordance with the standards of the ADA CERP.

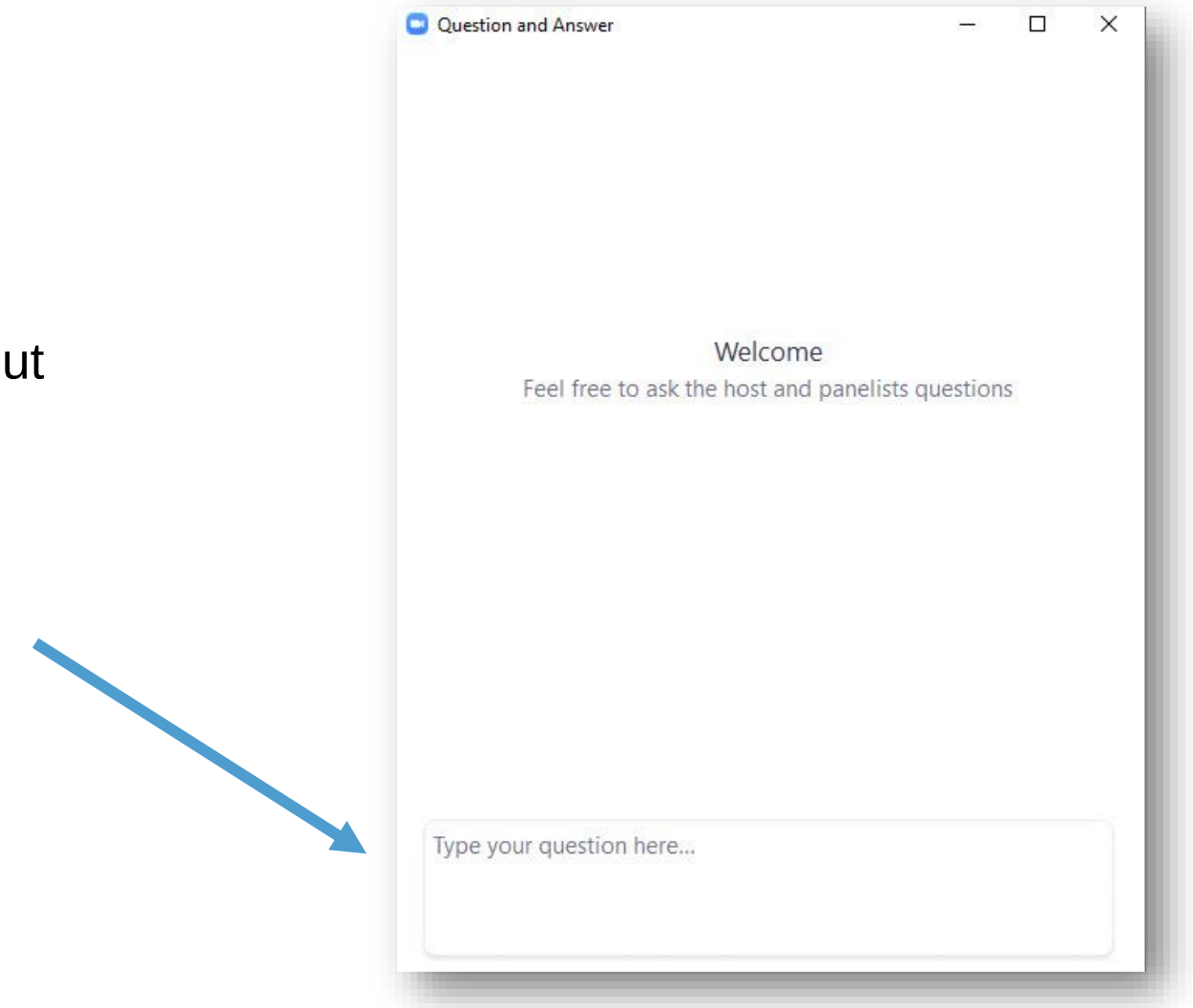
*Full disclosures available upon request

CareQuest Institute for Oral Health

APHA ORAL HEALTH SECTION

Question & Answer Logistics

- Feel free to enter your questions into the **Question & Answer box** throughout the presentations.
- We will turn to your questions and comments toward the end of the hour.



CareQuest Institute for Oral Health

APHA ORAL HEALTH SECTION

Thank You

CareQuest Institute for Oral Health

Learning Objectives

At the end of this webinar, you'll be able to:

- Examine the perceptions of predoctoral dental students regarding distance learning throughout the pandemic.
- Explain the association between depression symptoms, perceived stress, and oral symptoms among pregnant African American women.
- Analyze the unique challenges in accessing oral health care faced by the LGBTQ+ community and propose strategies to address these barriers.
- Review the current attitudes of pediatric dentists and orthodontists toward incorporating mental health screenings for disorders such as depression in adolescent patients.

Kevin Rodriguez Lichtenberg, DDS, MPH, CPH
Dental Director
Chesapeake Health Care
kevin.rodriguez17@upr.edu

CareQuest Institute for Oral Health

PRE AND POST PROFESSIONAL STUDENT AWARDS!

APHA | ORAL HEALTH SECTION

Deadline May 31, 2024!

Anthony Westwater Jong Memorial Population Oral Health Pre-Professional Award

Eligibility: Current student or student who has graduated within the preceding 12 months from an undergraduate or graduate-level program. Eligible students include: graduate students (MPH, MSPH, PhD) and students in a dental/medical professional health education program (PA, RN, MD, DDS, DrPH, RDH, etc.).

Caswell A. Evans Population Oral Health Post-Professional Awards

Eligibility: A health professional such as a dentist, physician, dental hygienist, dental therapist, nurse, nurse practitioner, social worker, or other professional with interest in oral health who is currently enrolled in or has graduated within the preceding 12 months from: (1) a CEPH-accredited School of Public Health or Graduate Public Health Program; (2) a CODA-accredited Dental Public Health Program; or (3) a Graduate-level/university-based program with a significant course of study in public health.

2024 Student Award Benefits:

Mentorship Opportunities
Oral Health Section Involvement
Two Year – APHA Student or Early Career Membership Stipend
APHA 2024 Meeting Registration Stipend
Travel Support to APHA 2024 Meeting in Minneapolis, MN
Maximum Award Value $1200 / 2 award opportunities in each category

To apply please go here

Community and Population Health: 2023 APHA Oral Health Section Student Awardees

CareQuest Institute for Oral Health

APHA | ORAL HEALTH SECTION

WEBINAR | Wednesday, February 28, 2024 | 7–8 p.m. ET | ADA CERP Credits: 1

MODERATOR

Kevin Rodriguez Lichtenberg, DDS, MPH, CPH
Dental Director, Chesapeake Health Care

PRESENTER

Sapna Nath, BS
DMD Candidate, Harvard School of Dental Medicine

PRESENTER

Olivert Mbah, MPH
Emory University, Rollins School of Public Health

PRESENTER

Nithya Ramesh, BDS, MPH
Public Health Resident, Doctoral Candidate, Harvard School of Dental Medicine

PRESENTER

Ellyce Clonan, DDS, MPH, MA
Dental Public Health Specialist

Dental Student Perceptions of Distance Education over Time: A Mixed-Methods Study

Nithya Ramesh, BDS, MPH

CareQuest Institute for Oral Health

HARVARD School of Dental Medicine

Outline

- Introduction
- Materials and Methods
- Results – Quantitative and Qualitative findings
- Discussion
- Conclusions

PMID: 37886918

CareQuest Institute for Oral Health

Before We Begin…

QR code to published paper

Please scan this QR code if you'd like to read the paper and follow along!

This research was supported by the American Dental Education Association (ADEA) Council of Section (COS) Project Pool fund.

CareQuest Institute for Oral Health

PMID: 37886918

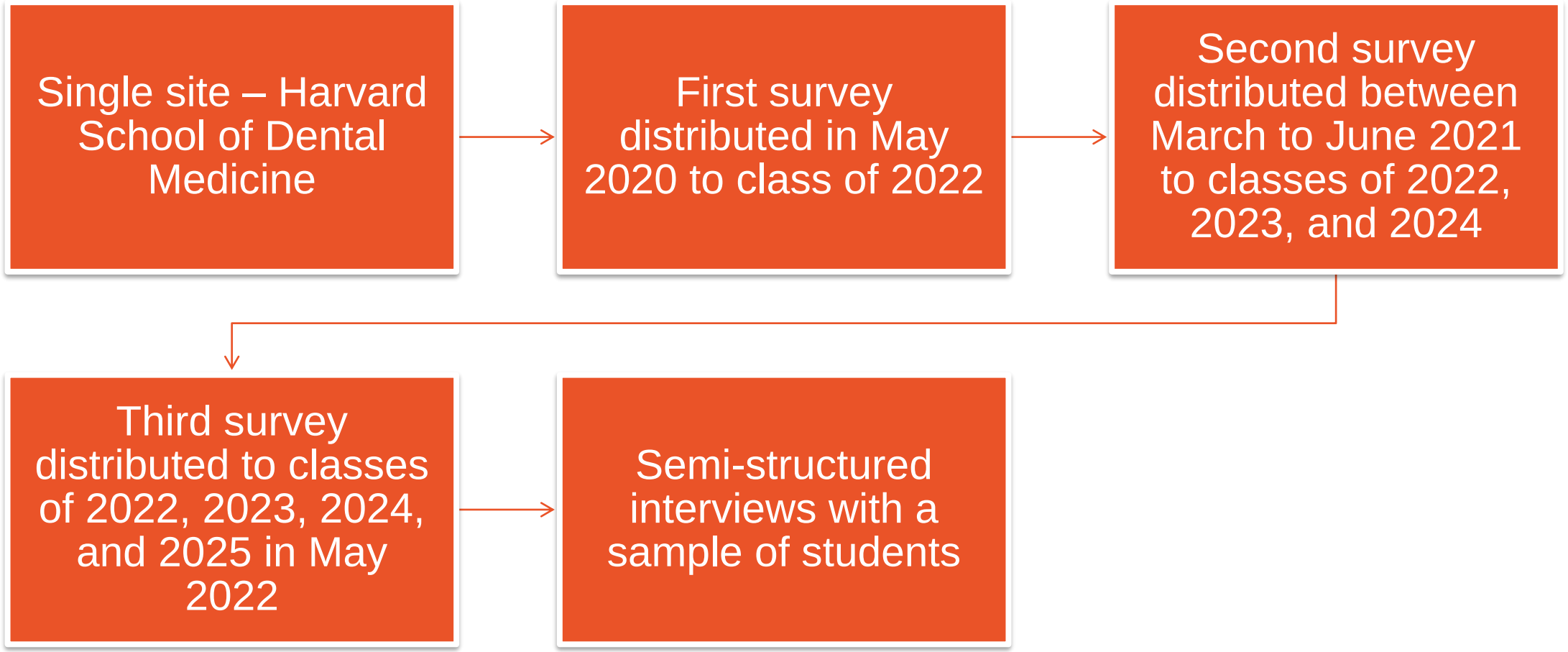
Introduction

- Transition to online learning during the pandemic
- Technological advancements
- Benefits and challenges of distance learning on academic performance
- Impact on future curriculum delivery

