

Enhancing Allied Dental Health Students' Understanding of Poverty through Simulation

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Abstract

Purpose: Poverty impacts the daily lives of over 40 million Americans. Allied dental health students need to be aware of the oral health barriers experienced by individuals with limited resources. The purpose of this exploratory descriptive study was to evaluate the impact of a poverty simulation exercise (PSE) on students' understanding of daily challenges faced by low-income families.

Methods: A total of 34 second-year dental hygiene students and 23 dental assisting students (n=57) participated in a 3-hour Missouri Association for Community Action poverty simulation exercise (PSE). Participants completed a survey immediately following the PSE to determine the degree of change in understanding challenges faced by low-income families. Upon completion of all scheduled community practicum/rotations, participants completed a second survey exploring whether the PSE changed their levels of understanding of the challenges faced by actual low-income families and their impact on oral health.

Results: Fifty-five dental hygiene and dental assisting students completed both surveys for a response rate of 96% (n=55). A majority of the respondents (87%, n=46) rated the PSE as extremely valuable in preparing them to understand challenges faced by low-income families and 85% (n=47) indicated encountering families living in situations similar to their role in the PSE. A majority of participants (89% n=48) indicated having a better understanding of how poverty effects oral health status and its impact on access to dental care. In addition, students indicated that they became less judgmental and more empathetic toward low-income families.

Conclusions: Results from this study demonstrate that a PSE was effective in eliciting change in allied dental health students' affective perceptions regarding poverty and helped improve their understanding of challenges faced by low-income populations.

Keywords: allied dental health education, dental hygiene education, access to care, dental public health, health attitudes

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Introduction

The code of ethics of the American Dental Hygienists' Association (ADHA) states that dental hygiene professionals should promote access to dental hygiene services for all, supporting justice and fairness in the distribution of healthcare resources.¹ This same concept is reflected in the American Dental Assisting Association's policy, which states that their organization is committed to providing access to oral healthcare services for all individuals.² In both statements, there is an important focus placed on all individuals which includes those from diverse backgrounds, experiences, and socio-economic levels. Students enrolled in dental assisting

(DA) or dental hygiene (DH) programs work with diverse patients as they progress through the curriculum, including those currently living in poverty. The United States (U.S.) Census defines poverty using income thresholds, which vary by family size and composition;³ a family of four earning \$24,849 or less a year is considered impoverished.³ In 2016, 40.6 million Americans were reported as living in poverty.³

DA and DH students in their second-year are required to rotate through a wide range of community-based dental facilities during their course of study at the University of North Carolina at Chapel Hill (UNC). Settings include local

health department dental clinics, federally qualified health centers, correctional institutions, Veteran's Administration and community hospitals, local private practice dental offices, preschool, elementary, and middle schools, senior citizen centers, and assisted living or long-term care facilities. Through these rotation experiences, DA and DH students will likely work with and treat low-income patients and families. Discovering and implementing educational approaches to help students become cognizant of the economic challenges and hardships that low-income patients experience is an important step to helping them develop a clearer picture of how social factors influence patient health decisions.

Yang et al. wrote that, given the rising number of U.S families living below the poverty level, health professional students need to develop and become aware of the barriers and stress factors faced by low-income patients.⁴ Health professional students need to be able to move beyond stereotypes and generalizations and examine the reasons why low-income patients may not be able to continue with treatment recommendations or complete a treatment plan. In addition, Noone et al., emphasized the goal of learning activities related to poverty in health education is to help change perceptions from a negative categorization to a more positive understanding and perspective.⁵ Simulations have been shown to help learners acquire new knowledge, and to better understand conceptual relations and dynamics.⁶ Gaba defines simulation as a technique which replaces or amplifies real experiences with guided experiences that evoke or replicate substantial aspects of the real world in a fully interactive manner.⁶ Fanning et. al. demonstrated that adults learn best when they are actively engaged in the process, participate, play a role, and experience not only concrete events in a cognitive fashion, but also transactional events in an emotional fashion. Learners must be able to make sense of the events experienced in terms of their own world. The combination of an active experience, particularly when accompanied by intense emotions, may result in long-lasting learning⁷

The Missouri Community Action Poverty Simulation (MCAPS) has been used across health profession disciplines for both undergraduate and graduate level students to help them understand poverty.^{4,5,8-10} Evidence suggests that participants who have completed a simulation using MCAPS demonstrated changes in their knowledge and attitudes regarding poverty, experienced heightened awareness of the realities of living in poverty, and were able to identify factors contributing to poverty.¹⁰⁻¹⁵ Using simulations to assist future health care providers in cultivating their ability to reason, tap into their emotional intelligence and improve their skills has been shown to be an exceptional learning modality that can be used to facilitate change.

