

Theater and Health: Results From *Dulce and the Good Life*

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Abstract

The purposes of this study were to provide a replicable model of community engagement involving local health issues and to examine the effectiveness of a community-based play for audience members' attitudes toward diabetes. The research question was, can a community-based, culturally responsive play positively influence participants' attitudes toward understanding diabetes? Diabetes knows no borders or boundaries. Latinos across the Americas are experiencing an increase in diabetes based on poor nutrition and a changing lifestyle in this new millennium. Communities on the United States–Mexico border are representative of this nutrition-related problem in both countries. The play *Dulce and the Good Life* was written with and for the border community. The protagonist, a Mexican American youth with type 2 diabetes, struggles with her diagnosis and food choices. Audience members of the two evening performances ($N = 70$) and one daytime performance ($N = 119$) completed a valid and reliable nutrition attitude survey; data analysis was performed using descriptive statistics and SPSS to determine significance levels. Participating audience members made statistically significant nutrition attitude changes. This study, based on community engagement and semiotic frameworks, adds to the literature concerning the importance of culturally relevant health interventions with maximum community involvement.

Keywords

diabetes; nutrition; health; Latinos; theater

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Authors' Note. We wish to thank the former students, teachers, school administrators, community members, organizations, and companies who assisted in every facet of this project. Also, we would like to thank Dr. Mirnal Mugdh for his help with the statistical analysis. This play, *Dulce and the Good Life*, and the PowerPoint presentation are available, in Spanish and English, upon request to the authors.

The objectives of this study, conducted in the lower Rio Grande Valley (LRGV) near the Gulf of Mexico, were to (a) involve the community in a culturally responsive theatrical play related to nutrition, diabetes, and obesity and (b) evaluate the efficacy of a play in changing participants' attitudes regarding nutrition. The research question related to the second objective was, can a community-based, culturally responsive play positively influence participants' attitudes regarding nutrition as it relates to diabetes? For both objectives, community engagement (Zhu, n.d.) and semiotics (Peirce, 1955) were the theoretical frameworks. Nutrition, diabetes, and obesity are important health issues in the United States and Mexico, and both countries lead the western hemisphere in obesity and type 2 diabetes (United Nations, 2013). In 1999, 13% of U.S. children aged 6 to 11 and 14% of U.S. adolescents aged 12 to 19 were overweight (Surgeon General, 2013). Based on 2009–2012 baseline data, the National Prevention Council (2014) reported that 16.9% of U.S. children aged 2 to 19 were obese. These figures demonstrate that obesity continues to increase in the United States. Childhood obesity is a leading health indicator in the 21st century (Healthy People, 2010).

More disturbing health-wise is the situation directly across the border in Mexico, which has surpassed the United States as the fattest country in North America (United Nations, 2013). The obesity rate in Mexico has tripled since 1980 (Barquera et al., 2009), and 33% of Mexicans were obese in 2008 (Food and Agricultural Organization of the United Nations, 2013). The percentage of school-aged Mexican children who were clinically obese increased 27% in just over a decade (United Nations, 2013). The side effects of obesity, such as diabetes and heart disease, are considered a public health emergency, and the Mexican government is the first in Latin America to launch a nutrition education effort (World Health Organization, 2011). According to the Central Intelligence Agency (2013), the primary resource for health-related data collection in most countries, of the more than 70,000 Mexicans who die from diabetes every year, the majority are food-based poor who also suffer from malnutrition. In other words, malnutrition and obesity can sit at the same table.

Children who grow up overweight are more likely to become obese adults in the United States and Mexico (Dietz, 1997). Therefore, it is logical to use a community engagement theoretical framework (Zhu, n.d.) to educate children at risk of becoming obese adults on proper eating habits. According to Zhu (n.d.), community engagement theory is tailored to the population, community-based organizations and diverse stakeholders should be involved, and the project should be evaluated. This study is focused on nutrition education through a community-based drama, *Dulce and the Good Life*, a play the first author cowrote with her former undergraduate students and coproduced with a high school drama teacher and his students. The play is focused on Dulce, a troublemaker teen who discovers she has type 2 diabetes. Dulce's grandmother,

whose foot is amputated due to diabetes-related problems, persuades Dulce to get tested for the disease. When Dulce discovers she, like her grandma, has type 2 diabetes, she is outraged because she has to alter her eating and exercise habits dramatically. Although Dulce's two friends are not supportive of Dulce's lifestyle changes, she has a friend, an Aztec goddess, school nurse, track coach, and family encouraging her to eat healthy and exercise.