CareQuest Institute for Oral Health

PMID: 37886918

Materials and Methods

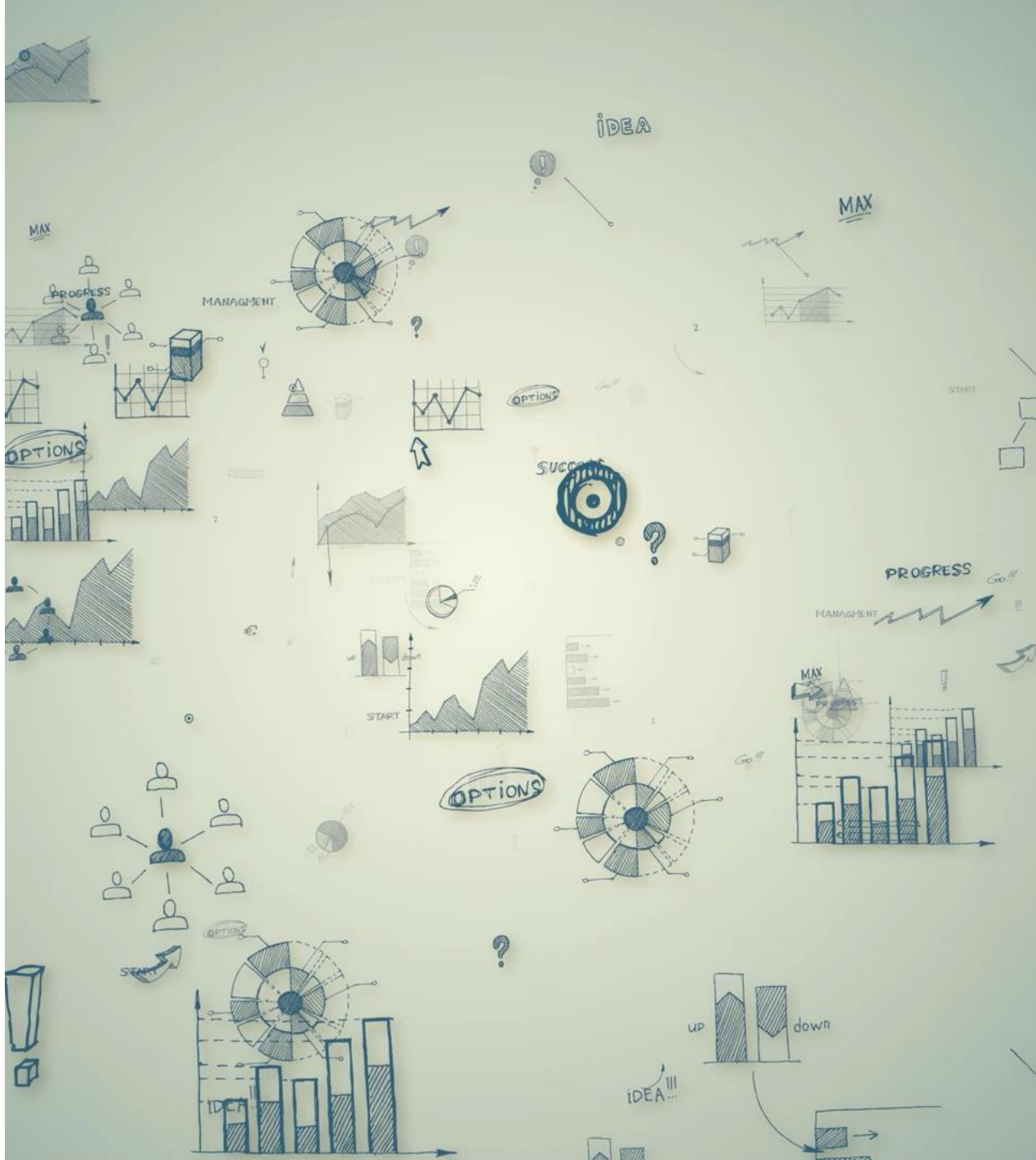


CareQuest Institute for Oral Health

PMID: 37886918

Surveys

- Consisted of both close-ended and open-ended questions
- Anonymous data collection
- Assessed various aspects such as burnout, engagement and impacts on retention of materials



CareQuest Institute for Oral Health

Example Questions

Close-ended Questions

Virtual learning during the pandemic has affected my retention **of class material in the following way:**	**Virtual learning during the pandemic has affected my level of** burnout **in the following way:**
Significantly decreased to significantly increased	

How effective do you believe virtual learning would be in the post-pandemic era?

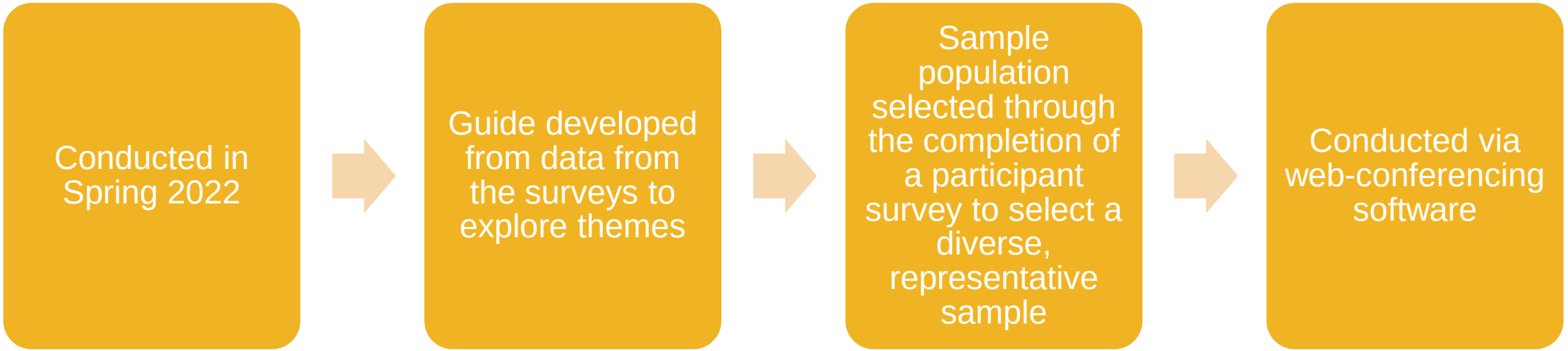
Not effective to very effective

Open-ended questions

What changes would you make, if any, to the way your current virtual classes are conducted?

CareQuest Institute for Oral Health

Semi-Structured Interviews



Example questions:

1. What are some features of online or in-person learning you found most useful?

2. Given the courses you have taken so far, are there any you feel are well-suited for online learning? Have your study habits changed as a result of virtual learning?

PMID: 37886918

Data Analysis

Survey Data

- Analyzed using Qualtrics Stats iQ
- Descriptive statistics

Qualitative Data

- Transcripts transcribed by Rev Transcription Services
- Mixed deductive and inductive approach used to perform thematic analysis
- All transcripts were coded by a single coder that were later discussed with the team

PMID: 37886918

Results

Response rates were **100.0%** (n = 39/39), **24.3%** (n = 25/103), and **21.2%** (n = **29/137**), respectively, from surveys **1 to 3**

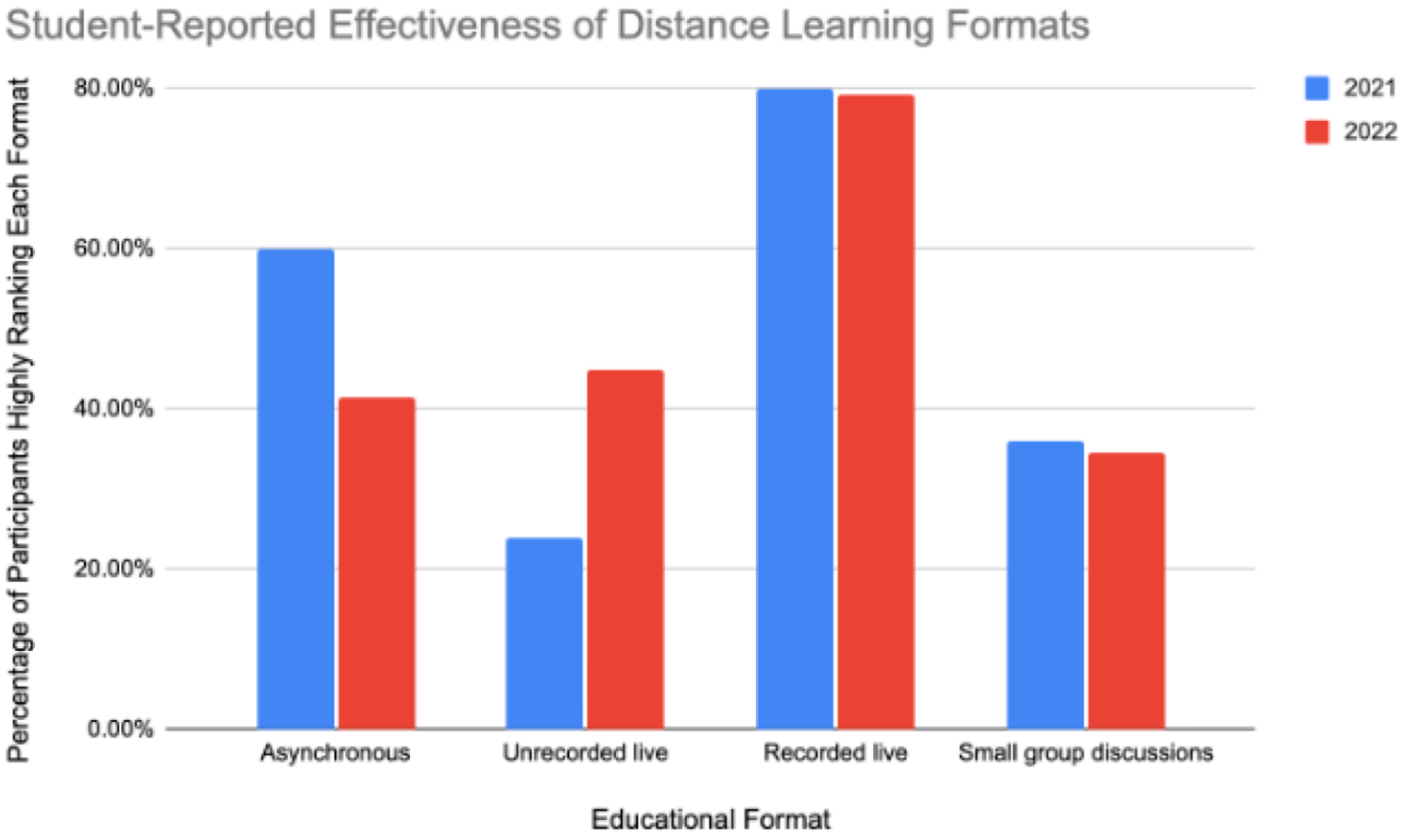
Table 1. Participant overview characteristics and response rates for three surveys.