Dental assisting and second year dental hygiene students attending the UNC Chapel Hill Adams School of Dentistry participated in a MCAPS exercise with the goal of providing the students with an opportunity to gain a deeper understanding of the impact of poverty on health and health-related behaviors for low-income families. The aim of this replicated study⁸ was to determine whether DA and DH students' understanding of the daily challenges faced by families identified as low-income was changed as a result of a poverty simulation exercise (PSE) and whether they found the experience valuable.

Methods:

This exploratory descriptive study was determined exempt from further review by the University of North Carolina, Chapel Hill Office of Human Research Ethics (study #16-2886). In January 2017, 34 second year DH and 23 DA students were required to participate in a 3-hour Missouri Association for Community Action Poverty Simulation (CAPS) exercise. Using methodology replicated from a previous study,⁸ students participated in the simulation experience before beginning their mandatory 3-week practicums and weekly spring rotations.

The PSE was designed for participants to role-play the lives of low-income families ranging from single parents trying to care for their children to senior citizens trying to maintain their self-sufficiency on Social Security.¹⁶ The PSE experience included a registration process, simulation experience, and debriefing session. During the registration process, participants were randomly assigned their new identities and families (Figure 1). These identities were based on family profiles created by the Missouri Community Action Network (MCAN). Once assigned their roles, participants reported to their simulation homes labeled with their new family names. Homes were set up in the center of the room surrounded by resource centers (Figure 2). At each home site, families received a packet of information, providing background



Figure 1: Participants randomly assigned family identities based on family profiles created by Missouri Association for Community Action



Figure 2: Participants arranged in family units, reviewing their packets that provided background information of each family member's responsibilities and expectations.

information on each family member's responsibilities and expectations. The packet also included identification documents, specific items the family needed to keep in their possession, money for various costs including bills that needed to be paid, and transportation passes to move from resource to resource throughout the exercise.

The PSE was facilitated by 4 MCAN trained facilitators, with the primary facilitator acting as the town mayor. The remaining co-facilitators assisted with the resource centers and answered any questions participants had throughout the experience. The primary facilitator provided instructions, ground rules, defined terms, and allowed for the family units to open and read through their packets before the start of the simulation. Community resources, which the families needed to utilize in order to meet the objectives of the PSE, were also introduced and described prior to starting the simulation. Resources included for profit, nonprofit and governmental organizations. PSE resource units included the social service office, mortgage/rent collector, supercenter (Food-o-rama), employment agency and interfaith services. The PSE occurred over one hour of time. For the purpose of the simulation the time was divided into four 15-minute weeks and three 3-minute weekends, representing one month in the life of the family. During the 15-minute weeks, the main goal was to provide the necessities of their family and maintain shelter.¹⁶ Participants had to make sure they attended work or school, paid bills, provided childcare for children, and had some form of transportation. The 3-minute weekend allowed the resource centers the opportunity to regroup and gave families a moment to discuss steps to take for the upcoming week.

A debriefing session took place immediately following the PSE. Facilitators asked the DH and DA students reflective questions regarding the PSE. Questions used to guide discussion included asking how participants felt about the issues they encountered and whether they discovered any emotions and attitudes regarding the challenges and barriers faced by low-income families as a result of the simulation. The debrief session allowed the group the opportunity to express their feelings and build off each other's answers during the open discussion. Following the debrief session, a support specialist familiar with the PSE read a verbal consent script to the participants to complete the paper survey. Participants were informed that the completion of the survey implied consent and that participation was entirely voluntary. The survey instrument was identical to one used in two previous studies that sought to evaluate the impact of a PSE on student understanding^{4, 8} and consisted of eight items. Five statements asked the participants to focus on their level of understanding of low-income patient challenges

prior to and following the simulation. Each before and after item was rated on a scale of 1 (no understanding) to 5 (almost complete understanding). Participants were also asked to rate the value of the simulation exercise on a scale of 1 (no value) to 10 (extremely valuable) in preparing them to understand the challenges faced by patients who have limited incomes/resources during their rotation. The final two questions were open-ended; "In your opinion, what do you think was the best part of the activity?" and "Please list any suggestions you have to improve this activity." Surveys were returned to an unmonitored drop box in the same room as the PSE.

