

Oral Health & Economic Welfare: A Two-Way Street?

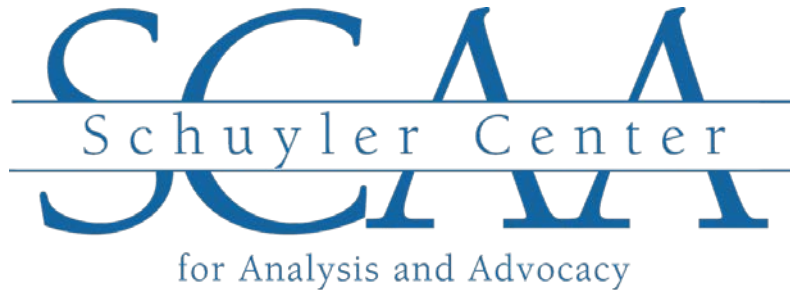
Burton L. Edelstein DDS MPH

Professor Emeritus, Columbia University

Jill Boylston Herndon PhD

Principal, Key Analytics and Consulting

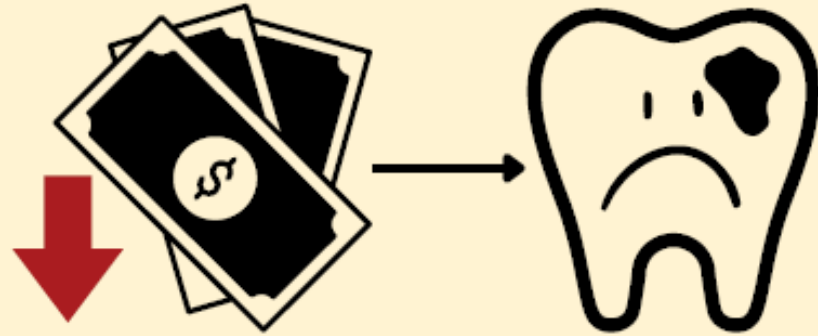
The Future Oral Health Workforce Project



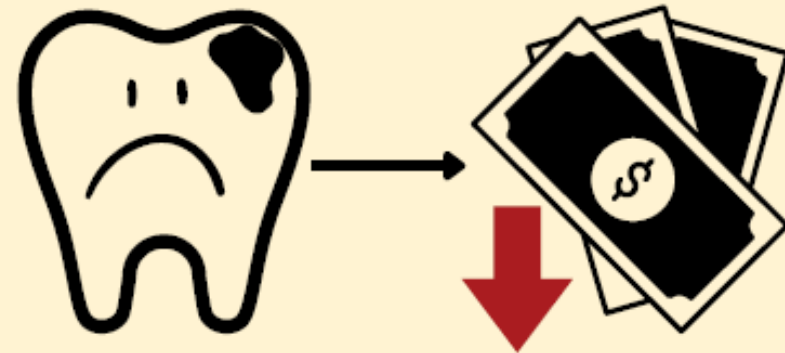
1. March 14, 2024: Project Kick-Off
2. April 22, 2024: Oral Health 101
3. April 25, 2024: Opportunities for Prevention and Intervention
4. **May 9, 2024:** **Oral Health and Economic Welfare: A Two-Way Street?**
5. May 14, 2024: Increasing Access to Dental Medicaid: Case Study from Missouri
6. May 20, 2024: Oral Health Needs Assessment for New York State

<https://scaany.org/oral-health/oral-health-workforce/>

It is known that **poor economic circumstances are associated** with poorer oral health.



But can poor oral health lead to poor economic circumstances?



The Mouth – Why the mouth matters!

An organ of

- Chewing and swallowing
- Digestion
- Respiration
- Speaking
- Protection
- Sensation

Home to unique structures

- Teeth and pulp
- Occlusion
- Periodontium
- Tongue
- Salivary glands
- TMJ



The Mouth – Why oral health matters!

