

## Research Article

# Home Dental Care Education for Uninsured Free Clinic Patients in the United States

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### ABSTRACT

**Objective:** Oral health disparities are a significant public health issue in the United States (US). Individuals utilizing a free clinic for underserved populations are one of the at-risk populations for poor oral health. The purpose of this study was to describe and evaluate home oral health education classes provided at a free clinic.

**Methods:** Data were collected by a pre-oral health class survey, field notes during a home dental health class and a post-oral health class survey at a free clinic from September to November 2017.

**Results:** Twenty-three oral classes were offered. There were 61 participants in the classes in total. Among the class participants, 49 patients filled out the survey. Although the

majority of the participants brushed their teeth regularly, they did not have much knowledge about the correct manner of brushing, including which toothbrushes and pastes were best to use. Flossing seemed to be less commonly practiced than brushing. Showing visual images and connecting oral health with overall body health seemed to be effective in providing the motivation for better oral health practices.

**Conclusions:** Brief informal classes on home oral health practice seem to be feasible solutions and have potential to improve the oral health of patients of free clinics.

**Keywords:** Free clinics; Oral health; Health education; Health promotion; USA

### Key points

#### What is known about this topic?

- Individuals utilizing a free clinic for underserved populations are one of the at-risk populations for poor oral health.
- Patients of free clinics have unmet needs for dental treatment.
- Among free clinic patients, oral health issues that interfere with a poorer quality of life are associated with the neglect of dental care and poor oral hygiene practice.

#### What the paper adds?

- Patients of free clinics do not have sufficient knowledge about the correct manner of brushing, including which toothbrushes and pastes are best to use.
- Flossing is less commonly practiced than brushing.
- Showing visual images and connecting oral health with overall body health are effective in providing the motivation for better oral health practices.
- Brief informal classes on home oral health practice may be feasible solutions and have the potential to improve the oral health of patients of free clinics.

### Introduction

Oral health disparities are a significant public health issue in the United States (US) [1]. Approximately one third of adults aged 20-44 have untreated dental caries [2]. Only slightly over 60% of adults had a dental visit in the past year, which is less than the recommended two visits per year. One of the major factors that affect poor oral health is poverty [3,4]. Adults living below 100% of the federal poverty level are less likely to have complete tooth retention compared to those living above the poverty level [4]. Individuals utilizing a free clinic for underserved populations are one of the at-risk populations for poor oral health.

Free clinics provide free or reduced fee primary care services to un- or under- insured individuals who are living in poverty [5]. Patients of free clinics have needs for dental treatment, however, only one-third of free clinics actually provide dental services [6-8]. Among free clinic patients, oral health issues that interfere with having a poorer quality of life are associated with the neglect of dental care and poor oral hygiene practice [9]. Regular oral health practices are not only important for the oral health, but also for the general health of free clinic patients [7]. Yet, little is known about oral health education programs at free clinics. On one hand, since free clinics often experience

limited financial and human resources, it may not be feasible for free clinics to provide dental treatment [10]. On the other hand, providing health education programs on home oral health care practices would be a possible low-cost option for free clinics to help improve the overall health of free clinic patients.

The purpose of this study was to describe and evaluate the “home oral health” education classes at a free clinic. To the best of our knowledge, there are no previous studies on “home oral health” education classes provided at free clinics. There are studies that have examined the relationship between health education programs and healthy lifestyle at free clinics. One such study on free clinic patients’ perceived benefits of and barriers to health education indicates that having recommendation from a healthcare provider as well as the availability of language services are some of the factors that promote attendance of health education programs [11]. However, it is still challenging for patients of free clinics to attend formal health education programs due to the lack of time and/or interests [12]. The provision of informal health education classes in a waiting room of a free clinic is a possible solution to increase participation in health education classes at free clinics [12]. A study on health education classes on healthy lifestyles in a free clinic waiting room suggest that participants were receptive when they learned through dialogue in an informal setting [13]. This study applies the knowledge from the previous studies to oral health education in the same setting.

## Methods

### Overview

This study was conducted at a free clinic in Salt Lake City, Utah from September to November 2017. The clinic has been providing free primary care services since 2005, to uninsured individuals living below 150% of the federal poverty level. The clinic is funded by donations and private grants and has 10 paid staff and over 400 volunteers. The total number of patient visits in 2016 was 15,344. Over 80% of the patients are aged 21-64. Patients are from more than 50 countries. About half of them speak Spanish. At the time of this study, the clinic had two operatories for dental treatment. However, due to lack of volunteer dentists, the only dental service provided by the clinic is extraction of teeth to eliminate pain and infection.