Participants received a second survey following their community practicum and rotations in April 2017. Data was collected for the DH and DA groups separately due to differing schedules. The same support specialist read the verbal consent script to participants. Following the verbal consent, the post-rotation survey consisting of the same five items regarding understanding levels of low-income populations, was delivered. Participants were asked to reflect using a scale of 1 (no understanding) to 5 (almost complete understanding) on their level of understanding of the challenges facing low-income patients following their practicum and/or community rotation experiences. Participants returned their surveys to an unmonitored drop box. Descriptive statistics were calculated and summarized using Statistical Package for the Social Sciences (IBM SPSS®, Armonk, NY) software.

Results

Fifty-seven DH and DA students participated in the PSE. Following the simulation and debrief, 55 students completed the survey (n=55) for a response rate of 96%. Three months following the PSE and upon completion of all community rotations, 55 students completed the second survey (n=55) for a response rate of 96%. Incomplete surveys were received from several participants during the first and second survey; questions that the individuals responded to were included in the analysis. Findings from the post-simulation survey showed that 40% (n=22) of participants believed or thought they had a moderate to complete understanding of the financial pressures faced by low-income families prior to participating in the PSE. Responses to the follow-up question regarding the participants level of understanding the financial pressures of this population as a result of the PSE indicated that the majority of the participants (91%, n=49) felt they had a moderate to complete understanding of their financial stress. Statements reported in the open-ended portion of the survey provided insight regarding participants feelings about the experience. One respondent reported that the PSE provided the ability "to see how much stress income puts on families". Another respondent wrote how

the PSE allowed them “to see how the parents of low-income families worked to keep their head above water, to keep life going.”

Following the simulation, a majority (87%, n=48) felt they had a moderate to complete understanding of difficult choices people with low resources must make each month when stretching limited income. In reflecting on their level of understanding regarding the difficulties in improving one’s situation and becoming more self-sufficient on a limited income prior to the PSE, less than half (42%, n=23) thought they had little to no understanding following the PSE, while 100% (n=55) of respondents felt they had a moderate to complete understanding.

Positive increases were also identified when looking at levels of understanding in relationship to emotional stressors and frustrations created due to lack of resources. Prior to the simulation, 67% (n=37) of respondents thought they had a moderate to complete understanding. However, post simulation 98% (n=53) indicated a moderate to complete understanding (Table 1). One participant wrote, “Although poverty can’t be replicated for real, this showed some of the stress that it can put on someone.” Another stated, “The actual act of going through the day and life in poverty, made you realize the challenges. I knew they existed but didn’t realize how limiting they were.”

Table I. Post survey questions following community rotations

	Moderate to complete understanding % (n=55)	Little to no understanding % (n=55)*
During your practicum or community rotations to what extent were you able to gain a better understanding of the obstacles low-income families face that may impact their ability to obtain dental care.	80%	20%
During your practicum or community, rotations to what extent were you able to gain a better understanding of the effects of poverty on the oral health status of low-income families.	89%	11%
How much effect, if any, did the poverty simulation have on your ability to be more empathetic toward the low-income patients you served during your practicum or community rotations	80%	20%
How much effect, if any, did the poverty simulation have on your ability to be less judgmental toward the low-income patients you served during your practicum or community rotations	81%	19%

*some survey questions were left blank by the respondents

A majority of the respondents, (89%, n=47), felt the PSE was moderately to extremely valuable in preparing them to understand the challenges faced by the patients with limited incomes that they would likely see in future practicum experiences and rotations. Only 6% (n=3) felt neutral towards how the PSE had prepared them and 6% (n=3) responded that the PSE had little to no value in preparing them to care for future patients living in poverty. When looking at the sum of respondent’s perceptions before and after the PSE, the overall impact of the experience showed a positive increase in understanding by an average of 5 units.

