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PHOTOVOICE: ENGAGING SCHOOL COMMUNITIES IN WELLNESS EFFORTS

BY

HILARY J. OVERBY

A thesis submitted in partial fulfillment of the requirement for the

Master of Science

Major in Nutrition, Exercise, and Food Science

Specialization in Exercise Science

South Dakota State University

2015

PHOTOVOICE: ENGAGING SCHOOL COMMUNITIES IN WELLNESS EFFORTS

This thesis is approved as a creditable and independent investigation by the candidate for the Master of Science degree in Nutrition, Exercise, and Food Science and is acceptable for meeting the thesis requirements for this degree. Acceptance of this thesis does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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I would like to dedicate this to my parents.

Thank you both for your continuous love and support. You have always believed in me, encouraged me to never give up, and shown me that I can accomplish anything with hard work.

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ABSTRACT

PHOTOVOICE: ENGAGING THE SCHOOL COMMUNITY IN SCHOOL
WELLNESS EFFORTS

HILARY J. OVERBY

2015

Introduction: Currently there are no interactive tools that allow school communities to assess their school wellness needs and foster interest in wellness efforts. PhotoVoice is a participatory action research methodology commonly used in public health that utilizes photography to document and showcase community strengths and weaknesses in order to promote change. **Purpose:** The purpose of this study was to gather perceptions of a school community after using PhotoVoice to document school wellness efforts ¹.

Participants: High school students (n=103) and school community members (i.e., residents of community, school faculty) (n=188) were recruited across three school districts. **Methods:** High school students were asked to attend four educational sessions about how to use PhotoVoice. Students were then asked to use PhotoVoice to capture the strengths and weaknesses regarding SWE at their school and these photographs were displayed in photo exhibits (n=3). High school students (i.e., those who used PhotoVoice (n=49) and those who did not (n=67)) and school community members (i.e., residents of the community/parents) (n=54) and school faculty (n=18) were asked to attend the photo exhibits and complete an open-ended survey immediately following the photo exhibit. Data was analyzed using content analysis theory to identify themes. **Results:** The most common theme reported after viewing the photo exhibit was an increase in awareness of

SWE (n=84). A small number of participants reported no change in awareness (n=14). A report of no change in awareness was less likely in students who used PhotoVoice (2%) compared to students that did not (13%). The photo exhibit increased participants' willingness to take action (i.e., wanting to discuss SWE with others) (n=83) or made them begin contemplating taking action (i.e., need to get more involved with the school) (n=20) to improve SWE. School faculty (22%) and students who used PhotoVoice (18%) responded with the most motivation to take action to improve SWE. Motivation was lower in students who did not use PhotoVoice (13%) and residents of the school community/parents (7%). **Conclusion:** These data suggest PhotoVoice may help increase awareness and motivate members of the school community to improve SWE, all while creating a positive transdisciplinary project based learning experience for participating students.

REVIEW OF LITERATURE

The literature presented in this review is focused on school wellness policies and PhotoVoice. This review will discuss the following topics: school wellness policy legislations and requirements, the need for school wellness policies, effectiveness of school wellness policies, facilitators to successful school wellness policies, barriers to successful school wellness policies, benefits of student involvement, history of PhotoVoice, PhotoVoice overview, and potential impact of PhotoVoice within the school community.

School Wellness Policy Legislations and Requirements

In 2004, the federal government passed the Child Nutrition and Women, Infants and Children (WIC) Reauthorization Act.² This act was passed to help create healthier environments in schools in an effort to prevent childhood obesity and prevent chronic diseases resulting from a poor diet and physical inactivity.³ As part of the Child Nutrition and WIC Reauthorization Act the federal government mandated all local education agencies that participate in the federally funded National School Lunch and/or Breakfast Program develop a school wellness policy and put the policy into action.²

A policy consists of regulations or actions that are intended to be implemented to help guide individuals and change behavior.⁴ A school wellness policy is a policy created to address the obesity epidemic and promote physical activity and nutritional standards in children's school environments.⁵ The Child Nutrition and WIC Reauthorization Act required school districts to create a wellness policy that included five minimum components.² These five components include: nutrition education and physical

education goals, nutritional guidelines for foods provided in schools, compliance of school meal guidelines, a plan for implementation and evaluation, and the development of a school wellness policy committee to involve parents, students, school food authority, school board members, and school administrators.² School districts that did not comply with this mandate and develop a written wellness policy by July 1, 2006 were at risk for losing federal funding for their school district.^{6,7}