The LRGV has the highest prevalence of obesity and diabetes in the United States (Texas Comptroller of Public Accounts, 2008) and is the unhealthiest geographic region in the United States (Associated Press, 2004). Hispanics represent 96% of the local population (U.S. Census Bureau, 2010). The U.S. Census Bureau (2010) uses the term *Hispanic* to represent people of Spanish origins, but for cultural specificity, we use the term *Mexican American* or *Latino* if a particular study highlighted this term (Nieto & Bode, 2012). Many years ago children and adolescents were rarely diagnosed with type 2 diabetes; however, much has changed in terms of children's diet and exercise, especially in developed countries. Nowadays, type 2 diabetes is 3 to 4 times higher in Hispanic children than in non-Hispanic Whites (Kaufman, 2008). Furthermore, many Latinos suffer from higher rates of type 2 diabetes, metabolic syndrome, obesity, and vascular-related complications (Caballero, 2005; Herscovici, Kovalskys, & De Gregorio, 2013). Mexican Americans in particular face higher risks for diabetes and obesity than the general U.S. population (Fisher-Hoch et al., 2010). These statistics are especially poignant because Hispanics are among the fastest growing and largest U.S. minority group and are expected to represent 23% of the U.S. population by 2050 (U.S. Census Bureau, 2010).

In the LRGV and Matamoros, Mexico, a few minutes away, Pérez, Reininger, Aguirre Flores, Sanderson, and Roberts (2009) found that about one third of 653 ninth grade students, aged 14 to 16, were at risk for being overweight or were already overweight. Only 7% of the Matamoros adolescents and 9% of the LRGV students in the Pérez et al. study engaged in varied, extensive physical activity; 57% of the Matamoros adolescents and 50% of the LRGV students watched 3 hours or more of television during an average week day. Rideout, Foehr, and Roberts (2010) corroborated these findings in their national poll; Hispanics spent 5 hours 21 minutes daily watching television.

Day (2004) reported that of the 1 million people living on the U.S. side of the Mexican border, many are Mexican immigrants living below the poverty line with a level of education lower than high school. According to Day, income and education are leading factors related to nutrition: "Poverty, number of adults without high school education, high unemployment, and the number of female-headed households in Cameron, Hidalgo, Starr, and Willacy counties suggest that food insecurity exceeds the national average" (p. x). Local families cross the border to visit relatives, often daily or weekly. Many families have school children living weekends with one parent or grandparent in Mexico and

attending school in South Texas while living with the other parent on school days. Many of these school-aged children on both sides of the border are suffering from poor nutrition, and obesity and type 2 diabetes are at near epidemic levels as a result.

Pérez et al. (2009) concluded that interventions on healthy eating, physical education classes, and team sports are important to reduce the high prevalence of obesity and Type 2 diabetes among students on both sides of the United States–Mexico border. The continued increase in obesity and diabetes in this border community is remarkable considering that medical professionals have been studying the problem for over 20 years (Green, 2012). Some strictly medical approaches have failed, and some educational approaches have had some success. Sharon Brown (as cited in Green, 2012) had some success by infiltrating the cultural aspects of life that may contribute to health problems. For example, instead of teaching people not to eat tortillas, she had some success with convincing people not to use lard when they made tortillas. Other cultural aspects were also helpful to Brown, Dougherty, Garcia, Kouzekanani, and Hanis (2002), who placed keen attention on respecting the local culture, families, and traditions. These dimensions of respect were achieved for the culture through Spanish usage, for the community through evening presentations, and for the families through patterns of support. These dimensions were considered part of the success in education as an intervention to diabetes. Brown et al. were able to reduce participants' diabetes indicators, as seen through bloodwork, by 25%.

Thus, Brown et al. (2002) hypothesized that culturally relevant interventions could impact community members' awareness of the medical complications associated with diabetes. Specifically, Jackson (2004) found that a culturally relevant play was an effective means to help African American school children understand nutrition. Thus, the first author cowrote a nutrition education play with her former students from an undergraduate content area literacy course. Participating students were preservice teachers. The goals of the *Dulce* play were to (a) produce a diabetes awareness play, which local health professionals checked and corrected for accuracy; (b) use education as a tool to combat local diabetes and obesity problems in local youth; and (c) involve the community in the artistic processes and products. Table 1 demonstrates how community members were involved in the play and research.

