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A Case Study of Barriers to Dental Care in Nebraska

Kaitlin Buhler

University of Nebraska-Lincoln Honors Program

Abstract

An important aspect of overall health is access to dental care, which is, unfortunately, oftentimes difficult to obtain. This study used data collected from a case study of three registered dentists in Nebraska to investigate the barriers to dental care, and identified the lack of dental insurance, limited access to free or reduced-price dental care, and dental anxiety as perceived barriers to dental care. Factors that did not seem to have an impact were language or ethnicity differences between patients and workers, distance to travel, comfortability with receiving free or reduced-price dental care, knowledge of how often to visit the dentist, and government policies in place that prevent easy access to dental care. Similarities to previous studies run by the state of Nebraska and dental institutions are also discussed, as well as ways to work around identified barriers using the Socio-Ecological Model.

Keywords: psychology, dental, Nebraska, barriers, care, socio-ecological, health, patients

A Case Study of Barriers to Dental Care in Nebraska

In order to address barriers to health care and create change, the United Nations Children's Fund applied the Socio-Ecological Model (SEM) to their own method of communication, called Communication for Development (C4D), which advocates for humanitarianism (2018). The SEM is a theory that explains how different levels of the environment effect an individual's actions and behaviors, as well as how the individual effects the environment (Hayden, 2019, pg. 552). The theory highlights the five different levels of the model as intrapersonal, interpersonal, institutional, community, and societal, with each level encompassing the levels more specific than itself.

At the intrapersonal level, the individual has defining characteristics and holds beliefs about themselves and their abilities, as well as how they perceive the organizations within the other levels of the model (Hayden, 2019, pg. 555). The interpersonal level of the SEM includes the relationships the individual has with people in their families and communities, who have influence in their daily lives (Hayden, 2019, pg. 555). The institutional level contains the environments of work, school, businesses, and facilities that an individual visits. These institutions often have policies, defined rules, and principles that an individual must follow, guiding their actions (Hayden, 2019, pg. 562). The community level of the SEM involves the entire community in which an individual interacts. This community can have both written guidelines and expectancies from its occupants, or it can involve the unspoken social norms of how families in the particular community should act (Hayden, 2019, pg. 563). The societal level encompasses each of the specific levels of the SEM, and also includes how the government policies, economy, and nation one lives in effect how an individual chooses behaviors (Hayden,

2019, pg. 566). Not only do each of these levels of the SEM effect the individual, but each level can have an important role on determining the defining characteristics of all other levels.

Using the SEM as a framework for understanding how different levels within a society interact, UNICEF collected information from communities who were not receiving adequate care in order to better understand their needs, and then applied their own system of communication, C4D, to create widespread change at each level of the SEM, improving access to healthcare and therefore the lives of women and children around the world (2018, pg. 9). A few examples of their work include causing change at the intrapersonal level by helping people realize the need for sanitary, capable health services, as well as making individuals feel capable of producing change. At the interpersonal level, UNICEF advertised healthier parenting skills, and in the institutional level, it promoted that individuals call for institutions to be of high quality and therefore enforce safer rules and standards for the individuals who are within those institutions. At the community level, UNICEF advocated for the reduction of hostility between community members, making communitywide efforts fighting for change more normal. Societally, they fought to remove outdated and dangerous social norms that were preventing positive change from succeeding. Overall, the efforts that UNICEF put into implementing changes at each level of the Socio-Ecological Model helped to create such a high level of success that it was able to, including using the C4D method to train workers to communicate more effectively in disease outbreak situations, educate parents in underserved areas about early childhood development, promote peaceful conflict resolution, and advocate for reduction of child abuse (2018).

UNICEF's outstanding work in the civil rights and humanitarian fields using the Social-Ecological Model can be utilized as a framework to create even further change in our societies, starting in Nebraska. Often overlooked in understanding overall health is the aspect of dental

care. In order to identify why something so fundamental is often unavailable in Nebraska, care must be taken to understand what is causing this deficit of dental care, so a survey was created to ask dentists in Nebraska their views on various barriers in each of the five levels of the SEM (Buhler, 2019).