In 2010, the Child Nutrition and WIC Reauthorization Act requirements were expanded by the United States Department of Agriculture's Healthy, Hunger-Free Kids Act.⁸ The additional requirements authorized school wellness policy committees to involve school health professionals, school food authority personnel, school board members, school administrators, students, and other members of the public in the development of wellness policies for schools.⁹ In addition, the act put more emphasis on including nutrition promotion as a required school wellness policy component. Furthermore, the Healthy, Hunger-Free Kids Act required that schools evaluate their school wellness policy implementation and impact.⁸

Need for School Wellness Policies

From 1988 to 2000, childhood obesity tripled among children and adolescents in the United States.¹⁰ Although the prevalence of childhood obesity has stabilized over the last 10 years, rates are still high.¹⁰ More than one-third of children are overweight and/or obese as of 2012.^{11,12} Overweight and obese children have a higher risk of developing chronic diseases associated with being overweight.¹³ The most common chronic diseases associated with obesity are: cardiovascular diseases, type 2 diabetes, hypertension, depression, sleep apnea, and osteoarthritis.¹³⁻¹⁶ Additionally, children who

are overweight and/or obese have an increased risk of being overweight or obese as adults.^{13,14,17,18} Primary risk factors for childhood obesity have been linked to poor diet and physical inactivity.^{14,17-19}

Schools play a key role in the fight against childhood obesity due to the amount of time youth spend in the school environment.²⁰ On an average school week, students spend 43-57% of their waking hours in their school environment.²¹ Since schools provide students with food and opportunities to engage in physical activity, they serve as a key environment to foster and facilitate healthy behaviors.^{22,23} School environments should be conducive to students' healthy eating and physical activity through positive health messages and role modeling.²² The promotion of healthy eating and physical activity can be done through the implementation of comprehensive school nutrition and physical activity policies and services, creation of healthful school environments, and inclusion of a wide variety of health related disciplines within the school wellness committee.²²

Wellness Policies Can Be Effective

Having effective wellness policies in schools can play a critical role in improving students overall health. Effective wellness policies have the ability to improve school's food environment by decreasing access to foods that are high in fats and sugars, enforcing close campus lunches, and limiting vending machine hours to decrease unhealthy purchases of items by students.¹⁹ School wellness policies can also help in promoting students in being physically active during the school day.²⁴ According to the National Physical Activity Guidelines of 2008, children should get up to 60 minutes of physical activity every day.²⁴ Schools can put policies into place allocating for ≥ 150 minutes of physical education a week to students.²⁴ Wellness policies have been found to

have an impact on the nutritional aspect of schools as well. Studies have found that food environments in schools can be changed by increasing the amount of healthy foods provided to students such as fruits and vegetables, and decreasing junk food.²⁵

Snelling and colleagues studied high school students purchasing choices and schools' competitive food offerings in 2005, after implementation of the Child Nutrition and WIC Reauthorization Act and again in 2007 one year after Nutrition Standards for competitive food sales was implemented and schools were required to have a wellness policy.²⁶ Competitive foods were classified based on the stoplight diet which entailed red foods being calorie dense and high in fat, yellow foods as lower in fat and calories, and green foods being low-calorie, rich in vitamins and minerals, and low in fat. Results of the study showcased that between 2005 and 2007 red food offerings decreased by nearly half and students' purchases of red foods reduced by 83% while green food purchases increased 9% despite a slight decrease in food offerings. Implementing effective wellness policies and enforcing environmental changes in schools has shown to have a positive impact on students' behavior.^{26,27}

Although school wellness policies have been shown to be effective, few schools are writing, implementing, and evaluating school wellness policies. Schwartz and colleagues developed a tool used to evaluate the strength and comprehensive of wellness policies called WellSAT.²⁸ A policy's strength is determined if the policy requires or enforces a specific action or implementation plan.⁵ A policy's comprehensiveness is determined by if the policy addresses all required items for a given topic.⁵ Scores for both comprehensiveness and strength are on a zero to 100 scale. A total score can then be calculated by adding the individual scores from the comprehension and strength

assessments.²⁸ Using this form of evaluation, Chriqui and colleagues evaluated school wellness policies over five school years (2006-07 to 2010-11). Overall scores revealed that comprehensive scores increased by an average of 38 to 48 points.⁵ Strength scores increased on an average of 21 to 28 points.⁵ Although Chriqui and colleagues study demonstrates that school wellness policy scores have improved slightly, the overall strength and comprehensive scores are still low.⁵ Studies have found that policies strength and comprehensive scores correlate with the likelihood of school wellness policies being implemented. The higher strength and comprehensive scores, the more likely to be implemented and provide a healthier school environment.^{5,7} Therefore, policies with lower scores are less likely to be implemented into the school environment.