Untreated oral disease can affect

- Appetite
- Ability to eat
- Nutrition

Periodontitis and dental caries lead to

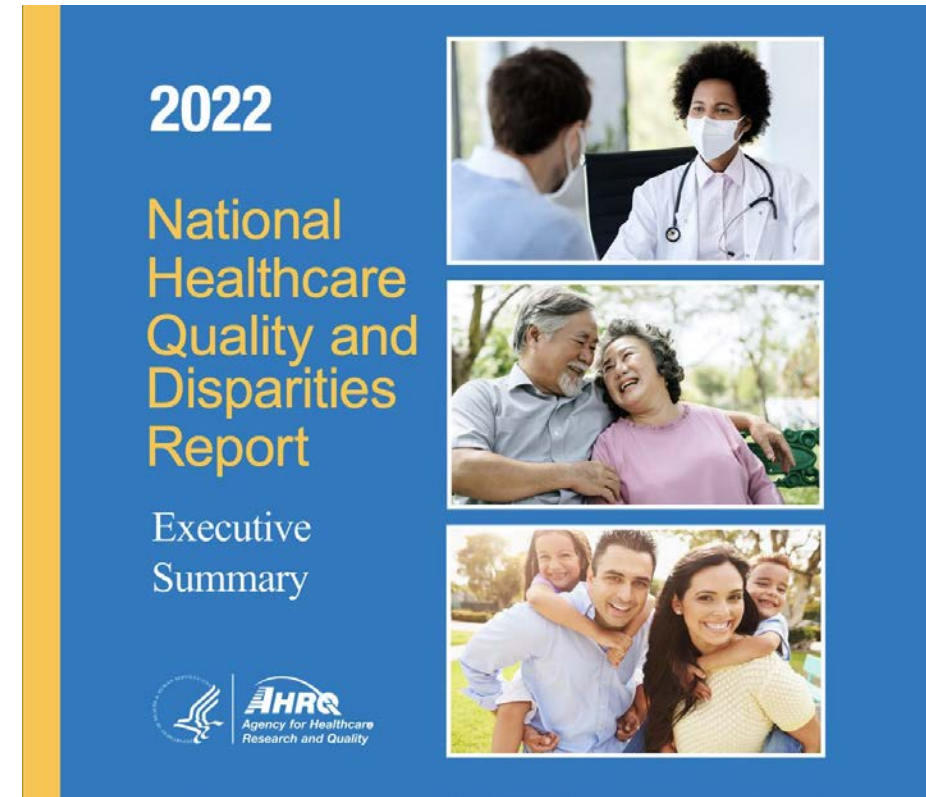
- Pain
- Impaired sleep
- Impaired academic performance
- Missed school and workdays
- Decreased employability**

Dental infections lead to

- Abscess
- Sepsis

Systemic Health

Poor oral health may also be associated with other chronic diseases, such as diabetes and heart-related conditions



Income and Oral Health

 IADR INTERNATIONAL ASSOCIATION FOR DENTAL, ORAL, AND CRANIOFACIAL RESEARCH  AADOOCR® American Association for Dental, Oral, and Craniofacial Research Impact Factor: **7.6**

 Restricted access | Research article | First published online May 15, 2019

The Relationship between Income and Oral Health: A Critical Review

[A. Singh](#)  , [M.A. Peres](#) , and [R.G. Watt](#) [View all authors and affiliations](#)

[Volume 98, Issue 8](#) | <https://doi.org/10.1177/0022034519849557>

Nationally and Internationally, Low-Income is Associated with:

Dental Caries

Periodontal Disease

Tooth Loss

Oral Cancer

Traumatic Dental Injuries

Poor Oral Health-Related Quality of Life

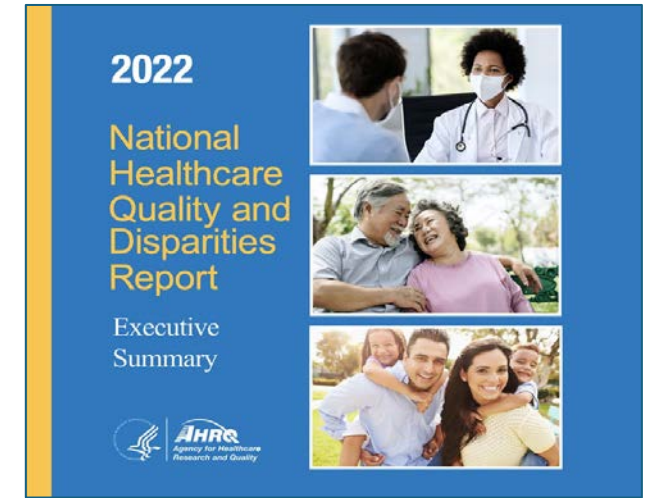
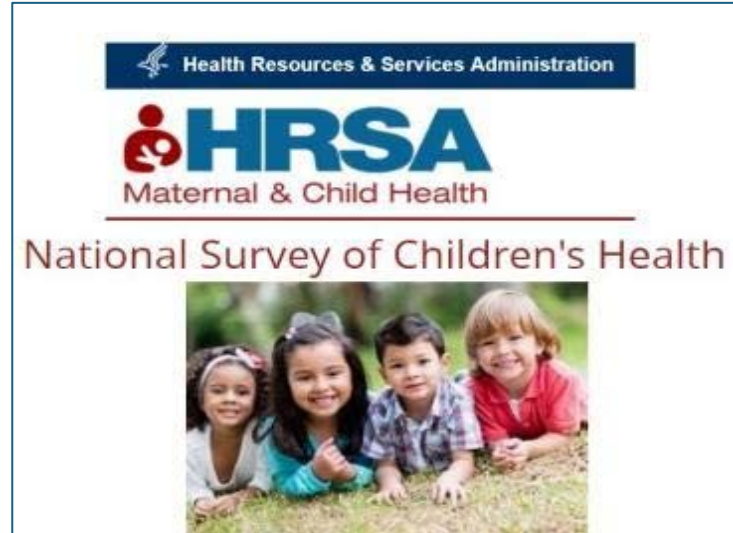
Data Sources on oral health disparities

