

## PUBLIC HEALTH

# Impact of a Simulation Exercise on Pharmacy Student Attitude toward Poverty

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**Objective.** To evaluate the impact of a simulation on pharmacy student attitudes toward poverty using the Attitude toward Poverty (ATP) Short Form scale.

**Methods.** Second-year pharmacy students participated in the 3-hour Missouri Association for Community Action Poverty Simulation. Students completed a survey of the ATP Short Form scale prior to and following participation in the simulation.

**Results.** Significant improvements in attitude were noted in 15 of 21 ATP Short Form items. Improvements in the stigma and structural domains were significant while improvement in the personal deficiency domain was not significant.

**Conclusions.** This poverty simulation exercise positively altered pharmacy student attitudes toward poverty. When combined with didactic and experiential curriculum, this simulation may enhance student achievement of the 2013 Center for the Advancement of Pharmacy Education (CAPE) outcome subdomain of cultural sensitivity.

**Keywords:** poverty, simulation, attitude, pharmacy

## INTRODUCTION

Healthy People 2020 defines a health disparity as a health difference closely linked with social, economic, and/or environmental disadvantage.<sup>1</sup> Economic stability, which includes poverty, is a Healthy People 2020 key domain for examining the social determinants of health.<sup>2</sup> Other national initiatives examine and seek to improve the health of populations that experience health disparities and inequities as a result of socioeconomic factors including poverty. One example is the Surgeon General's 2011 National Prevention Strategy report that calls for the elimination of health disparities as a foundational strategy for all prevention efforts.<sup>3</sup> This report also documents poor health in populations lacking economic stability and improved population health for people with employment and higher levels of education.

Research documents populations in poverty have poorer health outcomes and less use of recommended health services than populations not in poverty. Watanabe and Ney reported increased emergency room use and higher costs in persons unable to obtain necessary medications.<sup>4</sup>

The most frequently cited reason (71.7%) for not obtaining necessary medication was being unable to afford the medication, with another 14.5% citing a lack of insurance coverage for the medication.<sup>4</sup> Greene et al reported geographic areas of poverty had an increased prevalence of communicable diseases including acute and chronic hepatitis B, chronic hepatitis C, invasive pneumococcal disease, and influenza.<sup>5</sup> Gaskins et al examined the role of poverty and race on diabetes prevalence and found individual poverty increased odds of having diabetes for both black and white races, while living in areas of geographic poverty increased incidence of diabetes in the black population as a whole but only in the white population who were poor.<sup>6</sup> Higher incidence of preterm birth in neighborhoods with high poverty levels was reported by Margerison-Zilko et al.<sup>7</sup> This research compared neighborhoods with low and high poverty levels, suggesting that the degree of poverty influences health outcomes.

Poverty and other social determinants of health are important components in pharmacy curriculum. The Center for the Advancement of Pharmacy Education (CAPE) 2013 Educational Outcomes include cultural sensitivity, also referred to as "Includer" (Outcome 3.5).<sup>8</sup> This outcome states "the graduate is able to recognize social determinants of health to diminish disparities and inequities

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in access to quality care.”<sup>8</sup> Requirements to address economic and social issues impacting health care are also contained in the learning objectives for CAPE Outcome 2.3, health and wellness.<sup>8</sup> Likewise, the Accreditation Council for Pharmacy Education (ACPE) Standards 2016 require that advanced pharmacy practice experiences (APPEs) expose students to diverse populations as related to socioeconomic factors, including patients in poverty.<sup>9</sup> Guidance for Standards 2016 suggests patient care tasks be “inclusive of cultural, social, educational, economic, and other patient-specific factors” that impact patient care.<sup>10</sup>