Barriers to Successful School Wellness Policies

Research has found that the most common barriers school districts face in their school wellness policy efforts, include a lack of funding, lack of time, difficulty gaining support, competing influencers, lack of knowledge, and lack of tools provided to them.^{23,29,30} One of the most commonly mentioned barriers schools districts face when developing school wellness policies is a lack of funding. School districts struggle with a lack of funding and the risk of losing current revenue streams.^{23,30-32} One reason for inadequate funding is due to schools being required to hire additional staff such as physical education and/or health teachers, wellness directors, or foodservice staff due to the federal mandate.^{23,30} Schools have also experienced an increase in cost to offer healthier vending machine options and improve food options for students.^{5,23} School districts are in need of cost effective ways to implement effective policies without sacrificing their budget.

School districts also struggle to compete with other school priorities and the lack of time faculty members have available to help with school wellness efforts.²³ Competing priorities such as additional mandates and teacher contract restrictions limit faculty members in the time they can give to wellness efforts in their school.^{23,31} Schools face curriculum time restraints for allotting time for health, nutrition, and physical education in addition to core classes.^{23,31} Longley and colleagues found that schools find it challenging to fit nutrition education into their curriculum due to the requirements of the No Child Left Behind Act.^{33,34} The No Child Left Behind Act of 2001 holds both states and schools nationwide responsible for producing academic proficiency scores in their students.³⁴ Since this act passed, many schools allocate more time to mathematics, reading, and language arts classes.³⁴ Schools can benefit from receiving outside help, support, and resources from their community members such as volunteering their time or joining the schools wellness committee.

Gaining support from the public such as from students, parents, and the community is another barrier schools have commonly identified with.²³ Lucarelli and colleagues found that in Michigan, implementing wellness policies were difficult due to the competing influencers of students' home life, peers, and competitive foods which created a barrier of gaining support.³⁰ Students tend to complain about new wellness policies rather than support them. Many individuals such as parents and community members also become confused when discussing wellness policies such as nutrition standards.³¹ School districts struggle to educate others about school wellness policies and provide the information to gain support for change in school wellness policies.²³ Wellness committees and leaders in the community can help to educate others on the

importance of these policies being implemented into schools and how it affects their children.

A lack of tools to help guide and support schools wellness committees in policy development and implementation is another commonly identified barrier.²³ Researchers have found that school districts may be unaware of the resources available to schools for policy implementation which may lead schools to become reluctant to commit to what their wellness policies state.⁶ When interviewing school board members, Agron and colleagues identified that majority of board members believed that toolkits would be the most helpful in developing, implementing and evaluation school districts wellness policies.²³ The toolkits board members mentioned include: model nutrition standards, model physical activity standards, sample policies, youth engagement tools, other school districts case studies, action planning tools, and communication tool.²³ Therefore, adequate tools about wellness policies benefits and resources need to be provided to school districts.

Facilitators to Successful School Wellness Policies

The literature has identified three main facilitators to successful school wellness policies that include: bringing key stakeholders together, wellness champions and advocates, and grant funding. Developing effective wellness policies for schools has required bringing key stakeholders together and involving school faculty, school administration, community members, parents, and students.^{8,33} These individuals are the bridge between having a strong, effective written policy, facilitating wellness policy implementation, and evaluating the impact of the policy on student health in schools.²³

School wellness champions have also been shown to be advantageous to school wellness efforts.¹⁹ A wellness champion is an individual who has knowledge about school wellness policies and often serves as a leader in school wellness policy efforts.¹⁹ Wellness champions are often advocates for policy changes. School districts that have the support of a wellness champion have been found to have a healthier school environment.¹⁹ Wellness champions have been found to provide school districts with more physical activity opportunities available to students such as intramural sports, provide healthier food environments by offering foods like fruits and vegetables, and have been associated with lower rates of soda consumption, tobacco use, and inactivity were found in schools with a wellness champion.¹⁹ Wellness champions in schools are essential in making wellness policies noticeable and impactful. These leaders are key players in holding schools accountable in overcoming their barriers and implementing their wellness policies.¹⁹

Grant funding is another facilitator to successful school wellness efforts. Schools can apply for grants to help counteract their lack of funding.²⁹ Grant funding can help to financially fund new physical activity or nutrition programs for students.³⁰ Grant funding can also help schools hire additional help to promote health and wellness, or to improve a schools environment such as additions to a learning laboratory or providing new equipment to physical education or the playground. Providing schools with opportunities for extra funding can also help to gain the tools and resources necessary to writing and implementing school wellness policies.