	Survey Year			Qualitative Interviews
	2020	2021	2022	
Classes (% (n))				
2021	0% (0)	0% (0)	0% (0)	0% (0)
2022	100.00% (39)	32.00% (8)	34.48% (10)	27.27% (3)
2023	0% (0)	56.00% (14)	10.34% (3)	45.45% (5)
2024	0% (0)	12.00% (3)	27.59% (8)	18.18% (2)
2025	0% (0)	0% (0)	27.59% (8)	9.09% (1)
Response rate (% (n))	100.00% (39)	24.30% (25)	21.20% (29)	N/A (11)
Survey tool used	Zoom polling	Qualtrics	Qualtrics	Zoom

CareQuest Institute for Oral Health

PMID: 37886918

Quantitative Data



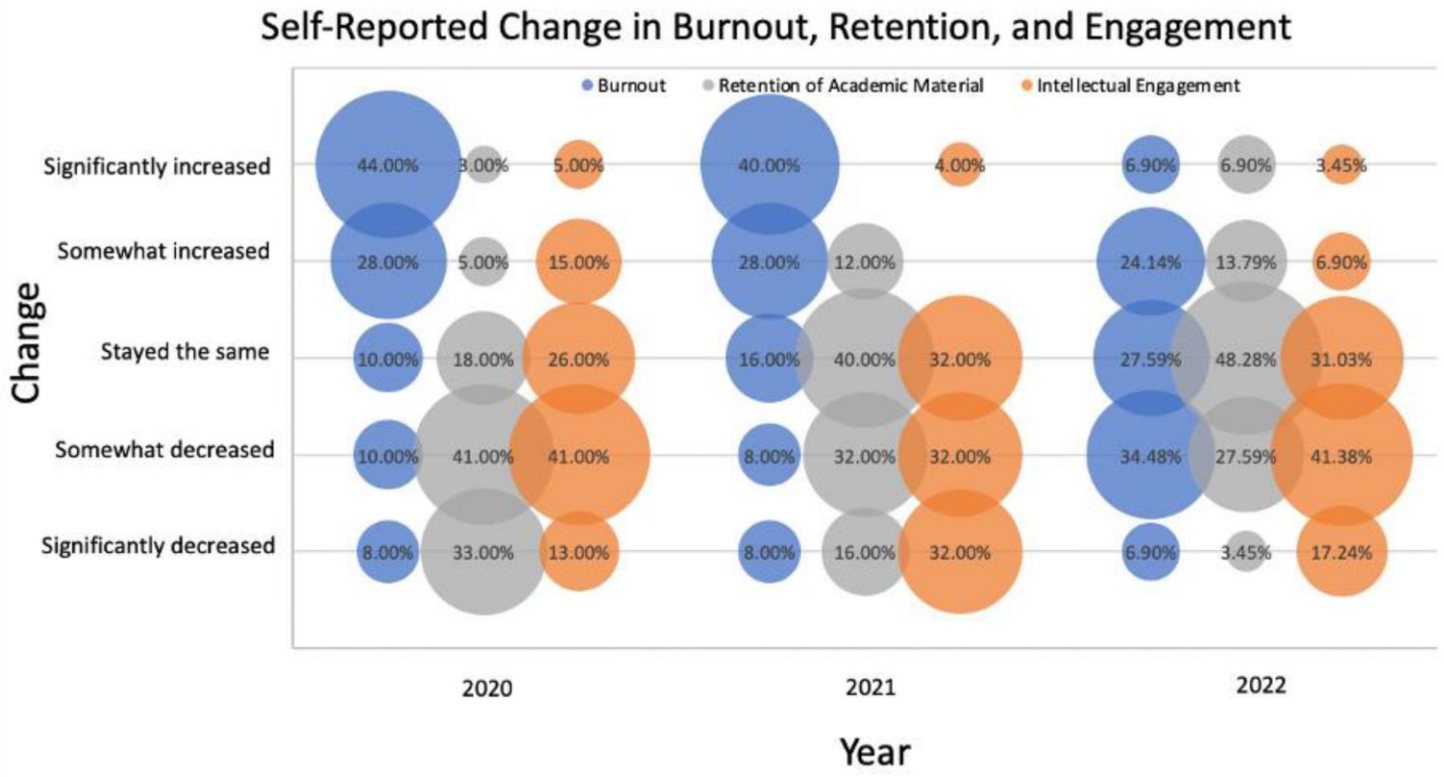
CareQuest Institute for Oral Health

PMID: 37886918

Student-Reported Change in Burnout, Retention, and Engagement

- Bubble plots for the responses to three questions that assess participants' self-reported changes in burnout, retention of academic material, and intellectual engagement compared to pre-pandemic in-person learning.

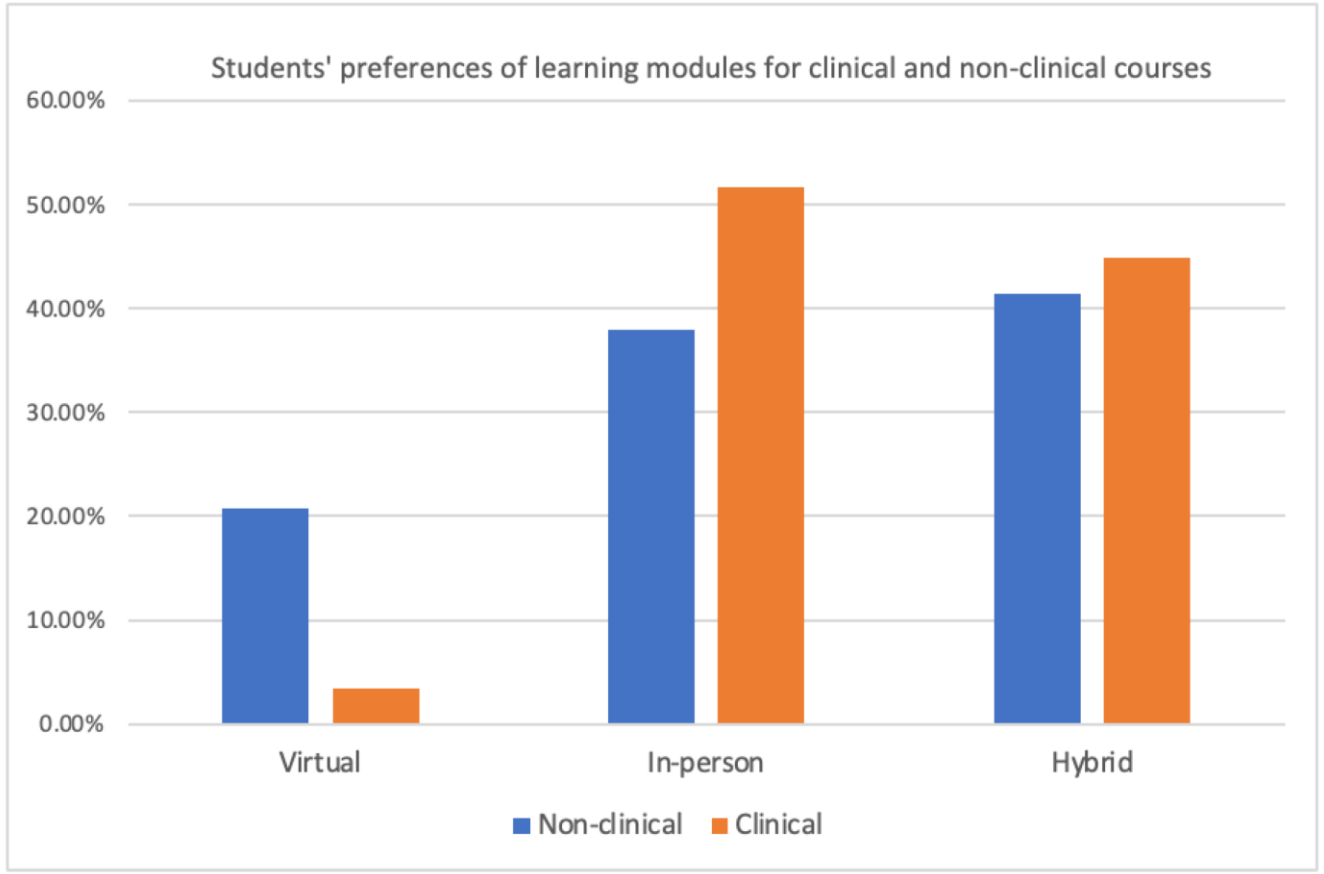
- Bubble size is the percentage of participants who selected each answer choice. **2020 (n = 39), 2021 (n = 25), and 2022 (n = 29).**



CareQuest Institute for Oral Health

Students' Preferences of Learning Modules for Clinical and Non-Clinical Courses

- Bar chart representing a survey result conducted in **2022 (n = 29)** where students were asked about their learning module preferences for clinical and non-clinical courses.
- The *x*-axis represents the learning modules, and the *y*-axis represents the percentage of students' preference for each module.



CareQuest Institute for Oral Health

PMID: 37886918

Qualitative Data

Theme 1. *The type of content influenced the student's preferred modality.*

"I feel like visual learning is the key element. So, pathology, you have a slide. And so, with our screen, it just works well. It's not going to change that much. Visual learning, it's online, I like it. It's not a bother. But then, when it comes to the clinical aspect of it, there's just so many reasons I prefer in-person. For ortho and prosth, I need to visualize things. I like to be able to interact with the professor for clinical courses, and it's just more organic and easier."

CareQuest Institute for Oral Health

Qualitative Data

Theme 2. *Appropriate use of technology and teaching tools helped facilitate learning in any modality.*

"I definitely think in-person has more engagement in the audience just because you can get a little bit more feel if a speaker's energized, walking around, using their hands, and projecting themselves, in-person's just way better. You don't get that feel from virtual classes."

"[Polling] is a way to engage students without having individual pressure to answer, which I really like. And especially on Zoom, it makes it easier to get engaged with the material."

CareQuest Institute for Oral Health

Qualitative Data

Theme 3. *Distance learning was beneficial to students in many ways; however, the functional challenges cannot be ignored.*

"I think for group learning or situations where… the teacher is asking a lot of questions; I think it's definitely easier to be in-person and facilitates discussion easier and more people from the class talk and I think I have an easier time paying attention and holding my attention span for longer in an in-person situation."

CareQuest Institute for Oral Health

Data Triangulation

MOST PARTICIPANTS PREFER A HYBRID MODEL CONSISTING OF A MIX OF DISTANCE AND IN-PERSON LEARNING, FOR DIDACTIC COURSES, SEEM TO BE THE OVERALL PREFERENCE.

IN THE QUALITATIVE INTERVIEWS, PARTICIPANTS EXPLAINED THAT NON-CLINICAL DIDACTIC MATERIAL IS BEST SUITED FOR DISTANCE FORMATS, WHILE CLINICAL-BASED SUBJECTS ARE BEST IN PERSON.

THERE DOES NOT SEEM TO BE A SINGLE BEST OPTION THAT FITS ALL COURSES IN THE DENTAL CURRICULUM.

CareQuest Institute for Oral Health

PMID: 37886918

Discussion

Our findings revealed the significant potential of distance education and acknowledged its diverse application to improve the learning experience in dental education

The flexibility offered by remote learning empowered learners to manage their study schedules more effectively, however, the absence of physical classroom interactions diminished the social aspect of education

Previous studies found that engagement positively correlated with academic performance in distance learning environments and highlighted the use of collaborative learning strategies to enhance engagement

Faculty should carefully plan the extent of distance learning incorporated for each course, considering the course subjects, overall class performance, and student mental and physical well-being.

CareQuest Institute for Oral Health

PMID: 37886918

Other Implications

Faculty shortage – address potential gaps in workforce

Limitations of this study – single site, varied response rates and participants

PMID: 37886918

Conclusion

- Students and faculty demonstrated adaptability and a willingness to embrace distance learning during the pandemic.
- Recorded live lectures emerged as the preferred choice among students.
- Most students perceived that distance learning was better suited for didactic content, while it was considered less optimal for clinical subjects.
- Majority of participants believed that distance learning would remain effective in the post-pandemic era.
- They also suggested that a hybrid learning approach, combining both in-person and distance learning, holds the key to the most effective educational experience moving forward.