Content Validity

To ensure maximum community participation, this project spanned 2 years and involved area teens, parents, and health professionals. Content validity was the first focus of the research design. Thus, a local Mexican American high school student with diabetes, as well as his sister and mother, spoke to the writing group about how the student and his family reacted to and coped with

Table 1
Participants' Matrix

Participants' matrix		
Participants	Role	Contribution
Health care professionals	Feedback regarding accuracy of the medical and nutritional content in the play	Medical and nutrition content validity, community need
Teenager with diabetes, his mother and sister	Guest speakers at university writing group session	Medical and nutrition content validity, community need
Organizations and local media	Publicity	Advertised the play and invited public to participate as survey respondents
Local hospital and authors' university	Monetary assistance	Assisted in paying for additional props and costumes and the video-taping of the play
University faculty	Coauthor and coproducer the play and research	Planning, cowriting, implementation, and research
Preservice teachers	Observations of local teens in a mall; cowriters of first play version, music creators and performers, creators of food props, assistance with publicity, and photographers	Data collection in field, cowriting, and implementation
High school drama teacher	Coproducer and codirector	Implementation and feedback
High school students	Performers	Implementation and feedback
School district staff and teachers	Gatekeepers	Allowing the study to be conducted and assisting with data collection in classrooms
Evening performance audience-participants	Nonexperimental design	Survey and anecdotal data
Daytime high school audience-participants	Experimental design	Survey and anecdotal data

his recent diagnosis. Also, several local health professionals read and revised the script to ensure content validity of relevant medical and health information. For example, the first author changed a beginning scene from *Dulce* needing emergency care because of undiagnosed diabetes to Dulce's pediatrician

telling Dulce she had diabetes because health professionals stated that type 2 diabetes among obese adolescents is manifested gradually.

Community Participation

Besides content validity, cultural responsiveness and community engagement (Zhu, n.d.) were important in the research design and occurred throughout the process. According to Zhu (n.d.), main community engagements are: a) area-based, which focus on socioeconomic status disparities, b) person-based, which engage marginalized groups, and c) coalition-based, which involve special interest groups. The latter is focused on interest groups. Our project incorporated all three categories. Figure 1 demonstrates how the project began with a community need. For Step 1, local health issues, the first author participated in a LRGV literacy and wellness task force consisting of community members,

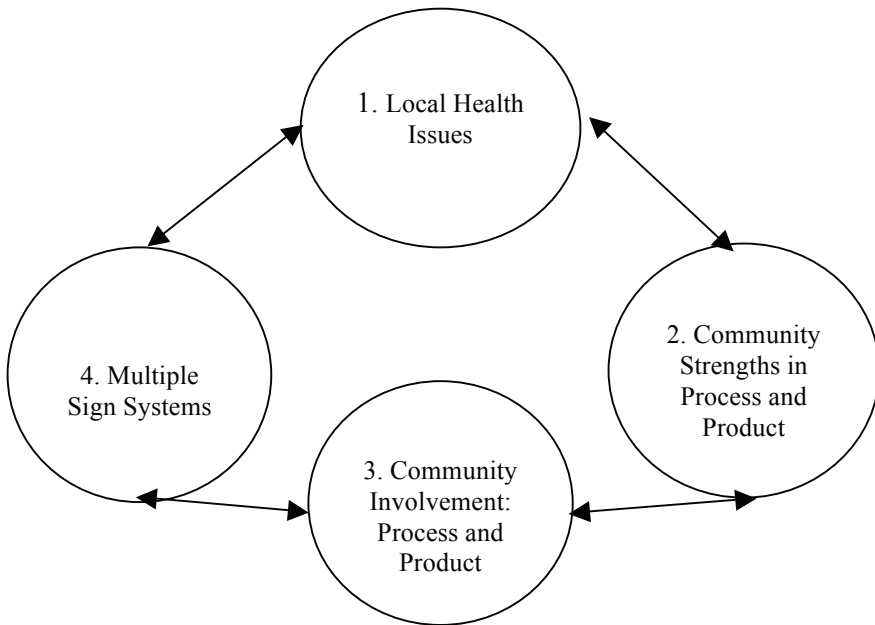


Figure 1. Culturally responsive community product model.

university students, and faculty. The task force sought ways to educate people about the high rate of diabetes and obesity in their South Texas border town. Thus, the first author attempted to solve this local health problem by cowriting a play with her students.