Benefits of Student Involvement

The specific impact student involvement can have on school environments has become an area of interest for schools and researchers.²² By involving students and giving them a voice in school wellness efforts, schools can gain knowledge and insight into conditions and the wellness efforts in the school environment. Student involvement can be an effective way of gaining valuable insight and information from those who spend a majority of their time in the school environment.³⁵ Although, student involvement may be an asset to schools wellness policies, students who become involved in wellness policies may experience personal benefit.

High school is an important period for identity development of adolescence.³⁶ At this time teens are also developing their social identity which requires skills in developing and understanding the environment around them.³⁶ Adolescents begin to develop a sense of belonging and become willing to contribute to their society to fulfill a sense of value.³⁶ Therefore, adolescents should be provided with the opportunity to express their thoughts and become a spokesperson for their school community. Students provide a unique perspective into the school environment.^{22,36} They have the ability to express new ideas and help overcome challenges schools are currently facing in their school wellness efforts.²²

Jomaa and colleagues have found that when students join student-teacher collaborations and participate in school's decision making process changes are made in school curriculums, policies, and implementation methods.²² Student-involvement has also impacted wellness policies to be stronger and more comprehensive.²² Research has shown that strong student-adult relationships and partnerships benefit schools in addition to strengthening wellness policy efforts. By getting students involved in their wellness

efforts, positive impacts have been seen in youth's development, level of ownership, level of self-confidence, academic achievements and test scores.^{19,22,33} Students can participate in the development and provide their input in school wellness policies by filling out surveys, joining the wellness committee, and role modeling to the rest of the students.²² Students may also get involved in hands-on school projects such as PhotoVoice, which requires them to critically think and engage others.

History of PhotoVoice

PhotoVoice was first developed in mid-1990 by Caroline Wang and colleagues when working with women living in a rural village in Yunnan province, China in order to influence policies that impacted them using photography.³⁷ PhotoVoice is a tool that uses photography to bring members of a community together in order to advocate for change. Photos taken typically represent not only the weaknesses of a community but strengths that the community should continue to improve upon. Once the photos are taken, a public event called a showcase or photo exhibit occurs in which photos are displayed for members of the community and policy makers to attend in the hopes of fostering change and addressing concerns that were raised through the photographs. Common themes advocated through past PhotoVoice projects include policy, environmental, and systems changes.³⁶⁻³⁸

PhotoVoice uses a qualitative, community based participatory research approach that is used to answer descriptive questions in research by showcasing problems within a community.^{35,38,39} PhotoVoice's method has been formed around health promotion principles, feminist theory, and theoretical tenets of education.^{35,36} The feminist theory principles specify that no one is better to understand and look into issues than the

individuals that are a part of the group or community being studied.³⁶ The method of using PhotoVoice includes three outcome approaches: 1) Empower and engage participants, 2) Assess community needs and assets, and 3) Take action in a community.³⁶

Utilizing photography has become an increasingly popular way to showcase social and economic perspectives in a community.⁴⁰ However, to date PhotoVoice has not been used as a health and wellness evaluation tool but as a tool to engage members of a community in participation.

PhotoVoice Overview

Individuals who participate in PhotoVoice are commonly those who do not have decision making power on changes in their community.³⁶ During PhotoVoice participating individuals are given cameras and asked to take photos of what they perceive as strengths or weaknesses in their community.^{36,39} There is wide variety in the volume of educational sessions included within PhotoVoice methodology, ranging within the previously published literature from six 1-hour sessions to 25 90-minute sessions over a timeline of a week to six months.^{35,36,40,41} These sessions are designed to teach participants about PhotoVoice, their community, the PhotoVoice purpose, and photography. Towards the end of the project, participants' photos are put on display in what is called a showcase or photo exhibit.^{35,36,38,40-42} The intentions behind the showcase/photo exhibit is to inform policymakers, family, friends, and others in the community what assets and issues were identified and brought forward in the project.^{35,38,41} Participants are commonly invited to stand next to their photo(s) throughout the showcase/photo exhibit to show their support for the project, discuss with attendees, and help advocate for the change needed in their community.^{35,36,40}