With an increased focus on social determinants of health, colleges and schools of pharmacy are seeking effective mechanisms to improve student knowledge, attitudes, and behaviors in this area. Poverty simulation has the potential to improve student attitudes toward poverty.<sup>11-15</sup> Vandsburger reported improved student attitudes toward poverty following the use of a poverty simulation in a mix of undergraduate health and human services students.<sup>11</sup> Four evaluations of poverty simulations in nursing students documented improved attitudes toward poverty using the validated Attitude Toward Poverty (ATP) Short Form assessment tool.<sup>12-16</sup> The ATP Short Form contains 21 items covering 3 domains: personal deficiency measured by seven items, stigma measured by eight items, and structural perspective measured by six items.<sup>16</sup> Three of the nursing student studies used the Missouri Association for Community Action Poverty Simulation.<sup>12,13,15</sup>

Patterson and Hulton evaluated the impact of the Missouri Association for Community Action Poverty Simulation in 43 nursing students and found significant improvement in attitudes in four ATP Short Form items and the ATP Short Form stigma domain.<sup>12</sup> Yang et al reported significant improvements in attitude in the ATP Short Form stigma domain in an evaluation of 233 nursing students following use of the Missouri Association for Community Action Poverty Simulation.<sup>13</sup> Menzel et al used a different poverty simulation in an evaluation of 98 nursing students.<sup>14</sup> Significant improvement was found in eight ATP Short Form items but domains were not reported. Noone et al used the Missouri Association for Community Action Poverty Simulation and found improved attitudes using the ATP Short Form, reporting total scores rather than individual items or domains.<sup>15</sup>

At the Drake University College of Pharmacy and Health Sciences, didactic and experiential requirements related to social determinants of health are placed longitudinally within the curriculum of the 4-year professional program. Students specifically learn about poverty through participation in a 1-hour lecture and 2-hour laboratory during the first year of the professional program.

In the second year, all students complete a 40-hour introductory pharmacy practice experience (IPPE) in a patient care environment serving populations at risk for health disparities. Experiential sites include free medical clinics, federally qualified health centers, and other safety net organizations. To further enhance this instruction, a poverty simulation exercise was added to the second year curriculum in fall 2013. The objective of this analysis was to examine the impact of the Missouri Association for Community Action Poverty Simulation on pharmacy student attitudes toward poverty.

## METHODS

The Missouri Association for Community Action Poverty Simulation was provided to 108 second-year pharmacy students in the 4-year professional program. Gender distribution based on college enrollment data was 58% female and 42% male. Self-reported ethnicity data gathered from college enrollment records showed participants were 86% White, 11% Asian, 1% Hispanic, 1% Black, and 1% reporting as unknown. The Drake University Institutional Review Board approved this research protocol.

Drake University purchased the Missouri Association for Community Action Poverty Simulation for use with students, faculty members, staff, and other stakeholders. The simulation has been used by other researchers to simulate the day-to-day realities of people living in poverty.<sup>11-13,15</sup> The simulation mimics a month of living with limited resources. Participants assume a role in one of 26 family units varying in size from a single elderly person to a 5-person multi-generational family. Chairs are arranged in the middle of the room to serve as each family’s home.

Encircling the homes are the various community resources used by participants during the simulation. Examples of community resources include the employer, school, health clinic, utilities, child care center, and a supercenter for groceries, clothing, and prescriptions. The simulation requires at least 3000 square feet of open space to allow for the set-up of chairs for each participant as well as tables and chairs for each community resource. Some community resources require multiple chairs. For example, the school requires approximately 30 chairs, one for each student to sit while in school.<sup>17</sup>

Each family meets in their simulated home to review the instructional packets that describe the family members, income, and budget. Each participant assumes a role and must conduct him or herself appropriately for the role. For example, a child cannot go to work and an ill family member must receive care from others. The roles of the

family members are detailed so participants can fulfill the assigned responsibilities. Families have assets such as income from employment, savings, transportation passes, and possessions such as a house, car, or appliances. Families also have budgeted expenses such as mortgage or rent, utilities, student or consumer loan payments, daycare costs, credit card payments, health care needs, and costs for food and clothing. By the third week of the simulation, consequences such as eviction or termination of utilities may occur if family obligations are not met.<sup>17</sup>