For Step 2 of Figure 1, community strengths, the playwrights attempted to affirm their community's border language and culture (Nieto & Bode, 2012)

by incorporating local code-switching (a common English-Spanish mixture) and by creating a 15-year-old Mexican American female protagonist, Dulce. The emotionally strong Latina protagonist was a counter-hegemonic move. In fact, most U.S. stories do not feature culturally diverse females as strong protagonists. Instead, most are about White male protagonists, and most literature for children and adolescents portrays females as weak (Garcia, 2013). Fictional characters and actors in the *Dulce* play were Mexican Americans, which is representative of the setting of the study. The script also mentioned the benefits of popular, nutritious Mexican foods, such as *nopales*, or cactus pads. The Mexican history and heritage were represented by an Aztec goddess who helped Dulce, the protagonist, eat in a healthy, Southern Mexican way rather than relying on eating habits influenced by mainstream Americans (e.g., corn tortillas versus flour tortillas or modern mainstream Texas Mexican fast foods and sodas loaded with corn syrup). Last, healthy Mexican recipes and eating and exercise tips were presented at the commencement of the play using PowerPoint slides.

To embrace community strengths and teen practices as part of Step 2, former Latino students observed teen speech and behaviors, as well as teen music and food choices, to incorporate components of the local youth culture into the

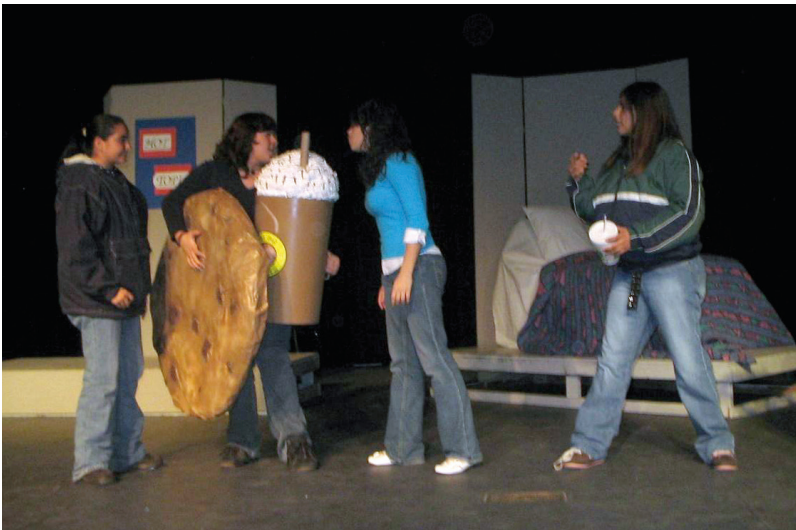


Figure 2. Actors and props in *Dulce and the Good Life*.

script. The richness of both border cultures is reflected in the play. In Figure 2, the main character, Dulce, chooses sweets over health and fights with her best friend, who is concerned about Dulce's diabetes. The scene refers to restaurants and music and clothing stores in the local mall, including a cookie stand. All business names were changed. See Figure 2.

For Step 3 of Figure 1, community involvement, the first author presented involved local children at a neighborhood soup kitchen in some of the skits related to a first draft of the play and sought feedback from the children. When the play was in its final version, advanced drama students and their public high school teacher produced the play, which was shown during the day and evening at the high school and in the evening at the university theater. Three performances were offered. For the daytime performance, high school research participants, teachers, and staff saw the play. For the evening performances, local media and health organizations announced the free play and invited the public to participate in the pre- and postsurveys. Also, a local hospital and the university provided approximately \$600 to pay for props, costumes, and a video recording of the play. According to Zhu (n.d.), power-sharing is an essential aspect of a community engagement framework. We demonstrated this throughout every facet of the research, as we sought feedback, wrote the play with college students, and then coproduced the play with a local high school teacher.

Step 4 of Figure 1 relates to the second theoretical framework, semiotics, originating from Peirce's (1955) study of signs. Sign or communication systems are ways to gain deeper understanding of phenomena (Berghoff, Egawa, Harste, & Hoonan, 2000). We involved drama through acting; language through the script; art through the props, sets and lighting; dance through the Aztec goddess who visits Dulce; and music through the scene transitions and before and after the play. We also included a short, informational PowerPoint presentation after the play as audience participants completed the survey. Unlimited semiosis or interpretations may more readily occur with combined signs (Berghoff et al., 2000). Two art majors from the same undergraduate course created the props. They made the cookies from papier-mâché and the mocha latte from a trash can and spray-on foam. A music major enrolled in the same class composed and performed the theme song of the play along with his friends; the play also included popular songs local teens enjoyed. The use of theater as a culturally responsive intervention also relates to learning styles theory. Because each human processes and stores information differently (Dunn, 1993), some audience members may be affected or moved by the music in a play, whereas others may be affected or moved by the script. In other words, many learning styles are tapped into with a play. Also, within the Mexican culture of rich music, dance, and art, a theatrical performance may be as appropriate as other educational interventions.