Three months after completing the PSE, and after completing their community practicum and rotations, students completed a second questionnaire. There were slight increases in the levels of understanding of the financial challenges of poverty (Figure 3). A majority (85%, n=47) of participants indicated encountering families living in situations similar to those portrayed during the PSE. Of those surveyed, 89% (n=48), reported that during the practicums or community rotations they gained a moderate to complete understanding of the effects of poverty on the oral health status of low-income families, while 11% (n=6) revealed having little to no understanding. When asked about the effect of the simulation exercises’ ability to increase their level of empathy towards the low-income patients served during their practicum or rotations, over three-fourths, (80%, n=44) felt that they became moderately to completely empathetic.

The PSE also had a positive effect on (81%, n=44) participants’ ability to be less judgmental toward the low-income patients served during their practicum or community rotations. Over three fourths of the participants, (76%, n=41) found the PSE to be valuable in helping to prepare and understand the challenges faced by patients with limited incomes/resources encountered during their practicums or rotations. One respondent wrote, “It was a wonderful way of understanding how people strive to live in day to day life. It was overall an eye opener for people who do not experience these things.”

Regarding the value of the PSE in relationship to practicums and community rotations suggest that participants who may have experienced poverty themselves felt that some participants did not take the PSE seriously. One participant wrote, “This isn’t new to me, my mother raised 3 kids on her own while my dad was on drugs. It was nice to see others come and try to see how people in poverty live/grew up. But I felt others thought it was a waste of time. Some laughed and did not take it seriously.” Another wrote, “I feel that my own experiences as a member of a low-income family helps me understand others. I felt that some students, who perhaps do not share these experiences, took the simulation as a game.” In contrast another respondent wrote, “The simulation was very valuable for me. It opened my eyes to the struggle people face trying to improve their socioeconomic status. It’s not as simple as I once thought.” An additional comment stated, “I think it was very helpful to have the simulation because during rotations we will see certain situations and will know how to approach them.” (Table II)

Table II. Select open-ended responses post-simulation and post community rotation

Post Simulation	In your opinion, what do you think was the best part of the activity?	<p>The actual act of going through the day and life of a person in poverty really made you realize the challenges. I knew they existed but didn’t realize how limiting they were.</p> <p>The “realness” of the simulation. Although poverty can’t be replicated, this showed some of the stress that it can put on someone.</p>
	Please Provide any additional comments you have about this morning’s Poverty Simulation.	<p>I found it very eye opening</p> <p>I appreciate this simulation because my family is low-income, and it makes me appreciate everything they have done for me.</p> <p>I think it’s so important for people who haven’t experienced poverty first hand to understand and hope to make them less judgmental.</p>
Post Community Rotation	Please share any additional thoughts or comments about the value of the poverty simulation in relation to your practicum or community rotations	<p>This simulation was very valuable for me. It opened my eyes to the struggle people face trying to improve their socioeconomic status, it’s not as simple as I once thought.</p> <p>I think it was very helpful to have the simulation during rotations we see certain situations and must know how to approach them.</p> <p>I think it is an exercise that all healthcare professionals should complete</p>

Discussion

The purpose of this study was to increase DH and DA students’ understanding of the daily challenges faced by families living with low incomes. Results confirmed that the participants’ level of understanding changed substantially in all categories following the PSE (Figure 3). When comparing results from this study to a previous study focusing on dental students, a similar percentage of students in both studies reported that the PSE was moderately to very valuable⁸ (Figure 4). Participants in both studies displayed an increased understanding of the financial pressures, difficult choices, difficulty in improving one’s situation, emotional stressors and the impact of community resources experienced by low-income families.

Unlike previous studies, this study included a second evaluation of the PSE after students returned from their community rotations, two months following the initial poverty simulation. Results suggest the knowledge and impact gained from the initial PSE continued to influence the participants far beyond the day of the simulation and levels of understanding remained high or increased in some categories.