After receiving instructions from the facilitator, the month in simulated poverty begins and is divided into four 15-minute periods, each representing one week. Most participants will go to work, school, or daycare for a significant portion (seven minutes) of the week. Others may be retired from the workforce or be a caregiver for a child or person with a disability. Participants interact with the community resources to meet their family responsibilities. To represent the cost of transportation, participants must present a transportation pass in order to move between all simulation locations except the school. After each week, participants return to their home to prepare for the next week.<sup>17</sup>

Families encounter circumstances that may help or hinder their abilities to meet their family's personal and financial responsibilities. Some circumstances are created through choice while others are unexpected and random. Some families will gain employment or receive assistance to improve their financial position while others will incur unexpected expenses. For example, during the first week of school, students are required to bring money for school supplies. Luck-of-the-draw cards are drawn by families during the simulation, which may or may not improve the family situation. Good luck may provide unexpected funds such as a cash birthday present, and bad luck may bring an illness or repair bill.<sup>17</sup>

During simulation instructions, participants are instructed to secure their assets by placing them under their chairs. If assets are not secured, a volunteer simulating the role of illegal activities may take the assets. The illegal activities volunteer also provides opportunities for some participants to become involved in criminal activity, which may result in participants being placed in the simulated jail.<sup>17</sup>

Debriefing and reflection are important components of the simulation. Immediately following the simulation, participants engage in guided discussion to debrief within their family unit. Next, the volunteers who staff the community resources share their observations of the simulation. Although not required, it is recommended that the community resource volunteers actually serve in a similar

role in the community in order to provide authentic commentary on the validity of the simulation. Finally, participants break into groups based on their role during the simulation, and a facilitator encourages group reflection. Examples of debriefing and reflection questions include inquiry about the feelings experienced during the simulation, the impact of poverty on relationships, and how the experience did or did not match existing perceptions about poverty. The entire simulation experience lasts approximately three hours (see Table 1 for a typical agenda).<sup>17</sup>

The University's Office of Community Engagement and Service-Learning (CESL) coordinated the delivery of the simulations. Tasks completed by the CESL staff included managing the space, recruiting and training volunteers, obtaining and organizing kit supplies, facilitating the simulations, and reorganizing the kit following the simulation. In these simulations, eight volunteers (16% of the total volunteers) were representatives from outside community organizations. Staff members of CESL are experienced facilitators of the simulation who served in this role for the simulations held on the afternoons of November 14-15, 2013. Students were divided into two groups based on enrollment in pharmacy practice laboratory sections. Students were randomly assigned to family units by drawing a nametag upon arrival at the simulations.

Following each simulation, four debriefing groups were formed based on family roles of children under 13 years of age, teenagers, parents in 2-parent families, and single adults. In addition to the reflection questions related to poverty in general, students were asked to consider how the simulation applied to the profession of pharmacy. For example, students were asked to consider their thoughts and attitudes when a patient does not pick up prescriptions or misses health care appointments.

Table 1. Missouri Association for Community Action Poverty Simulation Activities and Time Requirements<sup>17</sup>

Welcome and Overview	5 minutes
Review Family Instructions	10 minutes
Week 1 Simulation	15 minutes
Family Discussion	5 minutes
Week 2 Simulation	15 minutes
Family Discussion	5 minutes
Week 3 Simulation	15 minutes
Family Discussion	5 minutes
Week 4 Simulation	15 minutes
Family Discussion	5 minutes
Small Group Family Debriefing	10 minutes
Large Group and Volunteer Debriefing	45 minutes
Closing and Evaluations	10 minutes