Federal Agencies addressing oral health disparities

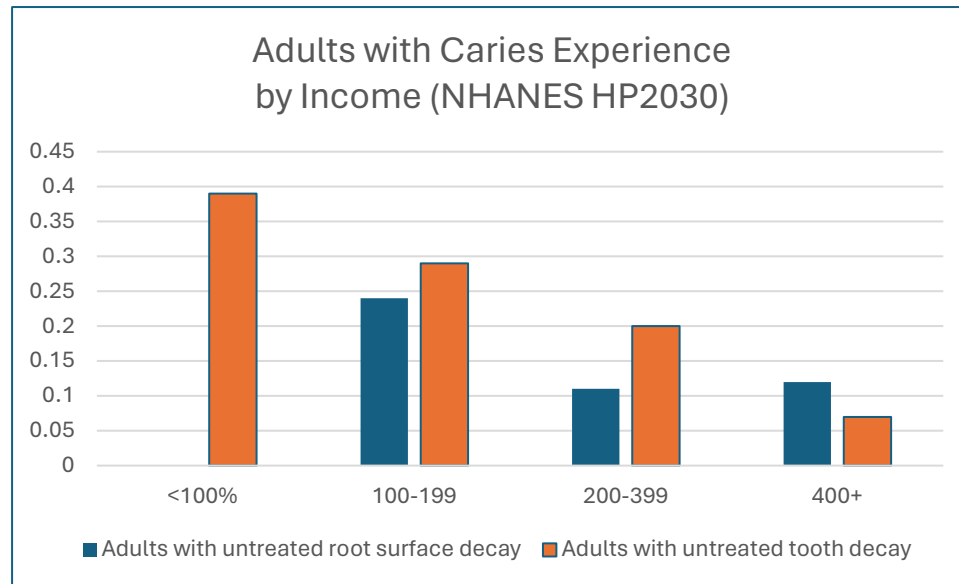
- CDC
- HRSA
- NIH
- AHRQ

Interactive databases

- <https://health.gov/healthypeople/objectives-and-data/browse-objectives/oral-conditions>
- <https://www.nschdata.org/>