Several other studies with a focus on the use of simulation to teach about poverty were noted as being effective in causing significant changes in knowledge and attitudes in relation to poverty.^{11-14,17} Disciplines effected by these simulation studies included nursing, social sciences, health and human services, as well as others.¹¹ It is noteworthy that these studies also used the same MCAPS kit utilized in this study and increases in participant knowledge and attitudes in several categories are similar to findings previously cited in the literature.

Findings from this study capture the goal of simulation when improving practice as described by Zigmont et al. In simulation, the learner moves from comprehension, to application, and analysis; bringing all aspects of the experience together.¹⁸ Allied dental health students and practicing clinicians taking part in simulations such as the MCAPS should be able to take their learning to a higher level. Through the PSE, participants learn not only based on the

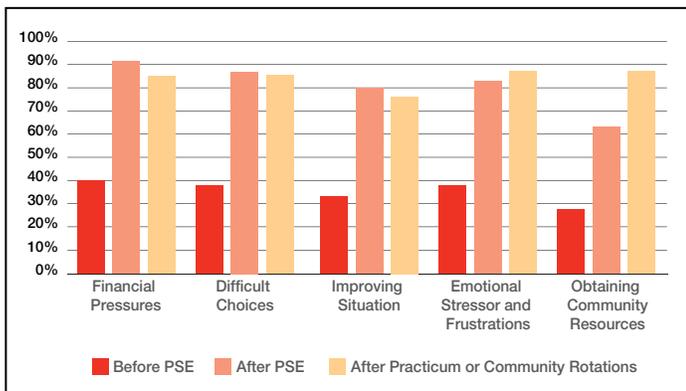


Figure 3. Changes in level of understanding

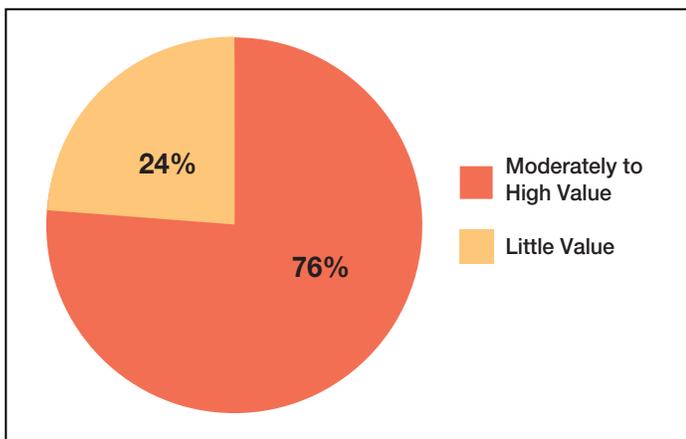


Figure 4. Poverty Simulation value in preparing to understand the challenges faced by patient who have limited income/resources that you saw during the practicum or community rotations.

exposure received from working within their roles and family problems that arise in the “simulated world” but they are also able to transfer their feelings and use the knowledge and empathy gained to help them work through real life clinical situations. In the Zigmont et al. study, it was also found that learner competencies in analytical and knowledge application were more evident following simulation experiences.¹⁸

Oral health disparities continue to persist in the U.S. Both the dental hygiene and dental assisting professions can act as key stakeholders in helping to close the gaps that still exist. Incorporating immersive simulation exercises that initiate change in attitudes, and increase awareness on issues, can be beneficial additions to the DH and DA curriculum. Increased understanding of struggling families unable to afford the basics of life, can influence healthcare providers’ perceptions and decisions when providing care.

Limitations of this study include not identifying within the

questionnaire any mixed experiences with poverty brought to the experience by the participants. Several of the students grew up in poverty and knew the challenges people face. Another limitation of the study is that the PSE lasted only one hour. Subsequent discussions on socio-economic status and its impact of dental care may help to increase understanding and change perceptions following the simulation. Future research should focus on how simulation experiences focusing on poverty also connect with greater understanding of diversity/inclusion and levels of cultural competency. Incorporating questions on cultural competency during the debrief section of the PSE to stimulate discussion could demonstrate the need for additional cultural competency training or activities.

Conclusion

Results from this study demonstrated that a PSE was effective in eliciting change in allied dental health students’ affective perceptions regarding poverty and raised their understanding of challenges faced by low-income populations. Understanding the impact and barriers impoverished families and individuals face is of importance for all dental health providers across all settings.

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