The ATP Short Form scale was embedded in two student assignments created and distributed via the coursework functionality in E\*Value, a web-based, password-protected platform (Advanced Informatics Solutions, Minneapolis, MN). The first assignment was made available to students three days prior to the first simulation, and the final assignment was completed within three days following the last simulation. The pre/postsimulation assignments included additional reflection questions not included in this analysis. The ATP Short Form scale was derived from the Attitude Toward Poverty (ATP) scale developed by Atherton and Gemmel to measure potential changes in attitudes toward poverty and people living in poverty.<sup>18</sup> The 21-item ATP Short Form was validated by Yun and Weaver through correlational analyses and independent samples *t* tests and established its reliability by analyzing salient factor loadings.<sup>16</sup> The response scale

ranged from 1 = strongly agree to 5 = strongly disagree.<sup>16</sup> Items in each domain were summed to create scale scores for this analysis.

Data from the ATP Short Form scale were removed from the E\*Value system and de-identified. An alpha value of 0.05 was selected. Paired *t* tests were calculated using Microsoft Excel 2010. Changes in attitudes were calculated for individual ATP Short Form items and for each ATP Short Form domain. Cronbach alpha was calculated using SPSS, v23 (IBM, Armonk, NY) for the ATP Short Form domains for the presimulation and postsimulation assignments.

## RESULTS

Table 2 reports the presimulation and postsimulation means for each of the ATP Short Form 21 items and its three domains of personal deficiency, stigma, and structure.<sup>16,18</sup>

Table 2. Action Poverty Simulation (ATP) Short Form Scale Results for Pharmacy Students (n=108)<sup>16</sup>

Statement	Pretest Mean	Posttest Mean	<i>t</i> value	<i>p</i> value
Factor: Personal Deficiency (Increased Score=Improvement)				
Poor people are different from the rest of society.	3.3	3.4	-0.35	0.36
Poor people are dishonest.	4.0	3.7	4.12	0
Most poor people are dirty.	3.6	3.8	-2.42	0
Poor people act differently.	2.76	2.7	0.42	0.34
Children raised on welfare will never amount to anything.	4.4	4.3	1.39	0.10
I believe poor people have a different set of values than other people have.	2.8	2.8	0.27	0.39
Poor people generally have lower intelligence than nonpoor people.	3.4	3.6	-2.94	0.
Overall score	24.2	24.2	-0.05	0.48
(Cronbach alpha pre=0.753, post=0.790)				
Factor: Stigma (Increased Score=Improvement)				
There is a lot of fraud among welfare recipients.	2.8	3.1	-2.79	0
Some "poor" people live better than I do, considering all their benefits.	3.6	3.9	-4.11	0
Poor people think they deserve to be supported.	2.9	3.2	-3.48	0
Welfare mothers have babies to get more money.	3.4	3.7	-3.84	0
An able-bodied person collecting welfare is ripping off the system.	3.0	3.4	-3.47	0
Unemployed poor people could find jobs if they tried harder.	3.1	3.3	-2.73	0
Welfare makes people lazy.	2.9	3.4	-6.55	0
Benefits for poor people consume a major part of the federal budget.	2.9	3.1	-2.46	0.01
Overall score	24.6	27.1	-8.77	0
(Cronbach alpha pre=0.814, post=0.819)				
Factor: Structural Perspective (Decreased Score=Improvement)				
People are poor due to circumstances beyond their control.	2.5	2.4	2.45	0.01
I would support a program that resulted in higher taxes to support social programs for poor people.	3.3	3.0	3.98	0
If I were poor, I would accept welfare benefits.	2.5	2.3	3.69	0
Poor people should not be blamed for their misfortune.	2.6	2.4	2.38	0.01
Society has the responsibility of helping poor people.	2.4	2.3	1.92	0.03
Poor people are discriminated against.	1.9	1.9	0.00	0.50
Overall score	15.4	14.3	4.12	0.05
(Cronbach alpha pre=0.662, post=0.744)				

Scale Scores: 1=strongly agree, 2=agree, 3=neutral, 4=disagree, 5=strongly disagree