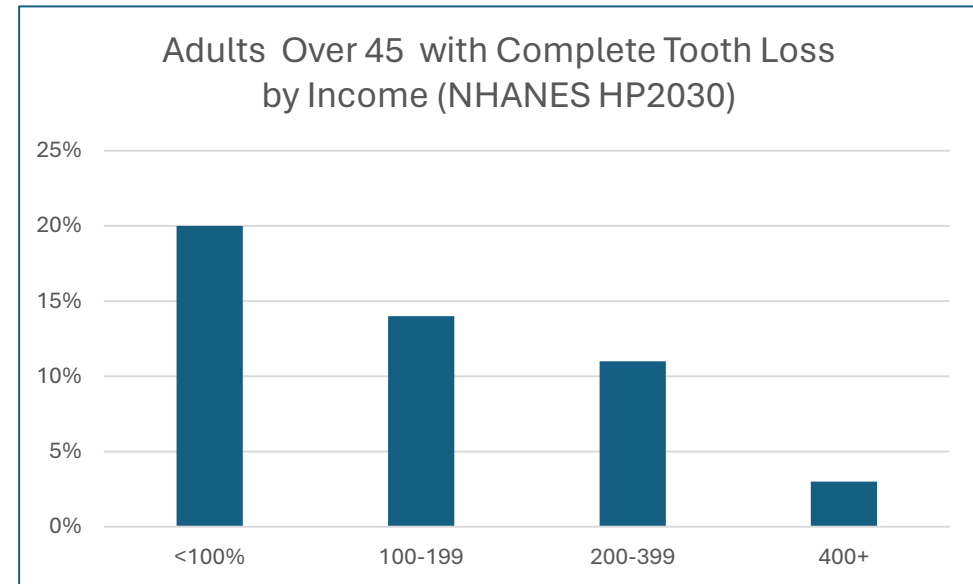


Income and Adult Oral Health



Take-homes

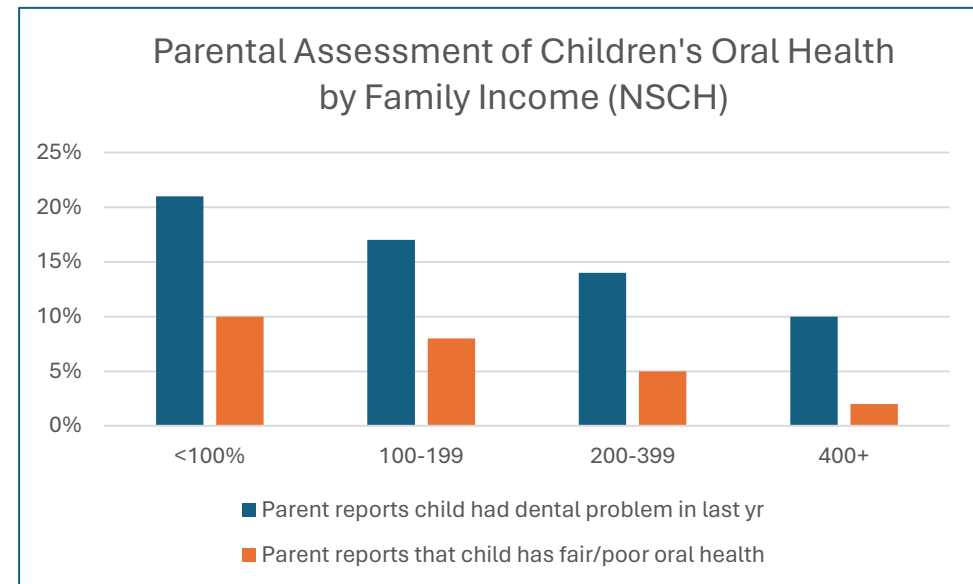
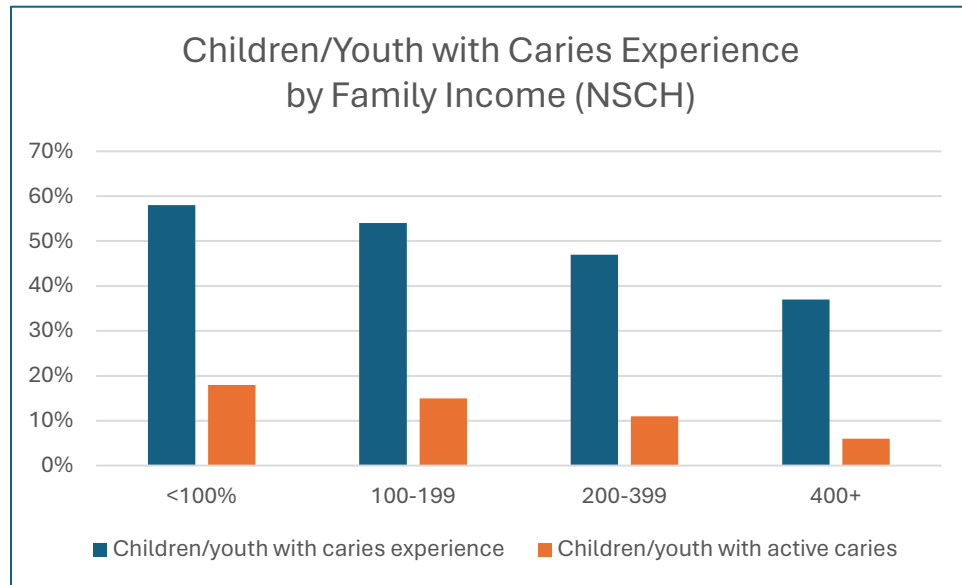
- Stairstep prevalence by income
 - Untreated tooth decay: any type
 - Untreated tooth decay: root surface