### Study procedure

This study was approved by the Institutional Review Board (IRB). Data were collected by a pre-oral health class survey, field notes during a “home dental health” class, and a post-oral health class survey. The eligibility criteria to participate in this study included being aged 18 years or older, speaking English or Spanish, and being a patient or a family member of a patient. Children under 18 were allowed to attend the class for their benefits but did not participate in the surveys. All class participants received a toothbrush, toothpaste and/or dental floss at the end of the class.

Three undergraduate students recruited participants, provided oral health classes, and collected data in the waiting

room of the free clinic. One of them, a pre-dental student (CB), was the instructor of the classes. He had previous experiences in teaching home dental care to underserved populations. One student (UM) is fluent in Spanish and assisted the classes as a Spanish interpreter. The third student (MJ) took field notes during each class. The pre-oral health class survey asked questions about socio-demographics (a country of origin, gender, age, educational attainment and employment status), self-rated health of teeth and gums (excellent, very good, good, fair or poor), dental insurance, preventive dental care in the past six months, perceived need for dental treatment, frequency of brushing and flossing their teeth. Each class consisted of an interactive lecture on home oral health care using a tablet and provided a list of resources for free or low cost dental care in the community. After the class, participants filled out a post-class survey which had one question about their satisfaction with the class (excellent, good, average, poor, very poor or don’t know).

The field note template was developed based on the Theory of Planned Behavior (TPB). The TPB focuses on individual motivations to change a specific behavior [14]. The most important predictor of a behavior is intention determined by attitude, perceived norms and personal agency [14]. The TPB has been proven to predict a wide range of health behaviors including oral health-related behaviors [15-17].

### Data analysis

Data from the surveys were analyzed using SPSS version 22 for descriptive statistics. The field note taker (MJ) organized field note data by themes during field note taking. The first author (AK) read all of the field notes and re-organized interrelated themes and then described the initial results. All team members reviewed the initial results, provided input and reached an agreement on the interpretations of the themes and data descriptions. After each class, the field note taker checked the accuracy of field notes with two other students to ensure the accuracy of the findings (validity). The team approach warranted reliability.

## Results

Twenty-three oral classes were offered. There were 61 participants in the classes in total. Among the class participants, 49 patients filled out the survey. The majority of the class participants who did not fill the survey were children under age 18 and were not eligible to participate in the survey.

### Survey results

Table 1 presents the results of the survey (N=49). The average age of the participants was 45.28 (SD=13.27). Approximately half of the survey participants chose the Spanish version (n=23, 46.9%). Nearly 80% of the survey participants were female (n=39, 79.6%). The most common country of origin was Mexico (n=14, 28.6%) followed by USA (n=11, 22.4), Venezuela (n=5, 10.2%), Brazil (n=3, 6.1%) and Tonga (n=3, 6.1%). Other countries of origin included Cambodia, Chile, Costa Rica, New Zealand, Russia and Samoa. Approximately 20% of the survey participants (n=9, 18.4%) had less than high school educational

**Table 1:** Participant characteristics.

	Frequency (%)
Language – Spanish	23 (46.9)
Female	39 (79.6)
Country of origin	
Mexico	14 (28.6)
USA	11 (22.4)
Venezuela	5 (10.2)
Brazil	3 (6.1)
Tonga	3 (6.1)
Educational attainment – less than high school	9 (18.4)
Employed	14 (28.6)
Self-rated oral health	
Very good	5 (10.2)
Good	17 (34.7)
Fair	17 (34.7)
Poor	7 (14.3)
Dental insurance	6 (12.2)
Preventive dental care in the past 6 months	13 (26.5)
Need for dental treatment	31 (63.3)
Frequency of tooth brushing – More than once a day	40 (81.6)
Frequency of flossing	
At least once a day	20 (40.8)
3-6 times a week	11 (22.4)
Less than 3 times a week	14 (28.6)
Class rating (post-class survey)	
Excellent	36 (73.5)
Good	9 (18.4)
Don't know	1 (2.0)
Non response	3 (6.1)
	<b>Mean (SD, range)</b>
Age	45.28 (13.27, 19-67)

attainment. Slightly less than 30% of the survey participants (n=14, 28.6%) had a job.