Significant improvements in attitudes were noted in 15 of 21 items. Improvements in the stigma and structure domains were significant, while improvement in the personal deficiency domain was not significant. Cronbach alpha calculations indicated postsimulation findings for each domain to have acceptable or good internal consistency as they were above the recommended Cronbach alpha of 0.7 set forth by Hair et al.<sup>19</sup> Attitude improvement was found in all eight items in the stigma domain. Attitude improvement in the stigma domain is shown by a higher scale score, indicating more disagreement with the statement. In the structure domain, a lower scale score, indicating more agreement with the statement, is considered attitude improvement.

Attitude improvement was found in five of six items in the structure domain. The structure domain item “Poor people are discriminated against” was not improved. Although the overall score for the personal deficiency domain was not improved, two items showed significant improvement within that domain: “Most poor people are dirty” and “Poor people generally have lower intelligence than nonpoor people.” The item “Poor people are dishonest” showed a significant change but indicated a decline in attitude according to the ATP Short Form scale.

## DISCUSSION

This study examined the use of a poverty simulation in pharmacy students and found results similar to existing findings among nursing students who experienced poverty simulation.<sup>12-15</sup> Patterson and Hulton’s methodology was used including the same poverty simulation, assessment tool, and data analysis strategy.<sup>12</sup> This study in pharmacy students showed positive improvements in attitude in 15 of 21 ATP Short Form items compared to four items in Patterson and Hulton’s nursing student group.<sup>12</sup> Both this study and Patterson and Hulton’s study showed significant improvement in the stigma domain, while only this study showed improvement in the structure domain.<sup>12</sup> Neither study showed improvement in the personal deficiency domain.<sup>12</sup>

Other nursing student studies cannot be directly compared to this study because of the variety of reporting strategies used for the ATP Short Form, which include individual items, domains, and total scores.<sup>13-15</sup> These studies used the Missouri Association for Community Action Poverty Simulation with the exception of Menzel et al, who used a virtual poverty simulation experience with a family and community resource structure similar to the Missouri Association’s simulation model.<sup>12-15</sup>

The ATP Short Form was used to measure changes in attitude toward poverty.<sup>16</sup> This validated instrument is also used in the published research in nursing students

as well as in studies with students in nonhealth majors.<sup>11-15</sup> The ATP Short Form domain of personal deficiency was not significantly improved in the Patterson and Hulton study in nursing students or in this study of pharmacy students.<sup>12</sup> Personal deficiency domain items may be considered inflammatory or stereotypical in nature, which may be contributing to these findings. Another potential reason is that attitude related to the personal deficiency domain items may already be positive, leaving little room for improvement. Diminishment was documented for one item in the personal deficiency domain “Poor people are dishonest” in Menzel’s study as well as this study.<sup>14</sup> While the ATP Short Form classifies dishonesty as a personal deficiency item, perhaps students viewed dishonesty from the structural domain rather than as a personal deficiency.

To achieve the CAPE 2013 Educational Outcome of cultural sensitivity (Includer), pharmacy students must have the ability to “recognize social determinants of health to diminish disparities and inequities in access to quality care.”<sup>8</sup> Poverty is a complicated topic and cannot be adequately addressed through one curricular strategy. Didactic coursework may inform students about poverty as a social determinant of health, while experiential opportunities allow direct observation of the barriers to quality care as a result of poverty. Simulation exercises create an additional opportunity for student development as they provide a unique opportunity for students to personally experience common situations found in poverty and to select actions based on these circumstances. As an example, health care services and prescriptions for medical conditions are included in many of the simulated family scenarios.<sup>17</sup> In these simulations, only one participant sought services at the health clinic or pharmacy, which were part of the simulation’s community resources. It is noteworthy that pharmacy students—who presumably value health services—did not prioritize health care needs during the poverty simulation.