PhotoVoice's Potential Effects

Over the past decade, growing attention has been placed on PhotoVoice in relation to public health, health education, and related fields.³⁸ PhotoVoice has been shown to be effective in increasing awareness and allowing those involved to be heard by their surrounding community and policymakers.^{35,41,42} Participants in PhotoVoice are provided with the opportunity to get involved in their community, develop new skills, build self-confidence, gain a sense of pride, experience self-determination, and are encouraged to advocate for change.^{36,40,42} PhotoVoice projects that involve youth allow parents and guardians the opportunity to become involved in their children's lives and gain insight into their children's perspective of the community.³⁶ PhotoVoice has the potential to be an effective tool at engaging and increasing awareness of school wellness efforts within the school staff, students, and community. PhotoVoice may also help to foster community participation in implementing successful school wellness efforts.

MANUSCRIPT

INTRODUCTION

Over the last three decades childhood obesity has more than tripled.¹⁰ In 2011, 26.5% of South Dakota's children were considered overweight or obese.⁴³ Research has linked obesity to multiple health concerns including cardiovascular disease, hypertension, type 2 diabetes, sleep apnea, orthopedic problems, and different types of cancers.¹³⁻¹⁶ Studies have also shown that obese children are more likely to be obese as adults.^{13,14,17,18} Every year obesity costs the United States an estimated \$147-210 billion with childhood obesity claiming an estimated \$14.1 billion per year.⁴⁴

In 2004, the federal government passed the Child, Nutrition, and WIC Reauthorization act as one of their initial steps towards fighting childhood obesity.² This act mandated all schools participating in the National School Lunch Program (NSLP) to develop and implement a school wellness policy by the start of the 2006-2007 school year.² In 2010, the federal government passed the Healthy, Hunger-Free Kids Act which added additional requirements for schools in their wellness efforts.⁸ These additional requirements were intended to expand and improve upon the Child, Nutrition and WIC Reauthorization Act by requiring schools to expand their wellness policy committees and continue efforts in implementing and evaluating their wellness efforts.⁸

Schools play an important role in improving our youth's lifestyle habits as they grow up, since students typically spend 43-57% of their time a week in their school environment.²¹ The development and implementation of effectively written school wellness policies has been shown to have the ability to reduce adolescents' risk of becoming overweight or obese. School wellness policies that are written more effectively

have the potential to increase students' levels of physical activity in the school day, improve cardiovascular and bone health, decrease body fat, and reduce anxiety and depression.⁴⁵ However research shows that many schools wellness policies are not meeting the federally mandated requirements.^{5,46} One barrier of writing and implementing effective policies commonly noted by schools is the lack of support from the public.²³ School districts struggle to bring awareness and educate their community on the importance of school wellness efforts. Another commonly identified barrier is the lack of tools or resources for schools to help them effectively write their wellness policies.²³

Agron and colleagues interviews with schools suggest that with the help of developed tools and resources, schools may be able to not only strengthen their written policies for implementation, but gain more support from their community by educating members on the importance of school wellness efforts.²³ PhotoVoice has the potential to be a useful tool in helping to increase awareness in school wellness efforts and engaging the community in becoming involved in successfully implementing school wellness efforts.

PhotoVoice is a participatory action research methodology commonly used in public health that utilizes photography to document and showcase community strengths and weaknesses in order to advocate for change.^{35,38,39} Photos are then displayed to the public and policy makers in hope of advocating for change. Generally PhotoVoice has been used for a variety of topics including advocating for policy, environmental, and system changes.³⁶⁻³⁸ With schools facing a lack of support from their community and also

looking for a tool to assess their school wellness needs, PhotoVoice helps to fill a communities need to engage their members and increase awareness in wellness efforts.

Therefore, the purpose of this study was threefold: 1) To identify student perceived strengths and weaknesses in school wellness efforts to see if the PhotoVoice: School Wellness curriculum could be used as a needs assessment tool within the school environment. 2) To identify if the frequency of themes within student photos displayed during the photo exhibit influenced the perception of the main strength and weakness identified by the school community after viewing the photo exhibit. 3) To gather the school community's perception as to how the PhotoVoice: School Wellness curriculum impacted their awareness and motivation to be involved with school wellness efforts.

METHODS

Participants

A convenience sample of three high schools from a rural, Midwest state were recruited for participation within the present study, based on proximity (located within 60 miles)), class time availability for a wellness related project, a school wellness policy with a WellSAT score (<60), and school district enrollment size. One large (3557 students), medium (1484 students) and small (365 students) school district was selected per the Average Daily Membership in accordance with the state activity association classifications.⁴⁷ All schools had a team of identified wellness committee members. Participant consent was obtained in accordance with the policy statements of Human Subjects Review Board at South Dakota State University.