Acknowledgements

Dr. Susanna Yeh (co-first author)
Dr. Kristie Kaczmarek
Dr. Chiho Ann, Alice Li
Dr. Hiroe Ohyama
APHA Oral Health Section
Participants from HSDM Classes of 2022-25

QR code to published paper

CareQuest Institute for Oral Health

PMID: 37886918

Nithya Ramesh, BDS, MPH
Public Health Resident, Doctoral Candidate
Harvard School of Dental Medicine
nramesh@hsdm.harvard.edu

CareQuest Institute for Oral Health

HARVARD School of Dental Medicine

Dentist-Patient Trust: Considerations for the LGBTQ+ Community

Ellyce Clonan, DDS, MPH, MA
She/Her/Hers

CareQuest Institute for Oral Health®

NYC HEALTH + HOSPITALS | Jacobi

PLAZA COLLEGE Est. 1916

Definitions

- **Ally**: Someone who actively supports individuals who identify as LGBTQ+

- **LGBTQ+:** Lesbian, Gay, Bisexual, Transgender, Queer, and other words to describe self-identification

CareQuest Institute for Oral Health

Credit: Kelly Schroeder, RDH, MS: LGBTQ+ *Inequities in Oral Healthcare*; CareQuest Institute for Oral Health

Do individuals who identify as **LGBTQ+** trust their oral health provider?

CareQuest Institute for Oral Health

Background

- Despite increasing visibility, LGBTQ+ individuals continue to experience discrimination within the oral health care setting.

- As a result of such lingering stigma and bias, sexual orientation-related disparities persist.

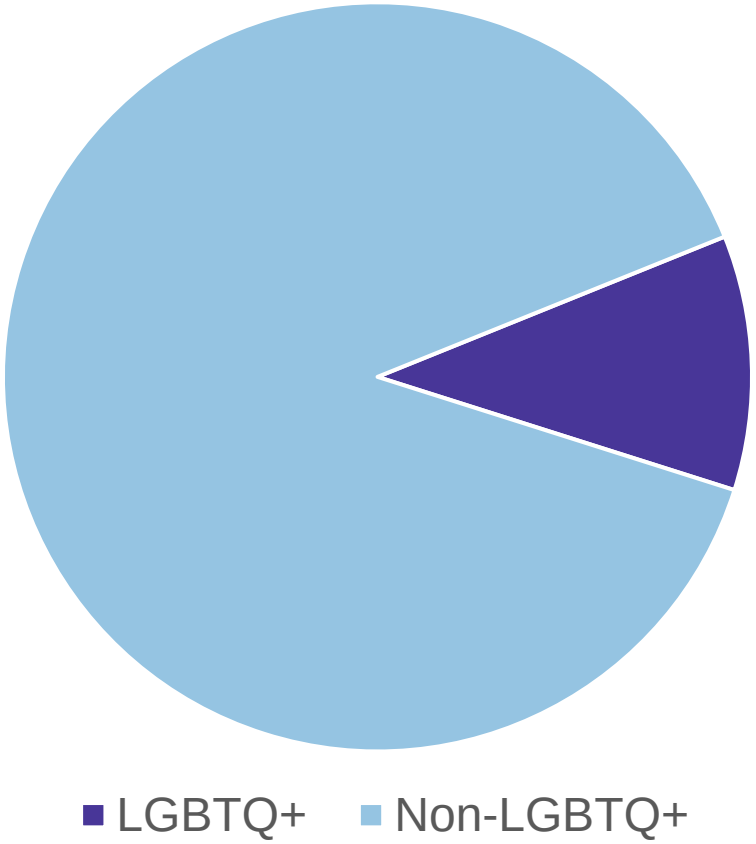
- Individuals who identified as being LGBTQ+ were **77%** more likely to report discrimination on a weekly basis, and **53%** more likely to report having high levels of anxiety about receiving care.*

CareQuest Institute for Oral Health

*CareQuest Institute for Oral Health. Oral health and the LGBTQ+ community: A snapshot of disparities and discrimination. CareQuest Institute for Oral Health, Inc.:Boston, MA. 2022.

State of Oral Health Equity in America (SOHEA) Survey (2022, 2023)

- A nationally representative, probability-based survey of adult consumer attitudes, experiences, and behaviors on oral health
- Data collected by National Opinion Research Center (NORC)
- Survey conducted online and by telephone through Amerispeak Panel
- Adults age **18+**
  - 2022: **N = 5,682**
  - 2023: **N = 5,240**



11% of respondents self-identified as LGBTQ+ *(N = 10,922)*

CareQuest Institute for Oral Health

Independent Variable: LGBTQ+ Status

“Which of the following best represents how you think of yourself?”

- Gay/straight or gay
- Straight, that is, not lesbian or gay
- Bisexual
- Something else
- I don’t know the answer

+

“How do you describe yourself”

- Male
- Female
- Transgender
- Do not identify as male, female, or transgender

CareQuest Institute for Oral Health

Dependent Variable: Trust

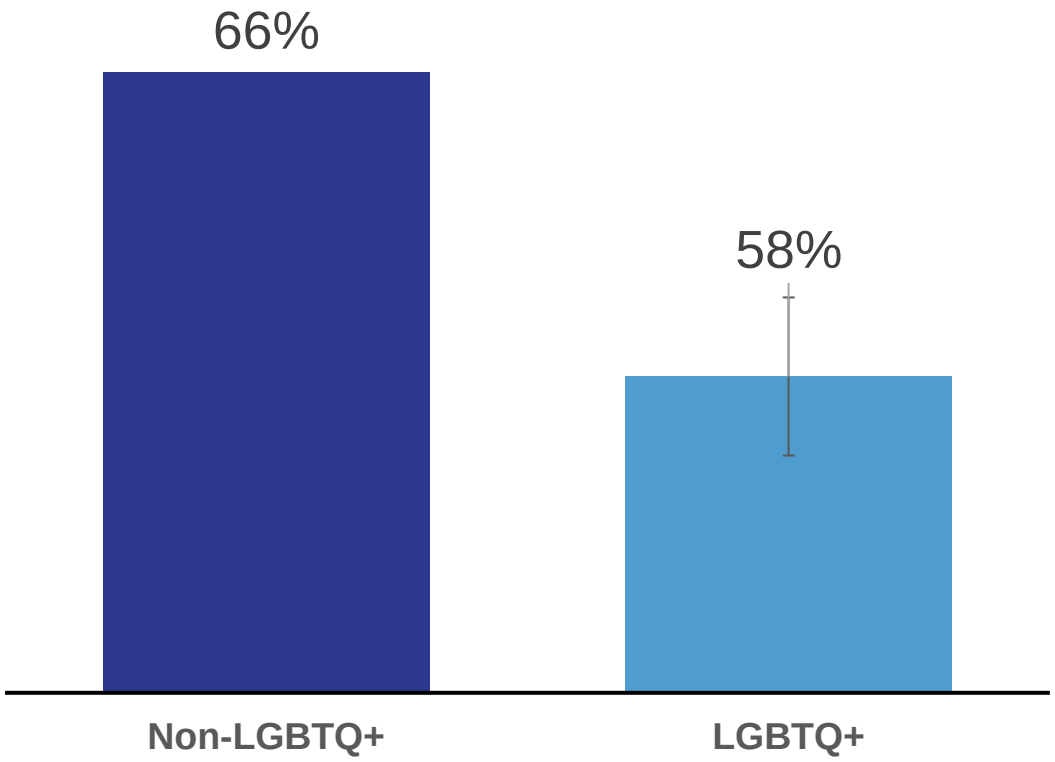
“How much do you agree with the following statements about your last oral health visit?"

- ***I trusted the oral health provider I saw***

  - Strongly agree
  - Somewhat agree
  - Neither agree or disagree
  - Somewhat disagree
  - Strongly disagree
  - Don’t know
  - Skipped

CareQuest Institute for Oral Health

Compared to non-LGBTQ+ respondents, a significantly smaller percentage of individuals identifying as LGBTQ+ strongly agreed that they trusted the last oral health provider they saw (**65.7%** vs **58.0%**).



p = < 0.0001

CareQuest Institute for Oral Health

In the fully adjusted model, *individuals identifying as LGBTQ+ were **24% less likely** to trust their oral health provider.*

	OR (95% CI)
LGBTQ+ (Ref: Non- LGBTQ+)	**0.76** (0.61 – 0.94)*

OR = Odds Ratio
CI = Confidence Interval
*p < 0.05

CareQuest Institute for Oral Health

Public Health Significance

- Historical and continued stigma and bias = **unique oral health care needs**

- **No existing studies have examined oral health provider trust and LGBTQ+ status** using a large nationally representative sample of the U.S. population

- It is essential that oral health providers **improve their confidence and the skills necessary to build trust** with their patients who identify as members of the LGBTQ+ community

CareQuest Institute for Oral Health

Action Steps

1. **Create a welcoming environment** by promoting LGBTQ+ inclusive materials throughout the office, including the waiting room
2. **Increase training** on the LGBTQ+ to help staff feel comfortable with using gender-neutral language
3. **Inclusion of sexual orientation and gender identity (SOGI)*** questions on patient health forms

Rittenhouse Smiles, Philadelphia, PA

Do you think of yourself as (Check one):
- Straight or heterosexual
- Lesbian, gay, or homosexual
- Bisexual
- Don't know
- Choose not to disclose

What is your current gender identity? (Check one):
- Male
- Female
- Transgender Male/Trans Man/Female-to-Male (FTM)
- Transgender Female/Trans Woman/Male-to-Female (MTF)
- Genderqueer, neither exclusively male nor female
- Additional gender category, please specify: _____
- Choose not to disclose

What sex were you assigned at birth? (Check one):
- Male
- Female
- Choose not to disclose

** Cruz, T. M. (2020). Perils of data-driven equity: Safety-net care and big data's elusive grasp on health inequality. Big Data & Society, 7(1). https://doi.org/10.1177/2053951720928097*

CareQuest Institute for Oral Health

Ellyce Clonan, DDS, MPH, MA
Dental Public Health Specialist
elclonan@gmail.com

CareQuest Institute for Oral Health

Providers' Attitudes Toward Mental Health Screening in a Dental Setting

Sapna Nath
Harvard School of Dental Medicine

CareQuest Institute for Oral Health®

HARVARD School of Dental Medicine

Background

Adolescents **(ages 12-17)** are experiencing unprecedented levels of anxiety and depression. About **20.1%** of adolescents experienced a major depressive episode and **33%** had an anxiety disorder.