Take-homes

- Stairstep prevalence by income
 - Complete tooth loss

Income and Child Oral Health



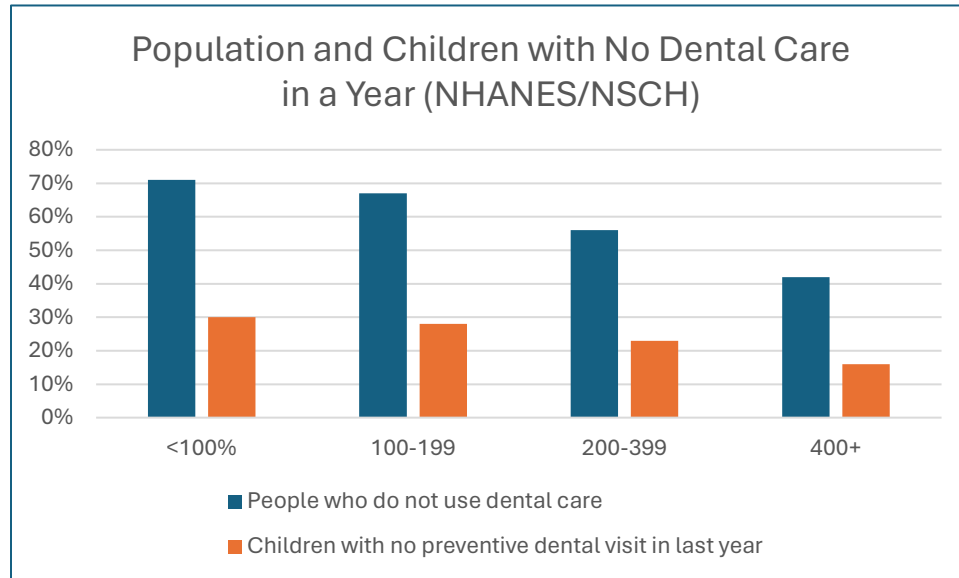
Take-homes

- Stairstep prevalence by income
 - Caries experience at any time
 - Current caries activity

Take-homes

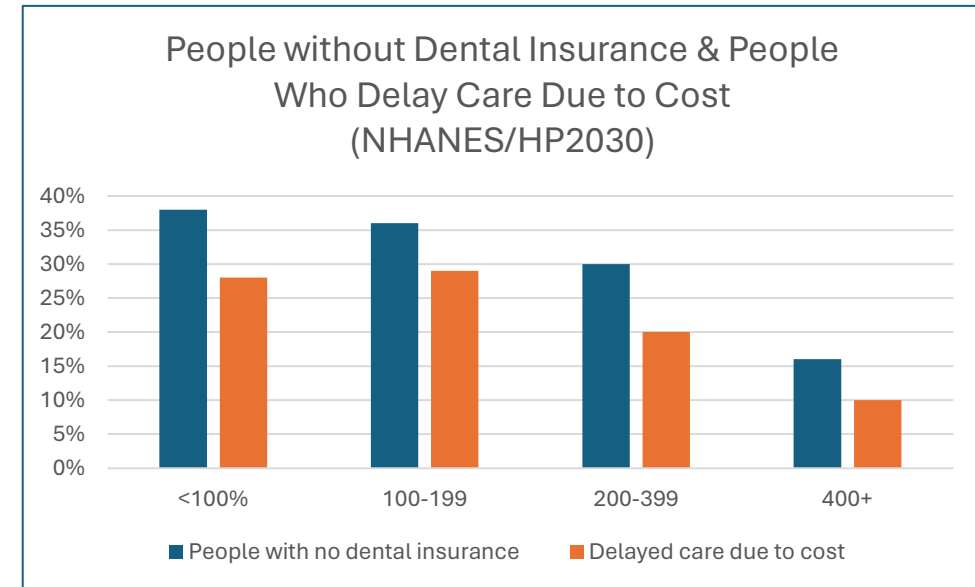
- Stairstep prevalence by income
 - Parent assessment of their children's oral health

Income and Dental Care



Take-homes

- Stairstep prevalence by income
 - Lack of any dental care in a year – all ages
 - Lack of child preventive care in a year



Take-homes

- Stairstep prevalence by income
 - People without dental insurance
 - People who delay dental care due to cost

Early Childhood (oversimplified) Shorthand

In the US, children under age six in poor families have...