CAPE 2013 Educational Outcomes and ACPE Standards 2016 also emphasize interprofessional education and collaboration.<sup>8-10</sup> This study’s findings, along with similar findings in nursing student studies, suggest other health care professional students may benefit from a poverty simulation exercise.<sup>12-15</sup> Given these collective findings, exploration of poverty simulation exercises as a simulated interprofessional education opportunity may be warranted.

A limitation to schools of pharmacy implementing poverty simulations is the complexity of planning and providing the simulation. Recruiting and training the 20-25 volunteers needed for each simulation may present a challenge. Although it is recommended that volunteers

simulating community resources actually serve in a similar role in the community, obtaining these volunteers may be difficult. In this analysis, only 16% of the total volunteers were representatives from outside community organizations. Increasing the percentage of authentic volunteers may have further improved the ATP Short Form findings.

Poverty simulations must be carefully planned and facilitated to avoid noteworthy concerns related to the use of poverty simulation. One concern is for student participants who are in or have experienced poverty.<sup>20</sup> Staff of the CESL proactively addressed this concern when facilitating the simulations by discussing the possibility that the simulation may be upsetting to students for a variety of reasons including a history of poverty. Facilitators should monitor student reactions during the poverty simulation and provide a safe exit from the simulation without identifying reasons why students may wish to exit. No student reactions during these simulations warranted removal. All persons experiencing poverty simulations bring their own history with and perceptions of poverty. The Missouri Association for Community Action Poverty Simulation is based on models of American poverty and uses data from the midwest.<sup>17</sup> This model of poverty may not match an individual's view of poverty.

Another concern is that poverty simulation may reinforce stereotypes, specifically, those related to addiction and criminal activity.<sup>20</sup> Addiction is not a direct theme in the Missouri Association for Community Action Poverty Simulation as there is no addiction treatment facility in the community resources nor are such treatments provided in the health center.<sup>17</sup> However, criminal activity is a part of the simulation. A volunteer performs illegal activities such as stealing unsecured items from some participants.<sup>17</sup> The US Department of Justice reports confirm that people living in poverty are more likely to be victims of nonfatal violent crimes.<sup>21</sup> Including criminal activity in poverty simulations contributes to a realistic simulation, as crime exists in all communities including impoverished communities. However, the simulation should not create an environment where a disproportionate number of participants become victims of crime or engage in criminal activity. Providing clear instructions to the volunteer performing illegal activities is necessary to ensure criminal activity is not overemphasized during the simulation.

Limitations of this study include its examination of one class of pharmacy students. Additional data across multiple years and with additional student demographics may inform decisions related to optimal use of poverty simulation. This analysis would have benefited from student demographic information related to household

income as household income is likely to influence participants' attitudes toward poverty. This class is less ethnically diverse than those of other schools of pharmacy.<sup>22</sup> Since poverty disproportionately impacts ethnic minorities, this may impact generalizability.<sup>23</sup> This research also did not evaluate whether changes in attitudes toward poverty persisted over time. Finally, this research examined the impact of the Missouri Association for Community Action Poverty Simulation; hence, these findings may not be applicable to other poverty simulations. However, Menzel used a different poverty simulation methodology and produced similar results.<sup>14</sup>

## SUMMARY

Poverty is a key social determinant of health that impacts access to quality care. Understanding how poverty and other social determinants of health create barriers to the achievement of health equity is an important component of pharmacy education. This examination of the impact of the Missouri Association for Community Action Poverty Simulation on second-year pharmacy student attitudes toward poverty documented overall improvements in attitudes, particularly in the domains of stigma and structure. These results are similar to those found in studies in nursing students, suggesting poverty simulation may be a useful educational tool for additional health care professions students and potentially provide an opportunity for interprofessional education. Supplemental use of a poverty simulation exercise combined with didactic and experiential curriculum may enhance student achievement of the CAPE 2013 Educational Outcome subdomain of cultural sensitivity, which addresses social determinants of health including poverty.

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