The first hypothesis was that the dentists in this case study, on a scale from strongly disagree, disagree, neutral, agree, and strongly agree, of how they viewed a barrier to dental care, would agree that language is a barrier to accessing dental care in Nebraska. Language, an aspect of the interpersonal level of the SEM, is a barrier due to miscommunications between patient and doctor, which could incorrectly convey risk and safety concerns (Meuter, Callois, Segalowitz, Ryder, & Hocking, 2015). Particularly dangerous as a barrier, language differences in Nebraska could prevent effective communication between dentists and patients. The second hypothesis was that distance would be neutrally ranked as a barrier. Fifteen of the ninety-three counties in Nebraska were without a general dentist as of 2017 (Wilson, Wehbi, Larson, Mosalpuria, Chen, & Deras, 2018, pg. 20). This effects more rural dwellers than those near the larger cities, where the dentists are more heavily grouped in, and as the population of Nebraska is balanced between rural and urban, the effect of distance would average out at neutrally being a barrier. The third hypothesis was that dentists would strongly agree that cost would prevent people from receiving dental care. In one year, an estimated five million dollars' worth of emergency room visits concerning dental emergencies accrue, costing up to ten times more than attending regular checkups and engaging in preventative care (MacDougall, 2016, pg. 209). In the eyes of the public, it seems that the price of dental upkeep is unattainable, pushing them to wait until the pain, and price of the procedures, increases greatly. The fourth hypothesis was that the inadequate access to dental insurance would be neutrally rated as a barrier. According to the

University of Nebraska Medical Center for Health Policy, approximately one percent of Nebraskans had private dental coverage in 2013 (Chandak, McFarland, Naya, Deras, & Stimpson, pg. 8). Two years later, the Nebraska Department of Health and Human Services (NDDHS) estimated that around thirty percent of the working class did not have access to dental insurance (2016, pg. 16). Because of this large estimated increase in dental coverage, as well as the lack of rural dentists in the case study, the hypothesis was to only be neutral in rating, as an average of those who do and do not have dental coverage. The fifth hypothesis was that dentists would agree upon the barrier of ethnicity differences between workers and patients. In 2017, ninety-four percent of the dentists in Nebraska were white and non-Hispanic (Wilson, Wehbi, Larson, Mosalpuria, Chen, & Deras, 2018, pg. 19), reflected as 87.49% white in the general Nebraskan population (World Population Review, 2020). Due to this slight inequality between those providing dental care and those receiving it, ethnicity differences could be agreed upon as a barrier. The sixth hypothesis was that dental anxiety would be a strong barrier for receiving care. Research suggests that, of adults in industrial countries, twenty percent have dental anxiety and five percent evade dental treatment fully due to the anxiety (Zinke, Hanning, & Berth, 2018). Considering that one-fifth of the population of Nebraska should then show similar prevalence of dental anxiety, the prediction was that anxiety was to be a strong barrier. The seventh and eighth hypotheses were that dentists would strongly disagree with both the barriers of being uncomfortable receiving free and reduced-price dental care as well as not knowing how often to go to the dentist. It is common in the general population to avoid situations in which both one requests help and has help requested from them (Crocker, Canevello, & Brown, 2016). However, when that assistance is along the lines of expensive dental procures, the assumption was that patients would be more inclined to accept help. As for knowing how often to visit the dentist,

sixty-eight percent of Nebraskan adults visited the dentist within the year 2010 (Chandak, McFarland, Nayar, Deras, & Stimpson, 2013). With the increasing prices of dental procedures, as well as the variable shortages of dentists in Nebraska across counties, this number seems to be reasonably high, causing the prediction of lack of knowledge to be a strongly disagreed upon barrier to dental care. The ninth hypothesis was that dentists would agree that not enough dental offices provide free and reduced-price care. There are ten free dental clinics across the state of Nebraska (Nebraska Free, 2020), a number too low compared to the thirty percent of dentally uninsured Nebraskans (NDHHS, 2016, pg. 16). The final hypothesis suggested that dentists would have a neutral reaction towards the barrier of government policies preventing patients from receiving care. Recent changes in health care policies in the last few presidential elections suggest that government policy around healthcare could be an impactful barrier to dental care.