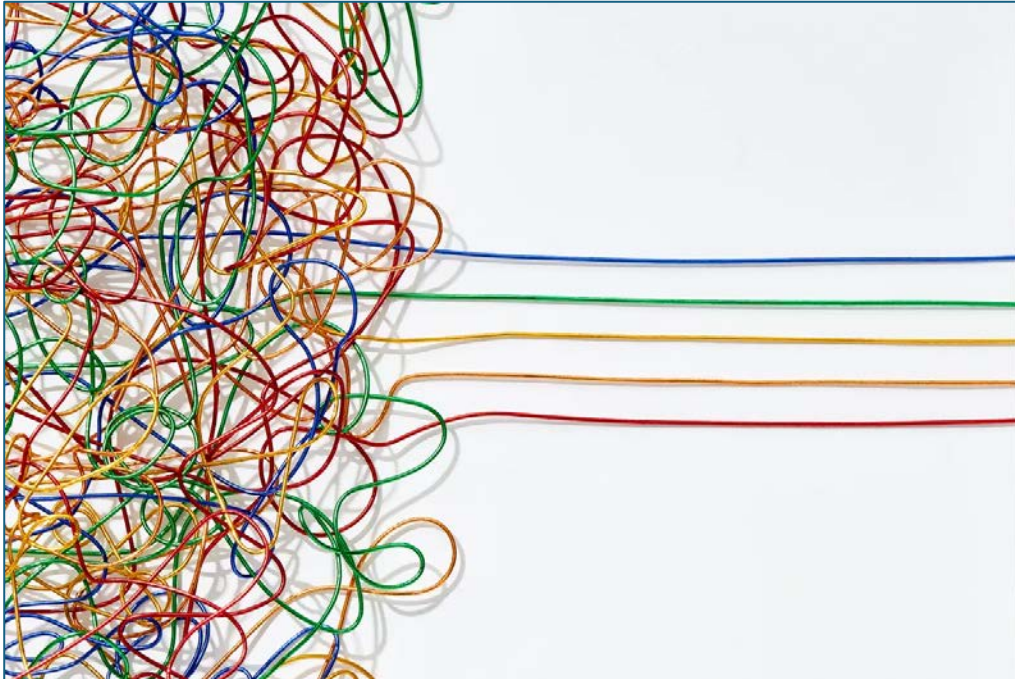
- Twice the odds of have caries
- Twice the extent of caries
- Twice the odds of having untreated caries
- Twice the experience of pain and infection from caries

But...

- Half the odds of having a dental visit



Let's not oversimplify human complexity



Income is a **proxy** for social standing

Social standing also involves

Income

Race

Ethnicity

Education

Culture

Geography

Demography

To develop program and policy interventions, better studies are needed based on:

Theoretical and methodologic advances
in social epidemiology

Intersectionality framework

Improved reporting and tracking

Causal modeling

More data exploration on your own



Explore by oral health condition by...

- State or Region
- Age
- Sex
- Race
- Ethnicity
- Parent nativity
- Primary household language
- Family structure
- Household income
- Parent education
- Parent military status
- Special needs
- Mental/emotional needs
- Family resilience
- Adverse childhood experiences
- Medical home
- Insurance status

Recall: Social standing is complex – more than income

Example: Dental Problem -- toothache, bleeding, cavities etc -- in last year among US children:

Income: 21% poor, 10% affluent
Race/ethnicity: 17% Hispanic, 15% Black, 13% White
Parent nativity: 17% Foreign-born, 13% US-born
Parent education: 21% less than HS, 11% College degree
Parent language: 20% non-English, 13% English
Family structure: 18% 1parent/grandparent, 12% 2-parent
Special needs: 16% yes, 13% no
Medical home: 15% no, 13% yes
Insurance: 20% no, 14% yes
Type of Insurance: 20% Public, 11% private

Grandma's Advice

“It's OK to be Rich”

“It's OK to be Poor”




“It's Better to Be Rich”

Even within poverty, there are socioeconomic gradients in oral health and dental care

Conclusions: Within an inner city area of poverty, the greater a census tract's socioeconomic risks to health, the greater the odds that children over age five experience caries and the lesser their odds of having dental sealants. While associations between SES and oral health outcomes across the full spectrum of SES have been recognized, this study suggests that within lower SES areas, SES-associated gradients exist in children's oral health.

J Public Health Dent . ISSN 0022-4006

Small-area socioeconomic status and children's oral health in a safety-net care delivery setting

Marcie S. Rubin, DrPH, MPH, MPA¹ ; Sean A. P. Clouston, PhD² ; Burton L. Edelstein, DDS, MPH³ 



Poor Economic Circumstances ARE Associated with Poor Oral Health

What about the reverse?