A total of 242 participants took part in this research study. The study consisted of two components: an educational (in class curriculum) component and a photo exhibit component. The educational component consisted of four sessions in which high school students were trained to take photos of the strengths and weakness of their school health environment and participate within large and small group discussions regarding their photographs. The photo exhibit component consisted of displaying student's photos for the community to see and for all attendees to complete a survey.

In the educational portion of our project, 103 students, grades 9-12, were recruited through their high school Family and Consumer Sciences (FACS), Physical Education, or Health class within their high school. Forty-four students were recruited from three FACS classes within the Large School District. Forty-two students were recruited from

two Health classes within the Medium School District. Seventeen students were recruited from their Health class within the Small School District.

In the photo exhibit portion of our project, 201 attended and 188 attendees agreed to complete the PhotoVoice: School Wellness survey. Some photo exhibit attendees elected out of taking the survey and therefore were excluded from the results. All photo exhibit participants were classified into one of four groups: students that participated in the educational portion of the study (PhotoVoice students; n=49), students that did not participate in the educational portion of the study (General students; n=67), parents and other community members (Community members; n=54), and school district employees (School faculty; n=18). Table 1 shows the photo exhibit breakdown of survey participants by school district size and groups.

Table 1. Photo Exhibit Breakdown of Survey Participants by School District Size and Groups

School District Size	PhotoVoice Students (n)	General Students (n)	Community Members (n)	School Faculty (n)	School District Total Participation (n)
Large	18 (41%)	49 (7%)	20 (0.76%)	6 (3%)	93 (3%)
Medium	18 (43%)	5 (1.34%)	10 (0.43%)	1 (1.11%)	34 (1.21%)
Small	13 (76%)	13 (12%)	24 (4%)	11 (37%)	61 (8%)
Total Participation	49 (48%)	67 (6%)	54 (10%)	18 (5%)	188 (3%)

PhotoVoice: School Wellness Curriculum

PhotoVoice, a participatory action research methodology, has been used since mid-1990 to promote change in public health such as advocating for policy,

environmental, and system changes.³⁶⁻³⁸ South Dakota State University (SDSU), SDSU Extension, and South Dakota Department of Health worked collaboratively to develop the PhotoVoice: School Wellness curriculum, in an effort to develop an interactive program that allows schools to assess their wellness needs, disseminate school wellness needs to the school community, and increase awareness of and motivation to be involved in school wellness efforts. The PhotoVoice: School Wellness curriculum was created using standard PhotoVoice principles, which is grounded in the theory of the Health Belief Model of behavior change.⁴⁸ Within the curriculum students attend four educational sessions for high school students on how to use PhotoVoice: School Wellness. Subsequently, students capture digital photographs of the strengths and weaknesses of wellness efforts at their school. These photographs are then displayed at a photo exhibit open to the school community.

A total of five sessions and an intersession were required for the PhotoVoice: School Wellness project (four educational, one intersession, one photo exhibit). Four educational sessions were held over a two week time period during the spring semester. All sessions were 50 minutes and held during scheduled classroom time. Sessions were led by three to four members of the research team to ensure a ratio between facilitators and students of no less than one facilitator to eight students. Facilitators included one to two graduate students majoring in Nutrition, Exercise, and Food Sciences and one to two senior Exercise Science undergraduate students. All students' participation and completion of their PhotoVoice: School Wellness assignments were graded throughout the project. Between sessions two and three students were given an intersession period which lasted for one week. During this week students focused on taking photos around

their school. One photo exhibit took place on a weeknight set by each school and was held in the school commons, and lasted for two hours. Recruitment of community and school staff members occurred through flyers, announcements, newspapers, school websites and weekly emails, letters to the parents, invites to wellness committee members, and any other sources individual schools provided.

Session One

The goal of the first session was to introduce students to the PhotoVoice: School Wellness curriculum and the team of facilitators. The student learning objectives within session one were to explain how PhotoVoice works, describe the purpose of the PhotoVoice: School Wellness project, and identify their role and what is expected from their participation in the PhotoVoice: School Wellness project. The session consisted of an icebreaker activity, an interactive presentation, and working with students to prepare them for their participation in the project.