Additionally in terms of Step 4 of Figure 1 and semiotics, several researchers have found that health-related plays positively influence participants' attitudes because multiple sign systems are involved. Perhaps this is because many people live vis-à-vis media images and popular culture (Rideout et al., 2010). Frank (1996) used this applied theater framework in Uganda to raise awareness

of health and environmental issues, although she does not explain how the two plays influenced audiences. Also, Perry, Zauner, Oakes, Taylor, and Bishop (2002) found significant differences in nutrition knowledge and food choices between the treatment and control groups ($N = 4,093$) after watching a nutrition education play and participating in follow-up activities; they found no differences between the groups at pretest. Participants, aged 5 to 12, represented a cross-section of public school children in Minneapolis. Similarly, Colby (2006) developed a Latino nutrition play with 19 Latino youth aged 8 to 12. Significant positive changes occurred in participants' nutrition attitudes, as well as a 26% increase in their knowledge, after the children cowrote and coproduced a bilingual nutrition play for the public.

Methods

This section is focused on the hypothesis, data source, sampling plan, non-experimental study (evening performances with no random sampling), and the experimental study (daytime performance with random sampling). The hypothesis was that watching the play would positively influence most participants' nutrition attitudes regarding diabetes, measured by a pre- and postnutrition attitude survey.

Data Source and Analysis

A preexisting valid and reliable nutrition attitude survey was used with prior written permission from the survey authors (Devine, Olson, & Frongillo, 1993a, 1993b). Each pre- and postsurvey was on a bubble-in Scantron sheet, which the authors' university assisted in creating. The first author used all 14 questions from Devine et al. (1993a, 1993b) survey (on a 5-point Likert scale). Sample statements were "Learning about nutrition is interesting to me" and "I feel better when I eat right." At the time of the study, an appropriate standardized survey about nutrition knowledge was not available, yet the question of influencing attitude remained. Therefore, this study was focused on positively influencing attitude. Respondents were asked to bubble in one response that best described the way they felt about each statement. Demographic questions related to weight, height, sex, ethnicity, age, and educational level; blood relatives with diabetes; participant's diabetes; and weekly exercise information.

Next, data were analyzed using descriptive statistics (e.g., percentages and mean scores) and inferential statistics (e.g., significance and correlations). For the latter, SPSS software was used to determine the t test, mean differences, confidence intervals, degrees of freedom, and significance levels. Last, quotes (including negative ones) from audience participants were provided for qualitative data and for transparency of research.

Permissions

Since this research involved human subjects, the institution's internal review board for human subjects reviewed and approved this project. The facets of research were a nonexperimental study (conducted during two evening performances) and an experimental study (with random sampling for high school students for a daytime performance). For the evening performances, adult audience members and students in grades six and over who had guardians present were invited to participate in the study. For the daytime study, all children participants turned in completed parent consent forms and child assent forms.

Nonexperimental Design

The nonexperimental study occurred during two evening performances in a south Texas border city in November and December. There were 29 matching pre- and postsurveys for the November evening performance: 23 adults, four children, and two unmarked for age, with 17 Latinos, eight Caucasians, and four who answered Other for race. Nineteen of 29 (66%) participants with matching pre- and postsurveys reported having blood relatives with diabetes, and four of 29 (14%) wrote they have diabetes.

The December evening performance yielded 41 matching pre- and postsurveys, from 30 adults, 10 children, and one unmarked for age, self-reporting as 31 Latinos, eight Caucasians, one Asian, and one Other. Twenty-nine of 41 (71%) respondents stated in the survey that their blood relatives have diabetes, and three of 41 (7%) said they have diabetes. Data regarding participants who cross daily from Mexico to attend public school in this border city were not disaggregated from permanent residents at the same high school since they have the same border culture and are influenced by the same health issues. Thus, 70 surveys for the two evening performances.

Experimental Design

In the same Mexican American border city, the experimental study occurred during seventh period class in a public high school in December. All 10 teachers, randomly selected for the control and treatment groups, agreed to ask their students to participate (100%). All students except one agreed to participate in the treatment group; eight students in one class of the control group did not wish to participate. Thus, nine of 240 chose not to participate, which leaves a participation rate of 96.25%.

The number of potential participants in the experimental study was 230; however, due to attrition, the number of final participants was lower after the posttest. The final data included 69 matching pre- and postsurveys for the control group and 50 for the treatment group ($N = 119$). Latinos made up 98%, as self-reported by the participants. Approximately 62% reported blood relatives

with diabetes. Only one participant reported having diabetes.

