Politics and personal responsibility:

How the soda tax in Berkeley, CA affects parents’ knowledge, attitudes and behaviors with respect to soda and oral health

Tara Benesch & Ana Ibarra-Castro
Universidad de California, Berkeley
Agenda

Lecture – 30min
• The importance of oral health
• The beverage tax in Berkeley
• Preliminary results of parent interviews

Discussion – 30min
• The role of tooth decay in the battle against sugary drinks
• The situation in Mexico
• Future opportunities
Dental Caries: omnipresent and ignored

Who has suffered from mouth pain?

Who has children who have suffered from mouth pain?

Who has had a cavity?

How has this experience been for you? How easy and cheap has it been to get treatment?
Dental Caries: omnipresent and ignored

Untreated Dental Cavities

Image courtesy of Karen Sokal-Gutierrez, MD, MPH, UC Berkeley School of Public Health
THE EFFECTS OF UNTREATED TOOTH DECAY

Cardiovascular disease
Related to periodontal disease

Cancer
Periodontal disease is associated with pancreatic and gastrointestinal cancer

Organ Infections
Oral bacteria are associated with infections of the brain, lung, heart, and other organs.

Pneumonia
Oral infections increase the risk of pneumonia

Pregnancy Complications
Periodontal disease is associated with preterm and low-birth-weight babies

Diabetes
Periodontal disease increases the risk of developing complications from Diabetes


Dental caries disproportionately affect Latinos...

Prevalence of dental caries by race/ethnicity in the USA, 2005-2008

- White
- Black
- Latino/a
- Asian

...and low-income communities

The prevalence of complete tooth decay (edentulism), by poverty level

Among adults 65 years and older in the USA, 2005-2008

Across the globe, **2.4 billion people** have dental caries

Untreated dental caries are the #1 most prevalent illness in the world.

The prevalence of dental caries is higher in the Americas than in any other region of the world.
Tooth Decay is Expensive for Individuals and for Society

<table>
<thead>
<tr>
<th></th>
<th>USA</th>
<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Root Canal</td>
<td>$800-$1200</td>
<td>$100-$200</td>
</tr>
<tr>
<td>Dental filling</td>
<td>$50-200</td>
<td>$20-50</td>
</tr>
<tr>
<td>Tooth extraction</td>
<td>$100-400</td>
<td>$25-50</td>
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</tbody>
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Direct costs (public and private) associated with different illnesses in the European Union (2008-2012)

- Stroke: $46 bn
- Cancer: $61.2 bn
- Oral Health: $94.8 bn
- Cardiovascular Disease: $126 bn
- Diabetes: $167 bn

Resources:
Dental caries are 100% preventable
Bacteria accumulates in a biofilm on teeth.

The bacteria consume sugar and produce acid.

The acid dissolves the tooth enamel.

A cavity forms.

Tooth brushing removes the accumulation of bacteria.

Reducing sugar consumption reduces the proliferation of bacteria.

Fluoride helps protect tooth enamel.

Education

Taxes

Public Policy Measures

Access to clean water and healthy food
Changes in oral health happen quickly

Baby Bottle Tooth Decay

6 months

24 months

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Preventing cavities is easy
Sources of Added Sugars in the Diets of the U.S. Population Ages 2+ (NHANES 2005-2006)

- Soda, energy drinks, sports drinks, 35.7%
- Other foods, 15.4%
- Fruit drinks, 10.5%
- Dairy desserts, 6.5%
- Cereals, 3.8%
- Tea, 3.5%
- Sugars & honey, 3.5%
- Candy, 6.1%
- Yeast breads, 2.1%
- Other foods, 15.4%
Consumption of sugar in the US, Mexico and China

Only 2% of media messages related to Measure D in Berkeley mention oral health.
Measure D in Berkeley

- Implemented 2015
- 1 cent/oz
- $1.2 million USD raised in 9 months
- 42% designated to the school district

El IEPS en México

- Implemented in 2014
- 1 peso / liter
- Reduced SSB consumption by 6-12% in the first year
- Raised 18,000 million pesos in the first year