Why we cared

Study was an outgrowth of work conducted by the Children's Dental Health Project.



- CDHP wanted to understand how improving oral health contributed to economic success.
- Demonstrating a linkage between oral health and economic success helps to make the case for integrating oral health as part of multi-pronged strategies aiming to improve economic well-being
 - Job training
 - Child care
 - Poverty reduction
 - Homelessness
 - Mental health

How we addressed

Scoping Review

- Synthesize “what do we know?”
- Identify “what do we still need to learn?”



Received: 30 June 2023 | Revised: 7 November 2023 | Accepted: 25 November 2023

DOI: 10.1111/jphd.12599

ORIGINAL ARTICLE

A scoping review of the economic impact of family oral health: Implications for public health, research, and policy

Jill Boylston Herndon PhD¹ | **Marcie S. Rubin DrPH, MPH, MPA²** |
Colin Reusch MPA³ | **Burton L. Edelstein DDS, MPH⁴**

¹Key Analytics and Consulting, LLC, Sarasota, Florida, USA

²Division of Socio-Behavioral Sciences, College of Dental Medicine, Columbia University, New York, New York, USA

Abstract

Objectives: To summarize evidence on the impact of oral health on individual and family economic outcomes, describe trends in the literature, and identify areas for additional research to inform public health research and practice.