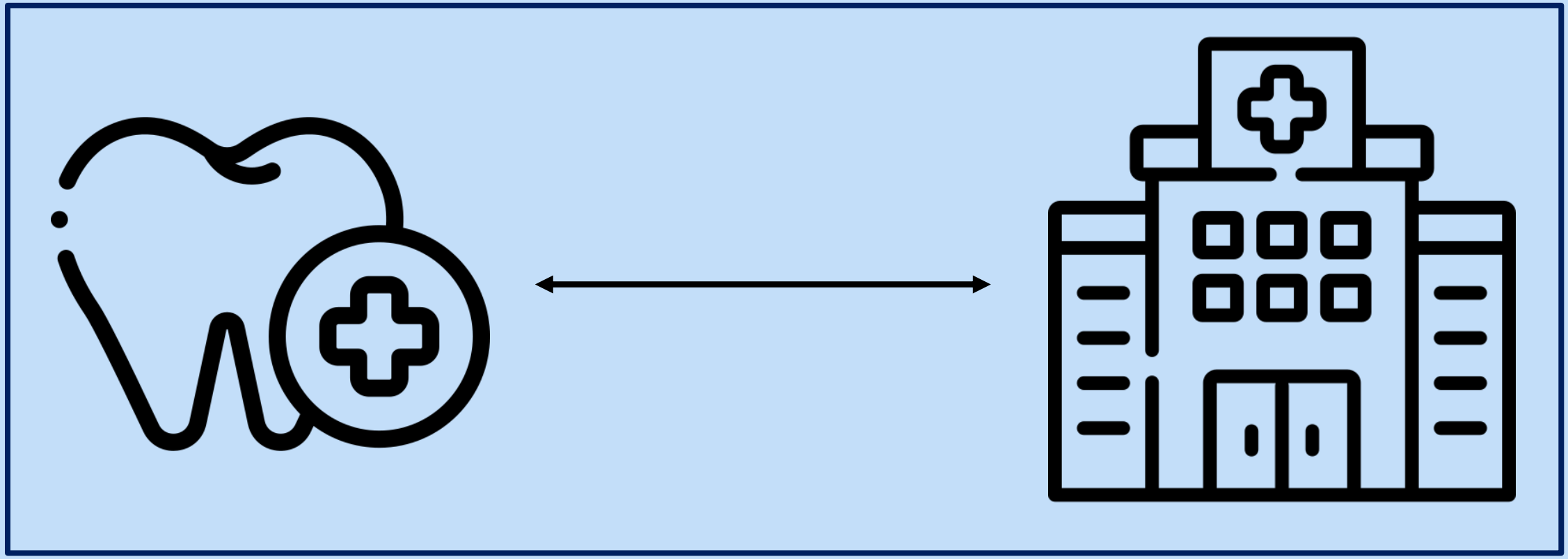
COVID-19 pandemic has exacerbated rates of anxiety and depressive disorders for adolescents due to social isolation, disruptions in daily routine, and general stress.

While the U.S Preventive Services Task Force recommends anxiety and depressive disorders screening for all adolescents aged **12-18 years,** only **2.1%** of primary care offices included screenings for depressive disorders.

CareQuest Institute for Oral Health

Wilson S, Dumornay NM. 2022. Rising Rates of Adolescent Depression in the United States: Challenges and Opportunities in the 2020s. J Adolesc Health. 70(3):354-355.
Wang S, Chen L, Ran H, Che Y, Fang D, Sun H, Peng J, Liang X, Xiao Y. 2022. Depression and anxiety among children and adolescents pre and post COVID-19: A comparative meta-analysis. Front Psychiatry. 13:917552.

Dental professionals, who see adolescents frequently, are **uniquely positioned** to support mental health resources for adolescents and can serve as a gateway to broader medical care.



CareQuest Institute for Oral Health

Objective

1. Assess and quantify the current landscape and attitudes of pediatric dentists and orthodontists on incorporating mental health screenings for adolescents

2. Examine challenges and facilitators around incorporating screenings and referrals in dental settings

CareQuest Institute for Oral Health

Methods

Mixed-methods approach: an explanatory sequential design

Quantitative Survey

- A **35-item** survey was sent to **5,538** pediatric dentists and orthodontists in 2022 using information from the Redi-data Inc. database.
- Questions on attitudes and current practices on screening for anxiety and depressive disorders.
- Univariate statistics and stepwise multivariate logistic regression modeling was used to analyze results.

Qualitative Interviews

- A convenience sample of **16** orthodontists and pediatric dentists
- A semi-structured interview guide was used based on survey results.
- A thematic analysis of the transcribed data using an inductive(conventional) approach was conducted.
- Codes were categorized into themes and sub-themes.

CareQuest Institute for Oral Health

von Elm E, Altman DG, Egger M, Pocock SJ, Gøtzsche PC, Vandenbroucke JP; STROBE Initiative. 2007 Oct 20. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. Lancet. 370(9596):1453-7.

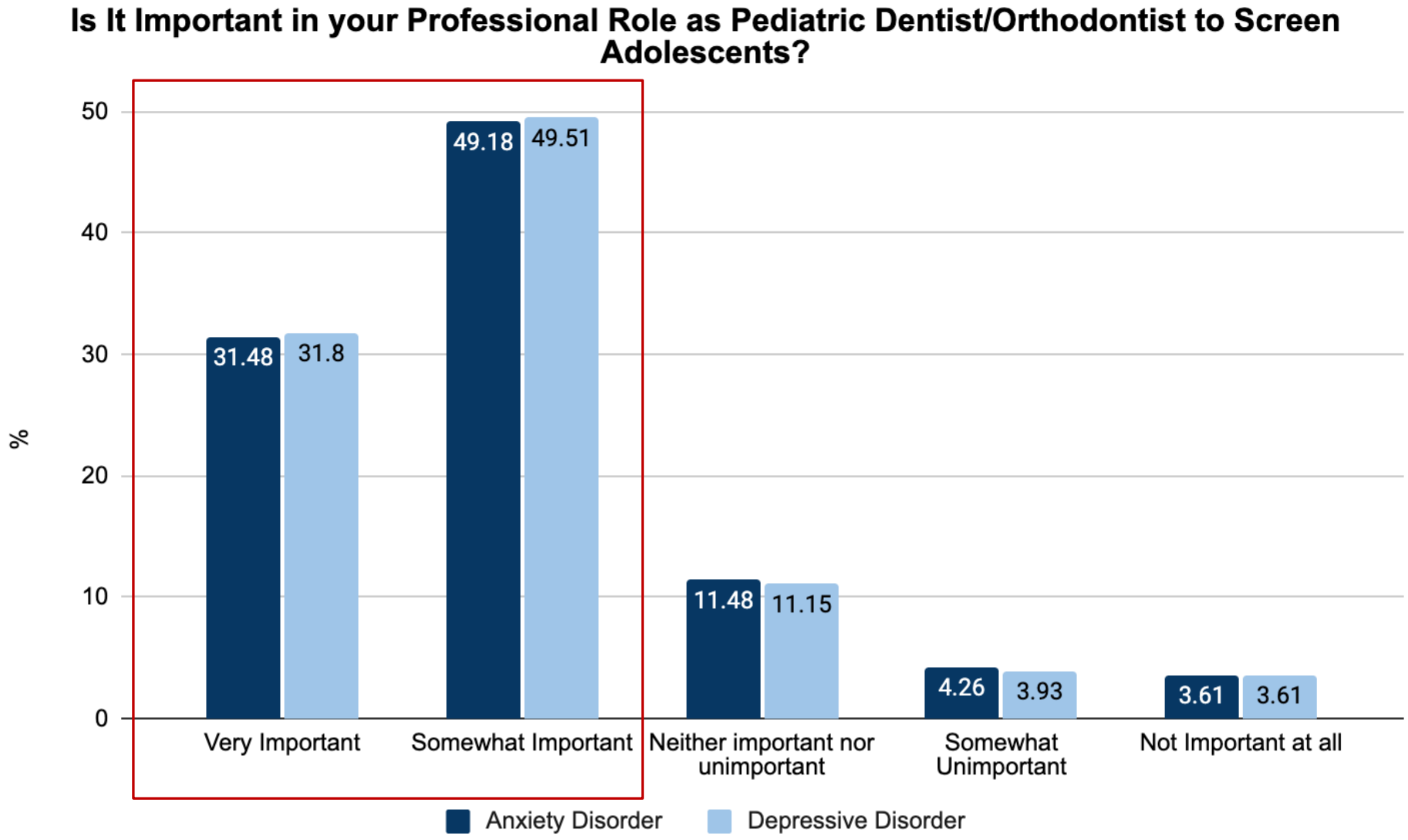
Results

Characteristics of Respondents (N= 305)	
Category	**N (%)**
Specialty (N=303)	
Pediatric dentist	158 (52.1)
Orthodontist	151 (49.8)
Other	1 (0.3%)
Region (n=285)	
Midwest	51 (17.9)
Northeast	72 (25.3)
South	111 (38.9)
West	50 (17.5)
Dental Setting (N=304)	
Private Solo	154 (50.7)
Private Group	116 (38.2)
Academic Dental	21 (6.9)
Other	28 (9.2)
Low –Income/Medicaid Patients (N=305)	
0-25%	182 (59.7)
26-50%	52 (17.0)
51-75%	34 (11.1)
76-100%	31 (10.2)
I don’t know	6 (2.0)