Colchero M Arantxa, Popkin Barry M, Rivera Juan A, Ng Shu Wen. Beverage purchases from stores in Mexico under the excise tax on sugar sweetened beverages: observational study BMJ 2016; 352 :h6704
What is the role of oral health in conversations about SSBs and beverage taxes?
Methods and Participants

- **4 focus groups**
- **16 in-depth interviews**

Participants

- **Low income**
  - <$24,000 for a family of 4
- **University education**
- **Voters**
  - (54% voted in 2014)
  - Of those, 54% voted YES to Measure D
- **Majority women**

Race/Ethnicity

- **Black** 25%
- **White** 25%
- **Latino** 37%
- **Indian/Pakistani** 13%
Results

• Beverage selection
  – External vs. Internal Influences
    • Price is a key factor in beverage selection
  – Heirarchy of beverages
  – The power of personal experiences
• Taxation works…although people say it doesn’t
• Salient health effects
  – Diabetes and obesity dominate the conversation
  – Commonly ignored, oral health is a prevalent concern with surprising potential
Beverage selection

“Dark soda is bad...like, it’s worse than regular soda.”
“…the truth of the matter is that the kids, they love whatever it is that the adults around them are offering. Kids love whatever adults are drinking.”
“Before, I suffered from kidney disease, so now I have a kidney transplant and I think my soda consumption had something to do with it... sometimes I drank 3 sodas per day. So... for me, after my transplant, just water. And for my whole family: water. After my transplant, more nutritious foods and only water. I had to live through that to realize the damages associated with sugar.”
Taxation

“In my opinion, I don’t think raising the taxes will get people to stop buying it. Raising taxes won’t change behavior.”
“...this water costs $1, and this juice used to cost $1...now that they are taxing this juice, it costs $2. So it was cheaper for me to buy two bottles of water than one juice.”
Price and consumption

“The price! Definitely the price!... The fact that you can buy a soda for $1 and a water costs $3... because the majority of us are from low-income communities, and I think that’s part of the reason why our communities are most affected.”

(Translated from Spanish)
Oral Health

“I just watch people suffer with toothaches. And when it gets to the nerve, it just affects everything, and you can’t concentrate or do anything.”

“If your mouth hurts, your whole body hurts”
“We took our oldest daughter to the dentist... They told me to completely eliminate the juices. Because she had a cavity, and that cavity was going to affect her other teeth. Now she, y esa carie iba a afectar a los otros [dientes]... Now she can’t have juice, she can’t have candy, she can’t have anything [sweet]. Because of that cavity. And that cavity helped motivate her to eat less.”

Translated from Spanish
“I think that it also has to do with embarrassment, because sometimes their teeth break and...they cover their mouth or they don’t go outside because they’re embarrassed.”

Translated from Spanish
Adults vs. Children

“I would say that it’s obesity (in adults)...
And for kids...I’m not sure what they’re called, but gray teeth. Unfortunately, I feel that children who drink more sugary drinks are more affected.”
Implications & Conclusions

Parents know that sugar is bad for health but can’t identify sugary beverages

Better nutritional labeling and access to healthy foods and beverages

Most parents support a tax, especially when revenue benefits children

Designating tax revenue for children’s programs may help SSB taxes pass in other cities

The most salient health effects are those that are personally meaningful

Design public health campaigns that speak to the experiences of the target population

Oral health problems are common and visible

Integrate oral health into the public health campaigns against SSBs
Next Steps

Oral health is a relatively unexplored theme in the battle against sugary drinks:

• We need more information about the prevalence of caries and their economic impact

• Possibly incorporating oral health messages into public health campaigns
  – A beautiful smile is a short-term indicator of good health

• Need more collaboration between academic communities
Something has to change
“...It’s really important that we change this...soda consumption is a huge problem in our society, and for my daughter and I to have a healthy future we have to solve it. So that she doesn’t develop problems that are so common here; problems that don’t occur in other places but that we choose to have here.”

(Traducido del inglés)
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Thank You!