Method

Participants

Out of a sample of 658 registered general dentists in Nebraska, sixteen were contacted by random selection and three participated in the current case study, recruited by a phone call to their offices. Two of the dentists were from towns with larger than twenty thousand residents and the other was from a town of larger than one hundred thousand residents. When asked of their ability to provide free or reduced-price dental care to their patients on a scale of strongly disagree, disagree, neutral, agree, and strongly agree, two dentists rated a neutral response and the other disagreed with the statement.

Materials

A self-report survey was provided to each dentist. The survey consisted of questions including the population of the community the dentist practices in, the percent of their patients

from other countries or states, the percent of patients that have immigrated from outside the United States, and the dentists' ability to provide free or reduced care to their patients.

Additional questions asked about the perceived barriers to dental care, including language barriers, distance, cost, access to insurance, different ethnicities between patients and providers, dental anxiety, uneasiness with receiving free or reduced-price dental care, not knowing how often one should go to the dentist, and the prevalence of government policies in place that prevent easy access to dental care. Higher scores meant a larger perceived barrier to dental care due to the reason listed in the question.

Procedures

Contact information was found using The Dentist Network website. A short phone call was made to each dental office offering information about participating in this study. An email containing the informed consent form and directions on completing the survey were sent to the offices who agreed to look into it, and three of the surveys were completed.

Results

In the study, the first hypothesis was that, on a scale from strongly disagree, disagree, neutral, agree, and strongly agree, dentists would agree that there is a language barrier preventing people from having access to dental care in Nebraska. Contrary to the hypothesis, two of the three dentists noted that they strongly disagree with the language barrier, while one of them agreed. The second hypothesis was that dentists would respond neutrally about the distance barrier to care, but contrary to the hypothesis, the majority strongly disagreed, only one responding neutrally. The percent of patients coming from other counties ($M=30\%$, $Std=8\%$), states ($M=23\%$, $Std=19\%$), and countries ($M=10\%$, $Std=0\%$), was also asked of each dentist. The third hypothesis was about the expense of dental care, predicting that dentists would

strongly agree that cost is a barrier to dental care. Contrary to the hypothesis, if only slightly, the dentists responded unanimously, rating that they agreed with the cost barrier. The fourth hypothesis dealt with the inadequate access to dental insurance serving as a barrier, suggesting that results would center themselves at neutrally responding. Contrary to this hypothesis, two dentists strongly agreed and the other simply agreed that patients had difficulty accessing dental insurance and therefore had that barrier to dental care. The fifth hypothesis was that ethnicity differences would serve as a weak barrier to dental care, in that dentists would agree to the barrier. Contrary to the hypothesis, one of the three dentists disagreed with the ethnicity barrier, with the other two disagreeing strongly. The sixth hypothesis predicted dental anxiety to be strongly agreed upon as a barrier to dental care. In partial support of the hypothesis, one dentist strongly agreed, but the other two dentists chose to disagree with anxiety serving as a barrier. The seventh hypothesis predicted that dentists would strongly disagree that their patients are uncomfortable with receiving free or reduced-price dental care. In full support of the hypothesis, all three dentists strongly disagreed that a barrier to care would be the unwillingness to received free or reduced-price dental care. The eighth hypothesis was that dentists would strongly disagree with not knowing how often to go to the dentist as a barrier to care. In partial support of the hypothesis, one dentist strongly disagreed with the knowledge barrier to care, but another chose neutral, with the third dentist strongly agreeing with the presence of a barrier involving not knowing how often to visit the dentist. The ninth hypothesis was that dentists would agree to the barrier of not enough places providing free or reduced-price dental care. In partial support of the hypothesis, each dentist exhibited a different level of perceived barrier, with disagreement, agreement, and strong agreement being chosen. The final hypothesis was about the barrier of government policy preventing easy access to dental care, predicting that there would be a neutral

reaction from the dentists. In partial support of the hypothesis, one dentist provided a neutral response, another disagreed, and the third strongly disagreed with the barrier of government policies to dental care.