Only 10.2 % of the survey participants (n=5) rated their oral health as very good. Six survey participants (12.2%) had dental insurance. One-quarter of the survey participants (n=13, 26.5%) had received preventive dental care treatment (cleaning and/or routine exam) in the past 6 months. More than 60% of the survey participants (n=31, 63.3%) reported that they had a need for dental treatment. More than 80% of the survey participants (n=40, 81.6%) brushed their teeth more than once a day, but only 40% of the survey participants (n=20, 40.8%) flossed their teeth at least once a day. More than 90% of the survey participants (n=45, 91.9%) reported that the class was excellent or good.

### Field note results

The twenty-three classes are summarized in Table 2. The majority of the classes took approximately 15 min. The number of participants in each class ranged from one to six. Since the classes were held in the waiting room, some classes were

distracted by background noise. Overall, participants seemed to be very engaged despite the setting of the class. However, there were classes in which few of the participants made comments or asked questions. In addition, when multiple languages were used, it was hard to maintain the flow of the class. Each class covered the following topics: Tooth decay, brushing, flossing, basic tooth and gum anatomy, periodontal health, diet and types of toothpaste.

Participants had questions about cavities (e.g. how to prevent cavities and cavity related pain), the tongue (e.g. brushing the tongue), roots and gums (e.g. health of roots, periodontal infections and abscesses), relationships between oral health and overall body health, brushing (e.g. proper technique, risks of overly aggressive brushing, timing of brushing teeth), types of toothbrushes, types of tooth paste and floss, flossing (e.g. how to floss, why flossing is better than a toothpick), diet (e.g. types of drinks that are bad for teeth, the impact of eating late on teeth), resources (e.g. dentists who see underserved patients, services provided by the University's School of Dentistry and how to make appointments), whether mouthwash helps for oral health and whether homemade remedies would work for oral health. Main oral health concerns among participants were: Pain, discomfort, gingival recession, smoking, negative impact of coffee on teeth, lack of dental insurance, cavities, tooth sensitivity, bleeding from flossing, proper brushing and flossing that are important for the health of gums and the prevention of cavities), thick floss which does not fit between teeth, never having flossed before, eating too much candy, aging and oral health and myths versus facts of oral health maintenance.

**Table 2:** Summary of classes.

Class	Length (min)	# of participants (# of females)	Language(s)
1	15	1 (1)	English
2	15	3 (3)	Spanish
3	15	1 (1)	English
4	25	4 (4)	English, Spanish
5	15	3 (3)	English
6	15	4 (2)	English, Spanish
7	15	5 (3)	English, Spanish
8	20	2 (2)	English, Spanish
9	15	2 (2)	English, Spanish
10	15	1 (1)	Spanish
11	15	1 (1)	Spanish
12	30	3 (1)	Spanish
13	10	1 (1)	English
14	20	6 (5)	English, Spanish
15	35	4 (3)	Spanish
16	20	2 (2)	English
17	15	1 (1)	English
18	20	3 (3)	English, Spanish
19	20	3 (2)	English, Spanish
20	15	2 (2)	English
21	10	3 (2)	English
22	10	2 (0)	English
23	15	4 (3)	English, Portuguese

Showing pictures of poor oral health seemed to be effective in promoting motivation to comply because participants were repelled and expressed motivation to maintain their dental health. Participants did not realize the severe diseases that could result from neglecting their oral health. Participants also mentioned that one of the reasons they did not put a high emphasis on oral health-care at home was because they did not have a family dentist/dental provider. A lack of access to regular dental care placed their oral health further down their priority list in comparison to other health needs. Having a regular dentist to visit may increase motivation to maintain dental health.

In addition, the intention to avoid painful, expensive dental procedures may increase motivation to seek dental treatment early. Furthermore, learning how oral health is related to the health of the rest of the body might motivate patients to better take care of their teeth and gingiva/periodontium. Based on what participants learned from class, they expressed that they would use soft toothbrushes, would not brush too hard and would drink more water than coffee. Participants seemed more engaged, receptive and interested when advice was shared/discussed on oral health techniques and practices that they could do at home which were cost effective and produced instant gratification. Suggested changes included drinking water after eating meals or candy, avoiding soft candies that stick to teeth, using toothpaste that contains fluoride and using easy-flossers to make flossing more convenient.