CareQuest Institute for Oral Health

Results

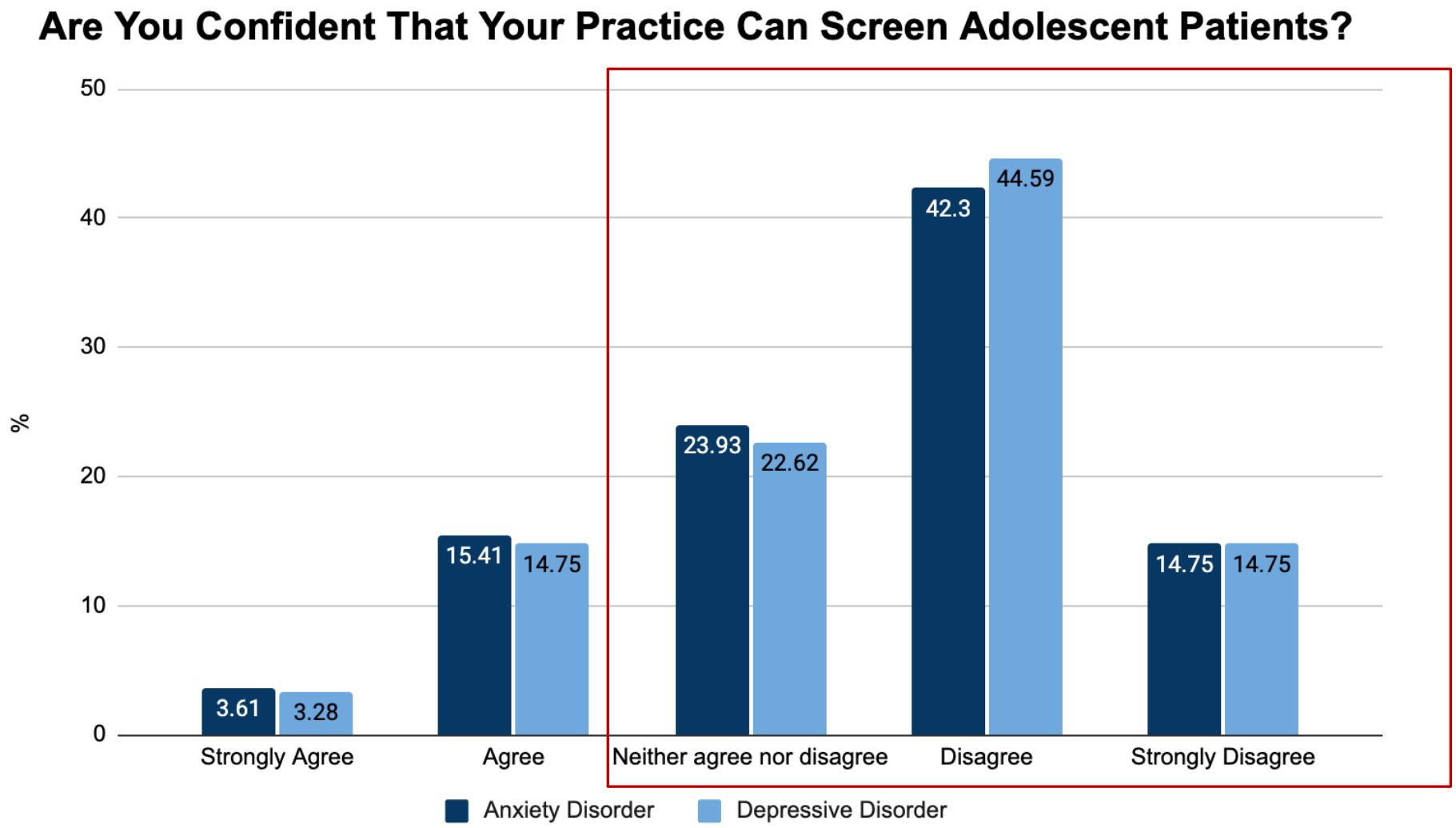
N = 305



CareQuest Institute for Oral Health

Results

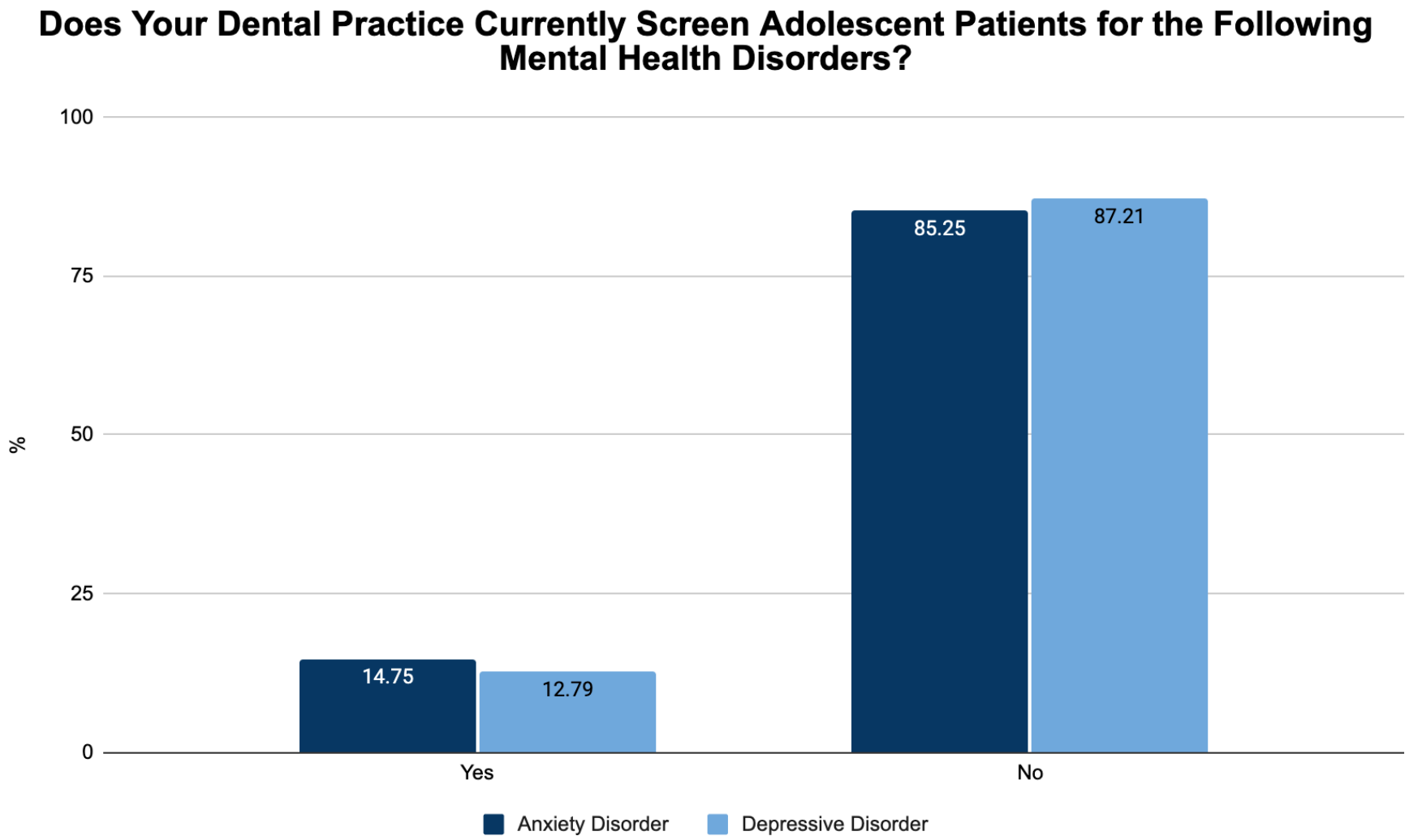
N = 305



CareQuest Institute for Oral Health

Results

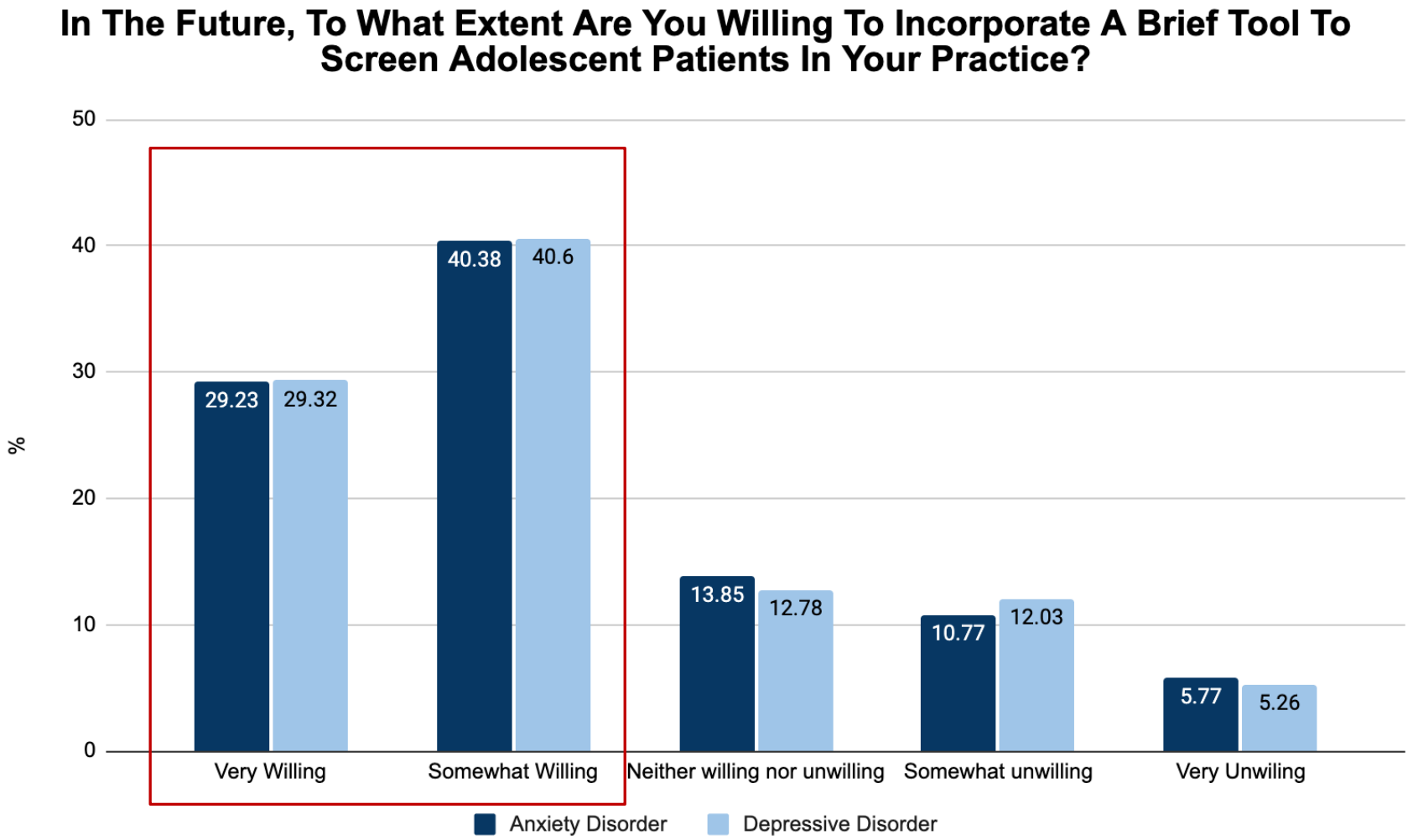
N = 305



CareQuest Institute for Oral Health

Results

N = 305



CareQuest Institute for Oral Health

Results

N = 305

Based on the outcomes of the multivariate logistic regression modeling:

- Dentists aged 45-54 years and those over 65 years being **were less likely** to incorporate depressive disorders screening compared to their counterparts below 45 years of age.
- Female dentists were **more likely** than male dentists to be willing to incorporate anxiety disorder screening.
- Dentists who believed their patients might perceive them negatively were **less inclined** to be willing to incorporate screening for both depressive and anxiety disorder.
- Dentists were **more than three times as likely** to be willing to screen for anxiety disorders if it would positively influence their colleagues' perception of them.

CareQuest Institute for Oral Health

Attitudes Around Mental Health

We have **responsibility for the whole child** to identify and refer is we have a suspicion or identify a frank problem to make a referral either way to the appropriate health professional. It's not to treat it. It's not to validate the concern.

COVID really caused a lot of problems. Now that most of the kids are back in school, and most of the kids are back with their friends and all, it's some decrease of that. But some of these same feelings that happened during all of that time have really been heightened. Particularly, to me, I think the anxiety levels for kids, they want to be... You want to be part of the group. You want to be like everybody else, even though nobody's like everybody else.

How we handle mental health now has to change as quickly as these kids are changing. I don't think it's as **stigmatized** as it used to be.

Barriers to Inclusion of Mental Health Screenings

I almost feel like that might be a turnoff to parents, that might feel like, “What the heck? **Why is this guy quizzing my child about mental health stuff?** That’s none of his business. He’s just here to straighten the teeth. Why is he getting all up in her personal life?

But an orthodontist like me, you're seeing 90 patients in a day, so then you say, “Okay, well, what can I do?” All of a sudden, I noticed that someone was severely depressed. Do I have **time** to address it?

You fill out the form, but then the next step, **what exactly would that next step be?** And you’ve said that also right now, that next step because there seems to be a shortage of therapists.

CareQuest Institute for Oral Health

If it is becoming or if it does become a routine assessment, then in dental school, there needs to be a quantifiable amount of **education** about it.

In terms of what other people would want, I think that insurance **reimbursements** for it.

Facilitators to Inclusion of Mental Health Screenings

There's a there's a nice **relationship** between the AAP and the APD. The AAP does a presentation every year at the Academy meeting…I said it might be something that we might look at, is having a mental health offering at the AAPD meeting and make it kind of a headline thing rather than one of the one hour clinic type things in the back room.

CareQuest Institute for Oral Health

Discussion

Screenings

While the majority of participants acknowledge its importance, less than 15% screen patients & less than 83% do not feel confident in screening adolescent patients.

Referral Resources

Inadequate referral resources and training may prevent screening adoption.

Integration

Greater efforts to integrate mental health training in dental training must occur.

Overcoming Stigma

Overcoming stigma as to the role of the dental provider is paramount.

Demographics

Older and male providers were less likely to incorporate screenings.

Liability

Liability was relayed as a major concern. Clear guidelines and protocols are critical with time constraints.

Conclusions

Whole Person Care

Most pediatric dentists and orthodontists understand their adolescent patients for anxiety and depression.

Screenings

Most dentists are unlikely to conduct screenings in the future without policy and education changes.

Obstacles to Address

Obstacles such as inadequate training, liability and stigma must be addressed for wider adoption in the future.

Future Directions

Future research and multifaceted initiatives are crucial to tackle these challenges.