Discussion

The first and second hypotheses were not supported, as the dentists strongly disagreed that both language and distance were barriers to dental care. Reviewing the data collected about the percent of patients travelling from different countries and states for dental care, it seemed that the majority of patients did not have to travel out of their own county to receive dental care. This might be due to the fact that out of the ninety-three counties in Nebraska, only fifteen of them were without a general dentist in 2017 (Wilson, Wehbi, Larson, Mosalpuria, Chen & Deras, 2018). All three of the dentists in the case study were from towns larger than twenty thousand people, suggesting that the dental offices were not located at distances further away from the general population of patients that attend each office. If the dentists studied were more rurally located, the results of the question could have varied greatly. The third hypothesis was supported less than originally predicted, but the dentists did agree that cost was a barrier. Though hypothesized as being a neutral barrier, inadequate access to dental insurance was shown to be strongly agreed upon by the dentists surveyed. This finding differed from previous research, as the Nebraska Department of Health and Human Services estimated around seventy percent of working-class Nebraskans to have dental coverage (2016, pg. 16). However, since this case study was not as broad as the methods they used in their study, for example not accounting for those not in the working class, the findings could have a large range of variability. Contrary to the fifth hypothesis, dentists strongly disagreed that the ethnicity differences between the workers and patients was perceived to be a barrier to care. The small difference reflected by the ethnicity

percentage of dentists as ninety-four percent white (Wilson, Wehbi, Larson, Mosalpuria, Chen, & Deras, 2018, pg. 19) versus eighty-eight percent white in the general Nebraskan population (World Population Review, 2020), was not enough to cause the dentists in this case study concern about ethnicity serving as a barrier to dental care. Hypothesis six was partially supported, as the majority of the dentists disagreed with anxiety as a barrier, but one dentist strongly agreed. While this could have to do with the uneven distribution of dentists in this case study, it could also be due to the predicted one-fifth of Nebraskan adults it seems that more research needs to be done on this topic. Hypothesis seven was fully supported, as the dentists strongly disagreed that having patients be uncomfortable with receiving free and reduced-price dental care would be a barrier to care. These results contradicted those of Crocker, Canevello, and Brown, who argued that individuals typically avoid having to ask for assistance (2017). One possibility of this outcome is that, since dental care is more expensive and necessary than most things one could ask a favor for, the incentive to reach out for help is persuasive enough to bypass potential discomfort. Partially supported, hypothesis eight received a wide range of responses, averaging at neutrally viewing the barrier of not knowing how often to visit the dentist. While in 2010, the number of Nebraskans visiting the dentist each year was around seventy percent, that number could have changed in the ten years since (Chandak, McFarland, Nayar, Deras & Stimpson, 2013, pg.1). Another factor that could have influenced the results of the survey were that more urban dentists were assessed in this case study, in towns where people with greater access and more reminders of the necessities of dental care (Buhler, 2019). Hypothesis nine was partially supported, in that dentists leaned more towards agreeing that not enough places provided free and reduced-price dental care. While having ten free dental clinics in Nebraska helps (Nebraska Free, 2020), that number is much too low to serve the thirty percent

of Nebraskans who lack dental insurance (NDHHS, 2016, pg. 16). The final hypothesis was also partially supported, but dentists leaned towards not agreeing that government policies were a barrier to receiving dental care in Nebraska. Some research suggests that various policy changes in the early 2010s caused coverage of medical and dental procedures to increase (Wall, Nasseh, & Vujicic, 2013, pg. 9). This increase in coverage would better insure Nebraskans, lessening the barrier of government policy on dental care.