As shown in the survey results, flossing seemed to be uncommon among the participants, but in the class, they learned the importance of flossing for oral health. Participants also learned proper brushing technique, which was to brush in a circular motion and avoid aggressive brushing in back and forth strokes which may contribute to gingival inflammation. The classes also raised awareness of the importance of prevention of oral health problems. Additionally, participants were very excited about getting tooth brushes, tooth paste and floss after the class.

## Discussion

This study described and evaluated “home oral health” education classes performed at a free clinic. The survey and field note results indicate that even a very short oral health class can cover multiple topics that free clinic patients did not know and found beneficial to their health. The study has three main findings. First, although the majority of the participants brushed their teeth regularly, they did not have much knowledge about the correct manner of brushing, including which tooth brushes and pastes were best to use (using soft toothbrushes and toothpastes with fluoride and brushing teeth gently up to 2 min). Second, flossing seemed to be less commonly practiced than brushing. Third, showing visual images and connecting oral health with overall body health seemed to be effective in providing the motivation for improved oral health practices.

The results of this study which suggest that more than 80% of the participants brushed their teeth more than once a day shows that this sample actually demonstrated a higher frequency of brushing their teeth than average, according to the tooth brushing

statistics from the American Dental Association (56.8% for women and 49% for men ) [18]. However, participants did not have much knowledge of how to choose the right toothbrushes and toothpastes or how to brush correctly. Asking the frequency of brushing teeth is not enough to determine the levels of home oral health practice. Teaching proper brushing skills to adult free clinic patients might help decrease oral health problems for their children as well. A study on tooth brushing skills among Mexican immigrant children suggest that parents’ knowledge about oral hygiene is important for developing tooth brushing skills in children [19]. To improve oral health of underserved adults and children, promoting proper tooth brushing skills would be essential.

Unlike brushing teeth, the percentage of the participants who flossed their teeth at least once a day was lower than the average, according to the statistics from the American Dental Association (50.5%) [18]. Compared to brushing, flossing seems to be less common even among the general public. Among underserved populations, it would not be surprising that flossing is not a common practice. Yet, there are few studies on dental floss use among underserved populations. One of few studies suggests that among Haitian immigrants, dental floss use is one of the predictors of unmet needs for dental treatment [20]. Scholarly work on dental floss use among underserved populations needs to be fostered in order to develop effective dental floss use education strategies.

In terms of teaching strategies, participants seemed to be motivated to improve their oral health practice when visual images were used and oral health was connected with general health. In general, visual images are considered effective to make messages from health education easier to understand [21,22]. This can be applicable when teaching home oral health care at free clinics. Furthermore, teaching how oral health can affect health of the rest of a body appears to be important. The free clinic mainly focuses on non-communicable chronic conditions such as diabetes and heart disease. Patients who have diabetes or heart disease are likely to have received messages regarding the importance of a healthy diet and physical activity from their providers or health educators, but it does not seem that they understand that poor oral health can negatively affect diabetes or heart disease. Teaching the importance of oral health for managing non-communicable chronic conditions is an important component for oral health and healthy life style education for free clinic patients.

While the main strength of this study is that this study examined home oral health education for patients of free clinics which had not been done by any other previous studies, there are some limitations and weaknesses. Like any other qualitative studies, the number of participants was too small to conclude the effectiveness of the classes. It is also possible that patients who were already interested in oral health participated in the class. While patients of the clinic are from more than 50 countries, the classes were offered in English and Spanish. Patients who did not speak English and Spanish usually did not participate. Offering classes in the waiting room helped recruit participants; however, each class was very short. Although a 15 min class

seemed to be effective, more comprehensive classes may be needed.

## Conclusions

Individuals in poverty, such as patients of free clinics, often do not have access to dental treatment. Most free clinics do not have resources to provide dental treatment on site. As examined in this study, brief informal classes on home oral health practice seem to be feasible solutions and have potential to improve the oral health of patients of free clinics. While this study evaluated the classes only based on patient satisfaction, future projects may measure actual behavioral changes after attending the class. In addition, reaching out to patients who were not covered by this study (e.g. non-English/Spanish speakers) would be important for future projects. Furthermore, an experimental study in an animal that examines the impact of the withdrawal of home oral health cares on daily basis on oral health. Finally, dental caries and periodontal disease can be affected by multi-factors, including predisposing risk factors, not only by home oral health practice. Future research should consider a wide range of factors that may influence oral health.

## Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

## Ethical Approval

The University of Utah Institutional Review Board (IRB) approved this study.

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