Towards the end of the session students were invited to join and create an account for the program we used to collect photos called BOX. One school had restrictions against using BOX due to internet connection. In this incidence we used the Pages app. Students were also asked to take home a Photo Release Form to complete and return before session four. The Photo Release Form gave our research team the rights to use the student's photos in the PhotoVoice: School Wellness Photo Exhibit and research.

Session Two

The goal of the second session was to introduce students to photography and prepare students for their week of photo taking. The student learning objectives within

the session were to explain how to use the iPads, explain photography tips, media consent forms, and explain how to use the BOX app. Students were also given time to practice using the photography tips and uploading practice photos to the BOX app. The session consisted of an interactive presentation and working with students to prepare them for their intersession week of photo taking.

Intersession

The intersession took place between sessions two and three. The goal of the intersession was to give students the opportunity to take photos of their school environment throughout a full week of school. The student learning objectives within the intersession were for students to identify and photograph health and wellness strength and weaknesses throughout their school and evaluate their photos.

Before session three, students were asked to select their top six photos (3 weakness and 3 strength) and write a caption for each. Captions consisted of no more than 140 characters and were written based on how the student felt when taking the photo or the message they were trying to portray in the photo. Photos selected were to represent what students felt were their favorite and most impactful photos. Students also completed SHOWeD worksheets to help evaluate their photos.

Session Three

The goal of session three was to gain a sense of what students felt were health and wellness strengths and weaknesses throughout their school environment through their photos. The student learning objectives were to hold small group discussions to discuss

the students top picked photos using the SHOWeD method and make sure all students' photos and captions were properly uploaded to the BOX app.

The SHOWeD method is an acronym used as a foundation to engage students in reflecting and answering questions about their photographs. Each letter of SHOWeD represents a question: S-What do you See here?, H-What's really Happening here?, O-How does this relate to Our lives?, W-Why does this problem or asset (strength or weakness) exists?, D-What can we Do about it?.^{36,38,39,41} This method helps to engage students in critically thinking about the project and provide a critical aspect in group discussions.³⁶

Session Four

The goal of session four was to have a large group discussion with students on school wellness, PhotoVoice methods, and wrap up the educational portion of PhotoVoice: School Wellness. The student learning objectives were to discuss student's perception of their schools health and wellness, student's experience with PhotoVoice: School Wellness, discuss the PhotoVoice: School Wellness Photo Exhibit details, and finalize which student's photos and captions were released to our research team for the PhotoVoice: School Wellness Photo Exhibit. After all educational sessions were completed, student's photos and captions were downloaded from BOX onto a secured computer in our research teams' lab and organized accordingly.

Photo Exhibit

The goal of the photo exhibit was to visually display student's strength and weakness photos. Photos were printed in a 12x18 format with 140 character captions

printed on the bottom portion of each photo as seen in figure 1. The caption described the strength or weakness displayed in the photograph from the student perspective.



Photo: Students took photos of what they perceived as strength and weaknesses in their school environment. This student felt their school weight room was a strength.

Caption: Students wrote a <140 character caption for their photos stating how the student felt or the message they were trying

Figure 1. A Strength Photo that was Displayed at a Photo Exhibit.

All parents and family of students, community members, students, and school faculty were invited to attend the PhotoVoice: School Wellness Photo Exhibits. Recruitment for the photo exhibits were done through flyers, school announcements, websites, take home letters, emails, and word of mouth. There were two components to the photo exhibit. Photo exhibit attendees first viewed the student photos on display and then were asked to answer a series of eight survey questions regarding their thoughts and perceptions of the photos. All questions were displayed on a large 36x48 poster boards and participants were given large 4x6 post it notes and asked to write their response to each question on their sticky note and post it onto the poster displaying the question (Figure 2). Each group (PhotoVoice students, General students, Community members,

School faculty) were all assigned specific colors to separate the group responses. The survey questions can be found in Table 2. This nontraditional survey format was used to allow for an open house format of the photo exhibit to occur allowing attendees to come and go and to create another stimulating visual for the participants.

Table 2. PhotoVoice: School Wellness Photo Exhibit Survey Questions

1. What do you see as strengths of your school's wellness efforts?
2. What do you see as weakness of your school's wellness efforts?
3. How did participation in the PhotoVoice photo exhibit and/or project change your awareness of the wellness efforts at your school?
4. How did participation in the PhotoVoice photo exhibit and/or project make you feel about the wellness efforts at your school?
5. How did participation in the PhotoVoice photo exhibit and/or project change your motivation to be involved in the wellness efforts at your school?
6. If you could make one change that would improve your school wellness efforts, what would you do?
7. How did participation in the PhotoVoice photo exhibit and/or project impact you?
8. What did you learn by participating in the PhotoVoice photo exhibit and/or project?