The author gave each classroom identical surveys in English and Spanish for those needing translations. To prevent invalid results, teachers were instructed not to make comments to influence students or do anything outside of their regular curriculum. The teachers, all bilingual in Spanish and English and of Mexican American heritage, read each survey question aloud as the students completed the two-page presurvey in their language of preference. All participants completed the presurveys the day before the play. Although the treatment and control groups attended the 65-minute play toward the end of the school day, only the treatment group completed the postsurveys. All audience members sat with the teachers, and the treatment group returned the surveys before they returned to their classrooms with their teachers.

Results

This section is focused on statistics and then participants' quotes for the nonexperimental and experimental studies associated with the *Dulce* play. Survey data were normalized on a Likert scale from 1 to 5 (1 = *agree*, 5 = *disagree*), such that 5, which represented a positive nutrition attitude, was always the best answer. For example, if a participant answered a 1 (*disagree*) to the question "Good nutrition is too much bother," that score was automatically converted to a 5. Thus, normalization of responses helped to create a meaningful nutritional attitude mean for each participant and group.

Nonexperimental Study

The 29 matching pre- and postsurveys for the November evening performance of the nonexperimental study had mean scores on pre- and postsurvey of 4.18 and 4.38, respectively, on a 1 to 5 Likert scale (again, 5 represents the best nutrition attitude), $MD = .20$, 95% CI $[-.35306, -.05732]$, $t(28) = -2.843$, $p \leq 0.008$. For the December evening performance (nonexperimental), 41 matching pre- and postsurveys existed, with mean scores of 4.11 and 4.2, respectively, $MD = .16$, 95% CI $[-.29344, -.03542]$, $t(40) = -2.576$, $p \leq 0.014$. The November and December results indicate participants made statistically significant positive changes in their nutrition attitudes after viewing the play.

The evening survey requested self-identification of age group. For the purposes of reporting data, participants were grouped as pre-teens (11-13), young teenagers (14-15), older teenagers (16-18), young adults (19-24), adults (25-44), middle aged adults (45-64) and elderly (65 and up). Several participants wrote comments on the post-surveys for the evening performances. For the November evening performance, a male Latino between ages 11 and 13 with no blood relatives with diabetes commented, "The play was asome [sic]." Also, Latino participants between ages 25 and 44 whose blood relatives had diabetes wrote:

"This play is too [*sic*] helpful that shult [*sic*] be take [*sic*] to other schools like elementaries and middle school."

"Es muy interesante el tema porque nos ayuda aprender sobre la nutrición y sobre la salud y como llevar un control sobre la diabetes" [The subject is very interesting because it helps us to learn about nutrition and health and how to control diabetes].

"Nos explica la forma de alimentarnos y que alimentos debemos eliminar para estar sanos y prevenir la diabetes" [It explains what to eat and what not to eat so we can be healthy and prevent diabetes].

A female Latino between ages 25 and 44 who was diagnosed with type 2 diabetes 3 years before she saw the play wrote in Spanish that the play was excellent and she would like to change her health habits after seeing the play because she did not have her diet balanced and she was not eating enough *nopales*, prickly pear cacti, known locally and scientifically as a natural way to decrease blood glucose levels (Hernandez-Galicia, Garcia-Vega, Flores-Saenz, & Alarcon-Aguilar, 2002; O'Connell, 2005).

For the December evening performance, a female Latino between ages 45 to 64 who was diagnosed with type 2 diabetes 10 years before seeing the play wrote that she thought the play would help Latino youth because they eat too much junk food, or as she put in Mexican Spanish, *chatarra*. A participant of Asian descent between ages 11 and 13 whose father and grandmother had diabetes commented on specific parts:

I liked the part when Dulce first liked shot put. I thought the part with the nutritionist was very informative. The play was humorous so it made everything easier to understand and not boring. The part where Dulce had to talk with the school nurse was very exciting. I think it helped Dulce. The beginning was good because it shows how careless Dulce was and if you compare it to the end, it shows how much she has changed.

Another youth, a 14- to 15-year-old female Latino whose mom was diabetic, wrote, "The play was great. I learned new and awesome things about eating and being healthy." Additionally, a White male participant between ages 45 and 64 with no blood relatives with diabetes wrote,

It seems to have a DVD of this, or something that could be circulated from school to school, would be very helpful. I could certainly use it with my students. An accompanying script would be helpful because inevitably questions will come up like, "What'd they say" and it would be a good opportunity to stop and talk about diets. I had one pre-AP [Advanced Placement] student tell me she didn't eat veggies because

they were fattening! Disinformation! Anyway this is a very useful tool kids will relate to.