CareQuest Institute for Oral Health

Acknowledgements

*This study is funded by the **Eleanor and Miles Shore Faculty Development Award** in Honor of Aina M. Auskaps, DMD awarded to Shenam Ticku, BDS, MPH.*

I would also like to thank the other co-authors: Shenam Ticku, BDS, MPH, Christine Riedy, PhD, MPH and Nithya Ramesh, BDS, MPH

CareQuest Institute for Oral Health

Sapna Nath, BS, DMD Candidate
Harvard School of Dental Medicine
sapna_nath@hsdm.harvard.edu

CareQuest Institute for Oral Health

Association between Depressive Symptoms, Perceived Stress, and Oral Symptoms among Pregnant African American Women

Authors: Olivert Mbah, MPH[1]; Grace M. Christensen, MPH[1]; Anne L. Dunlop, MD, MPH[3]; Anke Huels PhD, Msc [1]*; Irene Yang, PhD, RN[2]*

**AH and IY contributed equally to this work and shared last authorship*

[1]Department of Epidemiology, Rollins School of Public Health, Emory University; [2]Nell Hodgson Woodruff School of Nursing, Emory University; [3]School of Medicine, Emory University | Atlanta, Georgia

Oral Health and Pregnancy

- Pregnant women face unique risks for oral health diseases.
  - Changing hormones such as rising levels of ovarian estrogen and progesterone during pregnancy.
  - Alterations in dietary habits, nausea, and vomiting, can also exacerbate the risk of oral diseases among pregnant women
- Approximately **60% to 75%** of pregnant women report experiencing oral health issues *(CDC).*
- Periodontal disease among pregnant women is associated with poor pregnancy and neonatal outcomes such as preterm birth, stillbirth, low birth weight babies, and pre-eclampsia.

Oral Health Disparities

- African Americans with low socioeconomic status are more likely than their White counterparts to suffer from oral health issues and are less likely to seek dental care in spite of their higher risk for dental problems.
- Low oral health literacy and cultural beliefs can lead to lower use of dental care services during pregnancy.
- Oral health disparities are largely attributed to social determinants of health.
- Factors such as education, income, insurance, and marital/relationship status create barriers to the utilization of dental care services and limit access to healthy foods, fluoridated water and school sealant programs.

Oral Health and Psychosocial Factors

- Depression and stress may augment the risk of oral disease by affecting the host immune response.
- Depression and stress can affect oral health through changes in health behaviors such as poor dental hygiene, dietary changes, smoking, decreased utilization of dental care, etc.
- In 2019, an estimated **14%** of US women experienced depressive symptoms during pregnancy, and studies report higher levels among pregnant African American women than pregnant White women.
- A Prospective cohort study showed that NH Black women reported higher levels of perceived discrimination, external stressors, and lower levels of social support and coping than NH White women.

NH: Non-Hispanic

Objectives

Explain the association between depressive symptoms, perceived stress, and oral symptoms among pregnant African American women.

Discuss the potential clinical implications of associations between socio-demographic, behavioral factors and oral health symptoms among pregnant women.

Sample Population

Emory University's African American Microbiome in Pregnancy Prospective Cohort Study

n = 668 pregnant African American were considered for this secondary analysis

Based on availability of data on the outcome variable **(oral symptoms)**

Pregnant women who identified themselves as African American

18-40 year-old and pregnant (8 – 14 weeks) at enrollment

Psychosocial Measures

Perceived stress

- Perceived Stress Scale (PSS-14)
- 14–item scale that assesses perceived stress in the last month
- Analyzed as a continuous variable

Depressive Symptoms

- Edinburgh Depression Scale (EDS) also known as the Edinburgh Postnatal Depression Scale (EPDS)
- 10-item scale that assesses depression during pregnancy or postpartum in the Last Seven Days
- Analyzed continuously and categorically using clinical cut-offs (scores >= 10: clinically significant depressive symptoms)

Oral Health Outcomes

Oral Symptoms

Bad Breath

Red or Swollen Gums

Tender or Bleeding Gums

Painful Chewing

Loose Teeth

Sensitive Teeth

Receding Gums

Dry Mouth

- **8 symptoms** analyzed as binary variable (none vs. one or more symptoms)
- Oral symptoms with prevalence of 10% or more analyzed as individual outcomes

Tender or Bleeding Gums
Sensitive Teeth
Dry Mouth

Socio-Demographic Measures

Socio-demographic survey at time of enrollment

- Age
- Years of education
- Income status
- Health insurance
- Type of health insurance
- Relationship status
- Household income

Health survey Questionnaire

- ❑ Substance use behaviors in previous month
  - Tobacco consumption
  - Marijuana consumption
  - Alcohol consumption
- ❑ Oral hygiene and self-care practices
  - Brushing teeth in the previous two days
  - Flossing in the previous month

Data Analyses

Statistical Analyses

- Distribution of sociodemographic characteristics and health behaviors
- Multivariable logistic regression models
  - Obtain odds ratios (ORs) and 95% confidence intervals (CIs) for the association between perceived stress, depressive symptoms, and oral symptoms
- Directed acyclic graphs (DAGs) informed by literature were used to determine potential confounders
- Demographic, socioeconomic, and behavioral factors were assessed as potential confounders.

- Income status
- Education
- Type of health insurance
- Age
- Flossing

- Relationship status
- Alcohol consumption
- Tobacco consumption
- Marijuana consumption

Multiple Imputation Analyses

- The *Hmisc* (Harrell Miscellaneous) package was used to perform multiple imputation analyses.
- All Statistical analyses were conducted using SAS version 9.4 and R version 4.2.2.

Results

Table 1: Baseline Characteristics of Pregnant African American Women in the Study (n= 668)

Characteristic	Overall (N= 668)
Age (18 - 40 (years))	
Mean ± SD, IQR	26 ± 5.1, 8
Education Status, Frequency(%)	
Less than High school	95 (14.2)
High school graduate	261 (39.1)
Some college, Vocational school	190 (28.4)
College graduate or more	122 (18.3)
Income Status in the Past Year, Frequency(%)	
< 100% of Federal Poverty Level	249 (37.2)
≥100% of Federal Poverty Level	296 (44.3)
Missing	123 (18.4)
Relationship Status, Frequency(%)	
Not Partnered	145 (21.7)
Partnered	523 (78.3)

SD: Standard Deviation; IQR: Interquartile Range

Characteristic	Overall (N= 668)
Health Insurance Status during Pregnancy, Frequency(%)	
Yes	662 (99.1)
No	6 (0.9)
Type of Health Insurance during Pregnancy, Frequency(%)	
Medicaid	523 (78.3)
Private Insurance	137 (20.5)
Missing	8 (1.2)

Characteristic	Overall (N= 668)
Alcohol Consumption in the Past Month, Frequency(%)	
Yes	41 (6.1)
No	624 (93.4)
Missing	3 (0.4)
Tobacco Consumption in the Past Month, Frequency(%)	
Yes	94 (14.1)
No	574 (85.9)
Marijuana Consumption in the Past Month, Frequency (%)	
Yes	148 (22.2)
No	517 (77.4)
Missing	3 (0.4)

Table 2: Descriptive statistics of psychosocial factors and oral health characteristics (n= 668)

Symptom/Characteristic		Overall (N= 668)
Psychosocial Factors (Depression and Perceived Stress)		
	Depressive Symptoms in the Past Seven Days (Continuous); Range 0 to 30	
	Depression scores, Mean ± SD, IQR	**7.2 ± 5.6, 7.5**
	Missing	**21 (3.1)**
	Clinically Significant Depressive Symptoms in Past Seven Days, Frequency(%)	
	Yes	**200 (29.9)**
	No	**447 (66.9)**
	Missing	**21 (3.1)**
	Perceived Stress in Past Month (Continuous); Range 0 to 56	
	Stress scores, Mean ± SD, IQR	**24 ± 7.7,11**
	Missing	**18 (2.7)**

EDS: Edinburgh Depression Scale; PSS: Perceived Stress Scale; SD: Standard Deviation; IQR: Interquartile Range

Table 2: Descriptive statistics of psychosocial factors and oral health characteristics (n= 668)

Symptom/Characteristic		Overall (N= 668)
Oral Hygiene		
	Brushed Teeth in the Past Two Days, Frequency(%)	
	Yes	**656 (98.2)**
	No	**11 (1.6)**
	Missing	**1 (0.1)**
	Flossed in the Past Month, Frequency(%)	
	Yes	**369 (55.2)**
	No	**297 (44.5)**
	Missing	**2 (0.3)**
Oral Health Characteristics		
	Oral Symptoms, Frequency(%)[d]	
	At Least One Oral Symptom	**307 (46.0)**
	No Oral Symptom	**361 (54.0)**
	Sensitive Teeth, Frequency(%)	
	Yes	**203 (30.4)**
	No	**465 (69.6)**
	Tender or Bleeding Gums, Frequency(%)	
	Yes	**106 (15.9)**
	No	**562 (84.1)**
	Dry Mouth, Frequency(%)	
	Yes	**91 (13.6)**
	No	**577 (86.4)**

SD: Standard Deviation, IQR: Interquartile Range ; [d]At least one oral symptom is defined by the presence of 1 or more symptoms of eight oral symptoms (bad breath, red or swollen gums, tender or bleeding gums, painful chewing, loose teeth, sensitive teeth, receding gums, dry mouth).

Table 3: Association between depressive symptoms, perceived stress, and oral symptoms among pregnant African American women at enrollment (8 - 14 weeks) (n= 668)

	At Least One Oral Symptom[a]	Sensitive Teeth	Tender or Bleeding Gums	Dry mouth
	Adjusted	Adjusted	Adjusted	Adjusted
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Depressive Symptoms				
Depression Symptoms in the Past Seven Days [b]				
Depression Score (Standardized)	**1.57 (1.25, 1.96)**	**1.44 (1.15, 1.82)**	**1.63 (1.23, 2.17)**	**1.37 (1.02, 1.83)**
Clinically Significant Depression Symptoms in Past Seven Days [C]				
Yes	**1.39 (1.01, 1.92)**	**1.39 (1.00, 1.95)**	**1.47 (0.97,2.24)**	**1.27 (0.82, 1.96)**
Perceived Stress				
Perceived Stress in the Past Month [d]				
Stress Scores (Standardized)	**1.34 (1.06, 1.69)**	**1.44 (1.11, 1.85)**	**1.35 (0.99, 1.84)**	**1.00 (0.73, 1.39)**

Odds ratios(ORs) and 95% confidence intervals (CIs) from adjusted models fitted using the multiple imputation approach

The models were adjusted for age, education, type of health insurance, income status, relationship status, tobacco consumption, marijuana consumption, alcohol consumption, and flossing.

[a] At least one oral symptom is defined by the presence of one or more symptoms of eight oral symptoms (bad breath, red or swollen gums, tender or bleeding gums, painful chewing, loose teeth, sensitive teeth, receding gums, dry mouth)

[b]Depression scores ranged from 0 to 30 and were standardized using IQR (Interquartile Range) of 7.5. [c]Depression scores ≥ 10 were defined as clinically significant depressive symptoms

[d]Stress scores ranged from 0 to 56 and were standardized using IQR (Interquartile Range) of 11

Results Summary

- Pregnant women with higher EDS scores and PSS scores had increased odds of having at least one oral symptom after adjusting for socio-demographic, and behavioral factors.
- Women with depressive symptoms (using the clinical cut-off for depression) had increased odds of having at least one oral symptom after adjusting for socio-demographic, and behavioral factors
- Depressive symptoms had the strongest association with the oral symptom "tender or bleeding gums" followed by "sensitive teeth" and lastly, the "dry mouth" oral symptom.
- Perceived stress had the strongest association with the oral symptom "sensitive teeth" followed by "tender or bleeding gums" and lastly, "dry mouth" oral symptom.
- The associations obtained in all sensitivity analysis and complete case analyses were robust.