In summary, barriers identified by the three participating dentists included lack of dental insurance, limited access to free and reduced-price dental care, and also the weak barrier of dental anxiety. Factors that did not seem to have an impact were language or ethnicity differences between patients and workers, distance to travel, comfortability with receiving free or reduced-price dental care, knowledge of how often to visit the dentist, and government policies in place that prevent easy access to dental care.

Using the Socio-Ecological Model, it is possible to influence the prevalence of the lack of dental insurance, limited access to free and reduced-price dental care, and dental anxiety, lessening the barriers to dental care. In order to instill the most change, possibilities should be suggested at each of the five levels of the model. Beginning with the barrier to dental care that is the patients' lack of dental insurance, starting at the intrapersonal level of the SEM would require helping individuals understand the importance of having dental insurance. This could look like starting a campaign describing how dental insurance can cost less than what large dental emergency bills would, or that going in for regular checkups covered by dental insurance would improve their overall health and well-being. At the interpersonal level, those with dental insurance could discuss different policies they have, reason with each other about the necessity of dental insurance, and urge each other that dental health is an important aspect of physical

health. The institutional level includes the workplaces that provide most insurance plans, as well as the dentist offices that provide care. With the movement of intrapersonal and interpersonal importance of dental insurance, the individuals creating a larger market for dental insurance will likely lead to more competitive pricing among dental insurance plans, making them more affordable for patients. Also, the more people who advocate for dental insurance to be provided through their workplace, the more prevalent it will become. Typically, dentist offices do not accept all forms of dental insurance, but with the predicted rising importance of dental insurance, the diversity of plan types will likely increase, raising the demand for dental offices to accept a larger range of dental insurance providers. On the community level, it is becoming more common for dental institutions to provide free dental care days to students, veterans, and other underserved communities in Nebraska. Once these people experience the benefits of dental care, they'll be more inclined to come to these events, appreciate dental care, and advocate for the increase in access to dental insurance. Societally, the more people supporting dental insurance, the more publicized the increase in dental care will be, making it more of a social norm. Once more patients are receiving dental care, the stigma of having dental health issues will act to convince more people that the price is worth the benefit of receiving dental care.

In order to increase the population's access to free and reduced-price dental care, the intrapersonal level of the SEM must first be addressed by communicating the importance of this type of care to current dental providers. Interpersonally, individuals could talk to those around them about the importance of free and reduced-price care, discuss which dentists in the area provide that type of care, and even convince their own dentists to start providing more free and reduced-price dental care. Institutionally, dental offices could be incentivized by local businesses or other establishments to provide free and reduced-price care to those in need, in exchange for

advertising at the local business level, either by word of mouth or published advertising. Dental offices could be held to a standard percent of provided care be free and reduced-price. The UNMC Center for Health Policy published an update on their goals to reach more widespread levels of health promotion and dental outreach. Their paper urges how important it is to have a system of collecting data on the status of Nebraska's oral health, in order to be able to continually and accurately assess areas of need and effectiveness of current health promotion measures (Chandak, McFarland, Naya, Deras, & Stimpson, 2013, pg. 8). Through their survey, they were able to identify many discrepancies between the goals they had and the true condition of Nebraska's oral health. By implementing the addition of a survey that includes dental health questions to a preexisting government mandated survey like the census, organizations like UNMC and the NDDHS can have better and consistent access to information that will help them revise and adjust their goals for change within the dental outreach community. On that community level, holding events where local dentists can come and volunteer their time will not only increase the prevalence of free care, but it will expose more dentists to the gratifying feeling of providing a patient with more affordable care, increasing their likelihood to participate in events like this in the future. Creating change in the societal level would mean changing the stigmas of giving away free care if the dentist could be making money for it. The changes in society would most likely come from the norms shifting at individual and community levels. If it became more required of dentists to provide free and reduced-price care, the individuals geared against this would choose another profession, making dental care providers more statistically willing to provide this type of care.