A 25- to 44-year-old female Latino whose blood relatives had diabetes also said the play needed to be incorporated into local schools: "I would like elementary students to see a play like this. My son is a 4th grader at [school name] and it would be nice for 4-6 graders to be exposed to this info." Only one participant, a 14- to 15-year-old Latina who had blood relatives with diabetes wrote a negative comment on the survey. She said, "The play was too stereotypical."

Experimental Study

For the daytime experimental study, 119 pre- and postsurveys matched, 50 treatment and 69 control. The difference between the treatment and control groups mean before treatment was .12, which was not statistically significant according to the independent samples *t* test ($t = -1.407$, $df = 117$). The control group's presurvey score mean was 4.0. The treatment group's presurvey score mean was 3.88 and postsurvey score mean was 4.22, $MD = .33$, 95% CI $[-.47804, -.19796]$, $t(49) = -4.850$, $p \leq 0.000$, which showed the treatment group moved closer to a 5 (positive nutrition attitudes).

Besides a statistically significant change from pre- to postsurvey for the treatment group, 85% of the high school students in the treatment group made positive changes in their nutrition attitudes. The following are the treatment group's mean positive increases for each of the 14 questions: Q1: 14%, Q2: 21%, Q3: 5%, Q4: 17%, Q5: 22%, Q6: 13%, Q7: 13%, Q8: 7%, Q9: 19%, Q10: 13%, Q11: -2%, Q12: 8%, Q13: 7%, and Q14: 11%. The treatment group participants' attitudes became more negative for Question 11: "If I am careful about the way I eat now, I will be healthier when I am older." Perhaps the teens' attitudes were more negative for this question because some did not understand the conditional statement, which requires more careful reading or because they, like many teens, did not think about the impact of their actions today on their adulthood. Cognitively, this may have to do with the development period in which adolescents feel they are invincible (Wickman, Anderson, & Greenberg, 2008). Wickman et al. (2008) conducted interviews with teens about their feelings of invincibility regarding health-related behaviors; they concluded that involving teens in planning and conducting health promotion interventions is important.

High school respondents in the daytime treatment group circled their exact ages on the survey in response to the demographic question about age. The teens wrote several comments on their postsurveys; they had no negative comments. All quotes were from Latinos, who represented 98% of the daytime participants. Comments from Classroom 1, representing freshmen, were "I think this play was good because it provides you with information but in a fun way. It influence [*sic*] you to be healthy" and "The play was excellent. You should do

more things like that.” The former had a father and grandmother with diabetes. Also, a Latino female the same age who had a great grandmother with diabetes wrote, “The play rocked! Thanks!” Three Latino females the same age who had no blood relatives with diabetes wrote, “The play was good and also the message transmitted through it. Good idea to do this!” and “This was a very good play. I learned a lot from it! Thank you!” A 16-year-old Latino male whose grandmother had diabetes wrote, “It was a pretty good play for the students to learn about health problems.” From Classroom 2, representing high school seniors, an 18-year-old Latino whose mother had diabetes wrote, “Don’t just mention nopales [cactus]. Talk about more foods.”

From Classroom 3, representing juniors, a 17-year-old Latino female whose grandmother had diabetes wrote on her presurvey,

Wen [*sic*] talking about food makes me hungry. I will love to know how can I loss [*sic*] weight. I don’t want to eat more junk food. I want to get in good shape. I will love to get in a diet but I can’t because I always brake [*sic*] the diet.

On her postsurvey she wrote, “I think this play is going to help people who has [*sic*] that disease.” Judging from her comments, it appeared she believed the play applied more to people diagnosed with diabetes, even though her grandmother had diabetes, which made her at risk for it. Also, she did not mention losing weight in the postsurvey, which appeared to be her goal in the presurvey.

There were only three participants from Classroom 4; from these three surveys, no one wrote comments. Classroom 5 contained freshmen, and it was the last in the treatment group; a Latino male with no blood relatives with diabetes wrote, “I really wanna know about the health and what I did.” Based on these comments, the high school participants appeared to enjoy the play and learn from it for the most part.

Limitations

A limitation of this study was the use of an attitude survey, which is based on the opinions of participants. Although an attitude survey may not be as valid as a knowledge test or behavior scale, a goal of this study was to change the perceptions of the audience members. With 20 years of research using educational awareness and cultural relevance as foundations (Brown et al., 2002), a culturally responsive approach to attitudes is a legitimate undertaking. A separate study addressing knowledge gains should be conducted to address this limitation.

Next, perhaps participants answered the way they felt the author wanted because they were trying to be kind or because they believed seeing a free play obligated them to answer in complimentary ways. This quid pro quo perception is a possibility and thus may affect the validity of the results. In other words, did

the pre- and postsurveys measure participants' changes in nutrition attitudes, or did the participants respond in ways pleasing to the author?