What we asked: study questions

Does oral health impact
**employment or
employability?**



9 studies

Does oral health impact
**earnings or earning
potential?**



26 studies

Does child oral health
impact **parent employment
or missed work?**



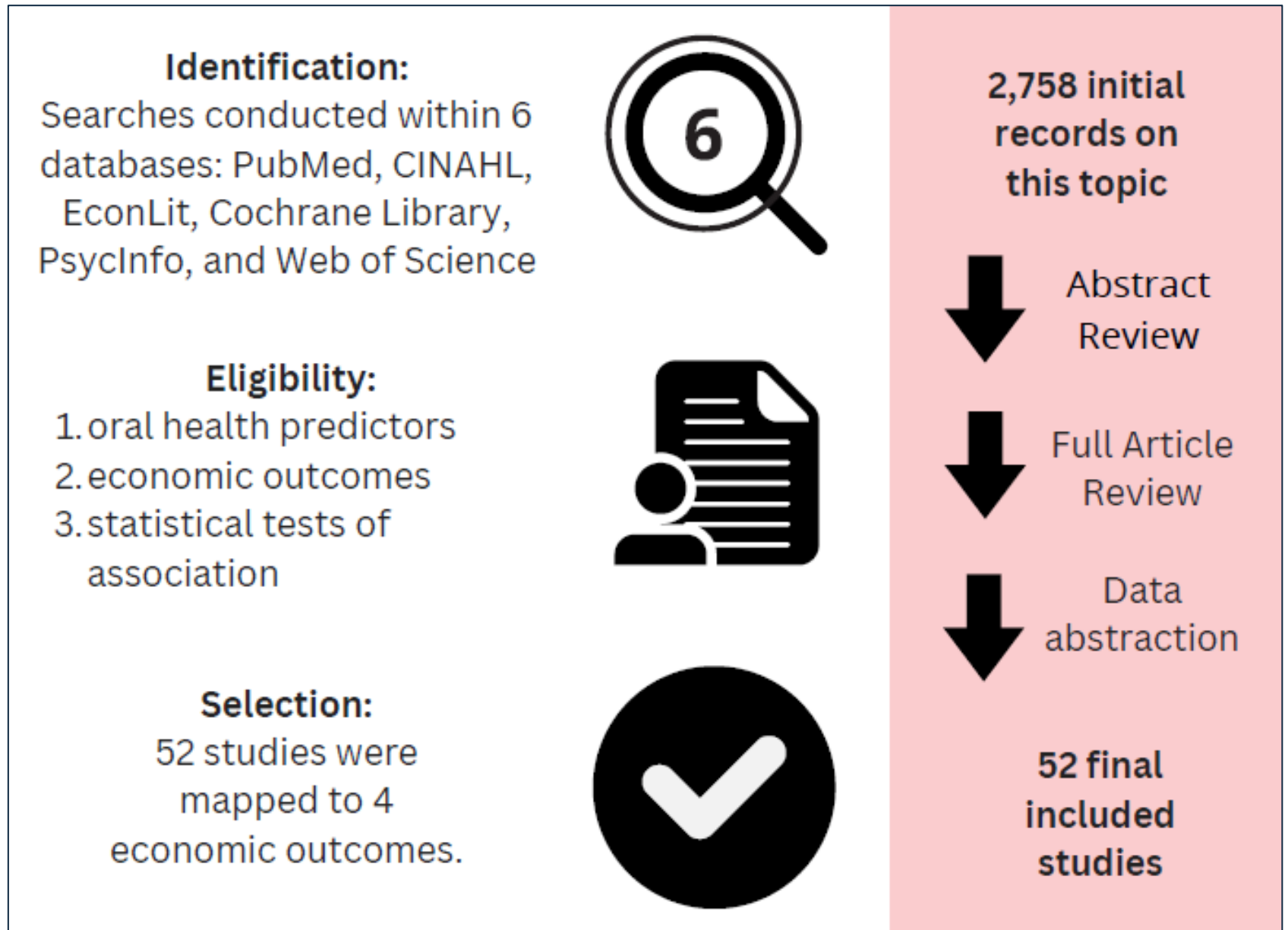
19 studies

Does oral health
impact **household
finances?**



3 studies

What we did: methods



What we found: economic outcomes & oral health predictors examined

Outcome Categories

Parent work/family
financial impact related to
child's oral health
(n=19)

Employment
status/
employability
(n=9)

Impaired work/
difficulty doing
usual jobs
(n=13)

Missed work –
time and cost
estimates
(n=9)

Child life
opportunities/
future earnings
(n=4)

Financial
loss
(n=3)

Predictor Categories

Caries/dmft/DMFT
(n=15)

Receipt of dental care/
dental treatment
(n=11)

Malocclusion
(n=11)

TDI
(n=10)

Self/caregiver
oral health rating
(n=10)

Other
pathology
(n=8)

Dental
discomfort/p
ain
(n=9)

Other
dentition
status
(n=4)

Oral
Function
(n=4)

Dental
appearance
(n=3)

Periodontal
disease
(n=2)

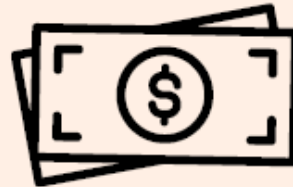
What we concluded
(with some cautions) :

Does Poor Oral Health Impact Your Economic Circumstances?

YES!



Dental caries variables are the **most common predictors** of poorer economic outcomes.



Dental pain and poor self-reported oral health status are also associated with **adverse economic outcomes**.





Interventions to improve oral health are **significantly associated with employment**.

More on this:



Interventions to improve oral health are significantly associated with employment.

Comprehensive oral care improves treatment outcomes in male and female patients with high-severity and chronic substance use disorders

Glen R. Hanson, DDS, PhD   • Shawn McMillan, MPA • Kali Mower, BS • ... Ken Smith, PhD •
Huong Meeks, PhD • Bryan Trump, DDS, MS • [Show all authors](#)



Home » American Journal of Public Health (AJPH) » December 2013


Evaluating the Impact of Dental Care on Housing Intervention Program Outcomes Among Homeless Veterans

Elizabeth Nunez DMD MST, Gretchen Gibson DDS, MPH, Judith A. Jones DDS, DScD, MPH, and John A. Schinka PhD

Journal of Dental Research



Impact Factor: 7.6

 Restricted access | Other | First published January 2006

Welfare Dental Intervention Improves Employment and Quality of Life

[S. Hyde](#) , [W.A. Satariano](#), and [J.A. Weintraub](#) [View all authors and affiliations](#)


[Volume 85, Issue 1](#) | <https://doi.org/10.1177/154405910608500114>

Back to the cautions: study characteristics

... and how we can improve the evidence




Economic outcome often was reported secondary to another study objective.




Only 1 study estimated impact of oral health on earnings.

Need: More studies with primary objective to examine economic impacts of oral health



The majority of studies used a cross-sectional design



1/3 of studies conducted multi-variable analyses

Need: More rigorous analytic approaches



14% incorporated race and ethnicity variables.



16 of 52
31% of studies incorporated sex into their models

Need: Examine variation by social and demographic characteristics

Acknowledgements

Children's Dental Health Project

- Meg Booth, former Executive Director

Our Amazing Co-Authors!

- Marcie Rubin
- Colin Reusch

Infographics

- Bree Zhang

Article citation

Herndon JB, Rubin MS, Reusch C, Edelstein BL. A scoping review of the economic impact of family oral health: Implications for public health, research, and policy. *J Public Health Dent.* 2024; 84(1): 43–99.

<https://doi.org/10.1111/jphd.12599>

Thank you!