Though anxiety surrounding dental care was only identified as a weak barrier to care, efforts should be made to reduce anxiety surrounding any medical procedure. Arguments can be

made against handling anxiety as a malleable force, or one of strict mental illness, so for this purpose, the dental anxiety discussed will be that of a patient with no diagnosed mental health conditions relating to anxiety (Buhler, 2019). On an intrapersonal level, educating the patient about what a procedure will entail can help calm their nerves. Communication between the dentist and the patient will ensure that pain is monitored, any mistakes or accidents will be avoided, and that both parties have a firm understanding of the procedure and the expectations of before and after treatment. In order to address the issue of the need for dental procedures, individuals should be encouraged to take themselves and their families in to receive preventative care, which is less uncomfortable for the patient than if they were to wait until pain arises. According to the NDDHS, three out of five Nebraskan kindergarteners will have already had tooth decay (Oral and Dental Health, 2020). Engaging in preventative care will not only prevent unnecessary pain during childhood, but reduce the risk of incurring large bills from expensive dental treatments, both of which can cause an individual dental anxiety. Interpersonally, being transparent with others about anxiety surrounding dental procedures will lead to more conversations about possible coping mechanisms, or discussing different local providers who cause less anxiety or give more attention to reducing the anxiety of the patient. At the institutional level, dental schools could incorporate training dentists on how to attempt to reduce the dental anxiety of the patient into their curriculum. Dental offices could provide extra amenities to help ease the symptoms of dental anxiety. Community wise, events could be held at the local community center that incorporate learning about common simple procedures from all medical backgrounds, like injections, stitches, x-rays, and cavity fillings, with interactive sessions geared towards children, all focused on reducing the anxiety surrounding the procedures. The organized events would familiarize people with the more anxiety causing

situations and cause them to be seen in a less daunting view, as well as being backed by community support. Societally, changing the norms surrounding the pain and discomfort of dental office visits will be difficult, but implementing small changes at each of the other levels will work to improve people's reactions toward dental visits.

The combined efforts at each level of the Social-Ecological are useful for understanding the possibility of making dental care more accessible to the population of Nebraska. Further research into the implementation of the SEM onto each of these three identified barriers would help gain further insight on steps that need to be taken to solve the issue of dental care shortages across Nebraska. Once the methods have been researched within the state, it can be applied to different states and different cultures to see if the barriers that effect Nebraska can be combatted in the same way, or if the SEM can be applied to different barriers in a broader sense.

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Table 1.

Summary of measures used in this study

Variable	Univariate Statistics	
Percent of patients from other counties in Nebraska	<i>M</i> =30%	<i>Std</i> =8%
Percent of patients from other states	<i>M</i> =23%	<i>Std</i> =19%
Percent of patients who have immigrated from outside the US	<i>M</i> =10%	<i>Std</i> =0%
Ability to provide free/reduced dental care to patients	Disagree	1(33%)
	Neutral	2(66%)
Perceived barriers to dental care in Nebraska		
Language	Strongly disagree	2(66%)
	Agree	1(33%)
Distance	Strongly disagree	2(66%)
	Neutral	1(33%)
Cost	Agree	3(100%)
Lack of dental insurance	Agree	1(33%)
	Strongly agree	2(66%)
Ethnicity differences between patients and workers	Strongly disagree	2(66%)
	Disagree	1(33%)

Dental anxiety	Disagree	2(66%)
	Strongly agree	1(33%)
Comfortability with receiving free/reduced-price dental care	Strongly disagree	3(100%)
Not knowing how often to go to the dentist	Strongly disagree	1(33%)
	Neutral	1(33%)
	Strongly agree	1(33%)
Limited access to free/reduced-price dental care	Disagree	1(33%)
	Agree	1(33%)
	Strongly agree	1(33%)
Government policies	Strongly disagree	1(33%)
	Disagree	1(33%)
	Neutral	1(33%)