Study Strengths & Limitations

Study Strengths

- No prior studies have studied these associations among pregnant African American women.
- Study findings supported by a previous study in the United States.
- Study findings highlight the unique vulnerability of pregnant African American women to oral disease.

Study Limitations

- Reporting bias due to the use of self-reported data.
- Limited ability to generalize findings to all pregnant women in the United States
- Inability to adjust for two variables due to limited variability.
- Multiple imputations performed for variables with missing data.
- The cross-sectional nature of the data puts constraints on temporality.

Conclusion

- African American women who experienced stress and depressive symptoms were at increased odds of having oral symptoms during the first **8-14** weeks of their pregnancy.
- Understanding the relationship between depressive, stress symptoms and oral health can potentially lead to educational and preventive interventions.
- Access to psychosocial resources during antennal care.
  - May moderate the prevalence of perceived stress and depression among pregnant.
  - May improve oral health among pregnant African American.
- Clinical and public health implications of incorporating an **oral health assessment** and psychological counseling as part of the first prenatal visit.
- Importance of collaboration between dental care providers, maternal health providers and mental health providers.

ACKNOWLEDGEMENT

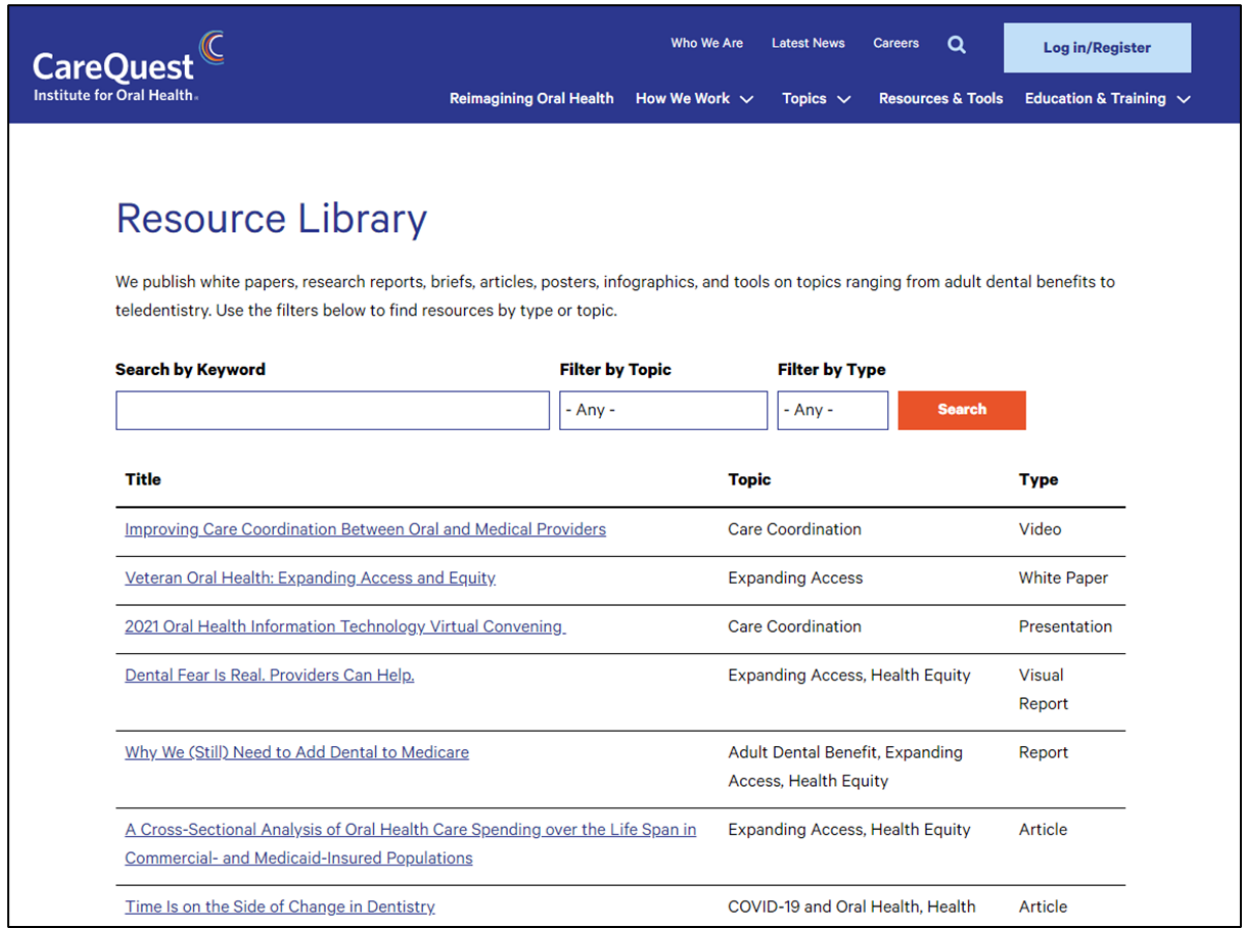
Ann Borders, MD, MPH, Endeavor Health
Richard Silver, MD, Endeavor Health
Jungeun (Camilla) Lee, MS; Endeavor Health

Olivert Mbah, MPH
Emory University
Rollins School of Public Health
olivertabohmbah@yahoo.com

CareQuest Institute for Oral Health

Question and Answer

To Explore More Industry-Leading Research



www.carequest.org/resource-library

CareQuest Institute for Oral Health

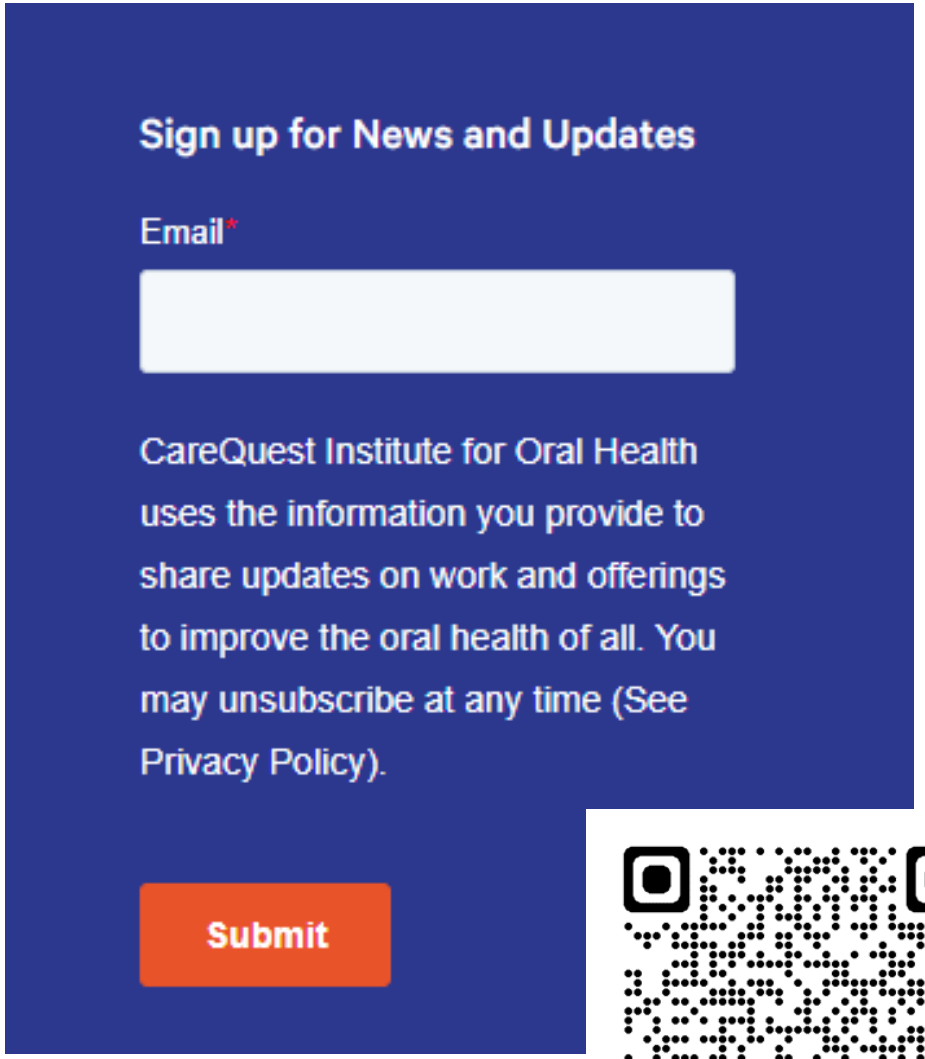
Webinar Evaluation

Complete the evaluation by **Friday, March 8** to receive CE credit. You will receive a link to the survey within 24 hours.

Next Webinar:

Caries Management and Risk Assessment Approaches on **March 21 at 7 p.m. ET**

And we invite you to take a minute to sign up for our newsletter to get more information on future webinars!



CareQuest Institute for Oral Health

Stay Connected

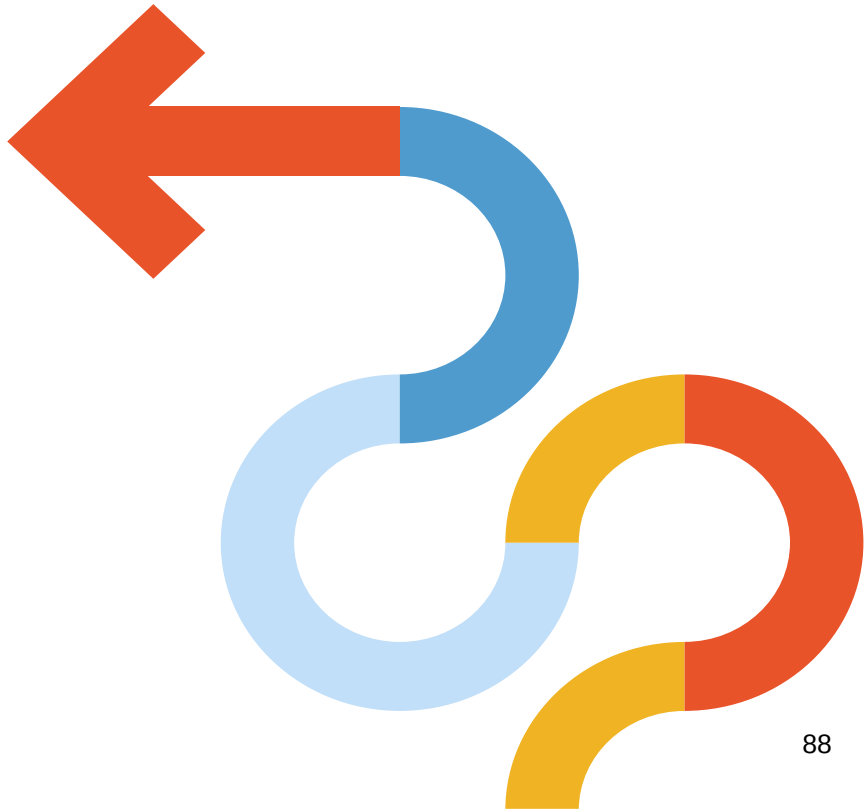
Follow us on social media

@CareQuestInstitute

@CareQuestInstitute

@CareQuestInst

CareQuest Institute



CareQuest Institute for Oral Health

CareQuest

Institute for Oral Health®