Another limitation relates to the short-term nature of the study. It cannot be determined, for example, whether participants' positive changes in nutrition attitudes impacted them in the long run. In terms of lasting impact, a post-posttest could have been administered from 1 week to 1 month later. Thus, only a short-term effect may be claimed for the play's impact on participants' nutrition attitudes. Learning theory suggests most of what is learned is from personally engaging in an activity versus merely watching something being performed (National Research Council, 1999). Thus, another limitation is the lack of follow-up activities to engage the audience participants. Also, drama educators such as O'Connor (2000) and Cahill (2007a, 2007b) have demonstrated that changes in attitudes and behaviors come from students creating their own dramas about topics important to them; both focus on participant-focused drama, in which process is more important than performance.

Finally, although residents on both sides of the border cross frequently for family events or cultural events such as Charro Days or the Sombrero Festival, two local holidays encouraging participants from Mexico and the United States, this study did not distinguish participant residency. The political climate regarding people without legal U.S. documents inhibits asking residency questions. Unfortunately, we did not include a question concerning participants' exact heritage, but instead we followed the 2000 U.S. Census categories of Hispanic or Latino, African American, White, American Indian, Asian, Pacific Islander, and other race as response types; thus, we cannot be more specific about ethnicity.

Recommendations

To eliminate the political overtones of identifying residency, the play should be performed in a border town in Mexico for comparison. If positive results are seen in a purely Mexican study away from the border, the play could be the core focus of a study in many Latino communities. Taking the play across borders and using the same pre- and postsurvey by Devine et al. (1993a, 1993b), in addition to another scale on nutrition knowledge and practices, would be a fruitful replication study. Minor rewriting of the play to fit local cultures and languages would make this possible. Other artist educators may tailor the emphasis and language of an educational play to raise awareness of other local health issues, such as AIDS. Targeting specific communities and cultures (Jackson, 2004) is a viable means of educating today's children on nutrition.

Regarding the short-term nature of the survey administration, it may be helpful for future researchers who conduct pre- and postnutrition attitude surveys to call participants 1 week (or longer) after they complete the postsurvey to determine whether their nutrition attitudes stayed the same or changed or

whether they changed any nutritional practices. This would measure long-term effects. It would also allow for more triangulation and cross-referencing.

Next, having youth create plays and dramas related to health concerns may have more of a lasting impact because of the learning process involved in co-creating performances and negotiating meaning. O'Connor (2000) discussed his drama work with 18 students, aged 13 to 20, with intellectual disabilities. Drama became "an agent for social change" (p. 4) or a conduit between the mainstream and marginalized. His students, who created and performed a drama, received standing ovations from an international audience. Cahill (2007a, 2007b), like O'Connor, advocated for children to be coinvestigators and key respondents in health and education programs. Cahill (2007a) also argued effective youth drug education in particular should include longitudinal, real-life "interactive learning strategies" (p. 673). Practitioners, researchers, and youth may create plays, skits, and dramas in response to LRGV health concerns. This study focused on nutrition education and type 2 diabetes, but a host of health issues could be explored through drama.

Besides being involved in the writing of plays, youth could participate in school activities related to a theatrical play that help them to discuss nutrition with their peers, who are important in their development and identity formation. Also, involving families is essential because school environments alone do not indicate changes in nutritional habits of school-aged children (Healthy Study Group, 2012). A school-home partnership with activities across environments may produce longer term improvements in nutrition-related behaviors.

Last, more analysis, such as relationships between the demographic questions and the pre- and postsurvey variables, would be useful for future studies. For example, does a relationship exist between nutrition attitudes and gender, age, ethnicity, body mass index (determined by height and weight), educational level, experience with diabetes, and exercise habits?

Conclusions

The *Dulce and the Good Life* play and research study involved the community in every aspect and focused on diabetes awareness in response to a community need. The study and project were firmly grounded in semiotic and community engagement theoretical frameworks in every facet, and the findings demonstrate that a culturally appropriate educational play positively impacted audiences' attitudes about nutrition. The majority of participants in each group, one daytime performance and two evening performances, reported having blood relatives with diabetes. Such high percentages are cause for alarm because if someone has a blood relative with type 2 diabetes, a genetic predisposition exists (Hall, 2009). Also, judging from respondents' reports of relatives with diabetes, the play appeared to match the health needs of the community. Next, based on participating audience members' quotes and their responses to the Likert scale questions, they appeared to enjoy the play. Their

before and after responses on the survey further indicate they made at least short-term positive changes in their nutrition attitudes.

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