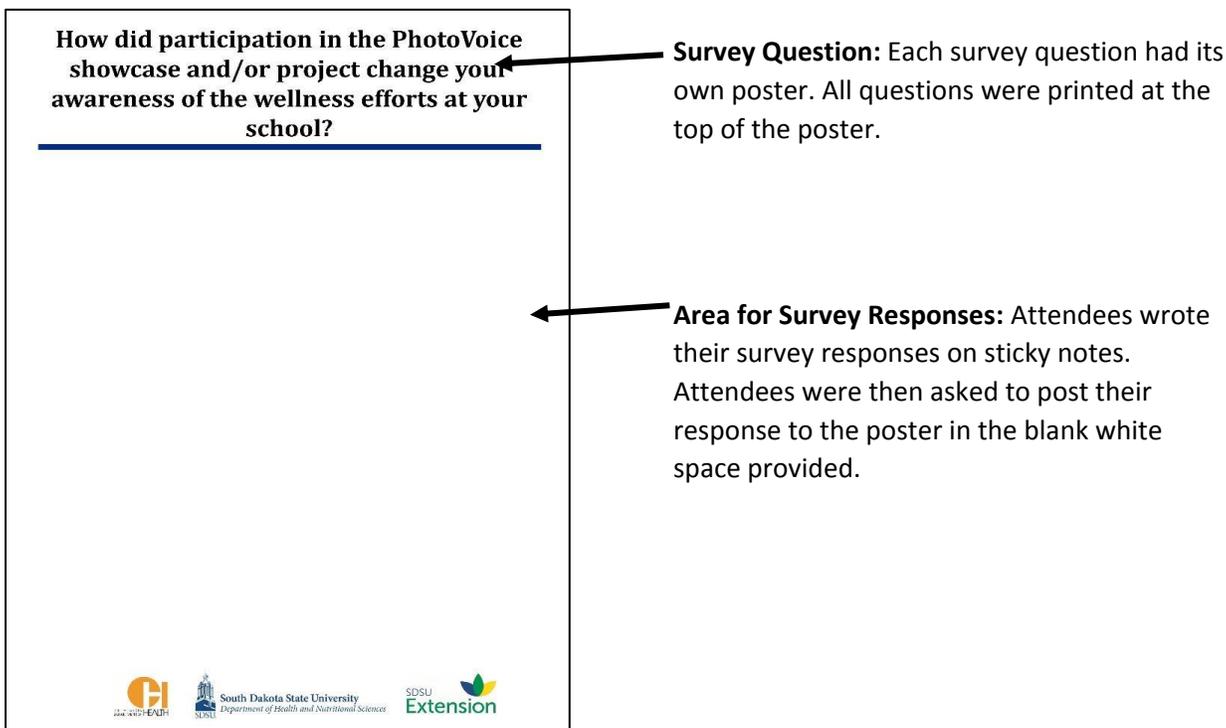


Figure 2. A Poster Used to Display Survey Question and Collect Responses

Data Analysis

Survey responses were imported into the NVivo 10 qualitative software (QSR International Pty Ltd. Version 10, 2012) and analyzed using content analysis theory. Content analysis theory is a qualitative research method which involves analyzing any form of communication including verbal and written.⁴⁹ Researchers also used the analytic process of immersion crystallization. The immersion process involves the researchers immersing themselves into the data by reading and/or examining the data in great detail.⁵⁰ The crystallization process of the analysis is when the researchers temporarily take a step back and examine their data in order to gain a sense of what patterns or themes can be seen.⁵⁰

In order to identify students' perceived strengths and weaknesses in school wellness efforts, each student's top 3 strength and top 3 weakness photos were analyzed across all school districts. Each major theme was then broken down into subthemes (secondary and tertiary). Coding of photos was completed by two researchers. Researchers individually coded photos based on previously determined categories. After the initial coding was completed, two researchers then met to discuss each other's coding and came to a consensus on how each photo was coded. A third researcher then reviewed the coding of each photo and a discussion took place regarding any changes in coding. Once finalizing the coding of photos, queries were run to identify and compare the most common strengths and weaknesses within each school.

To identify if the frequency of photos displayed influenced the survey responses regarding schools' perceived strengths and weaknesses, students' photos and attendees' survey responses needed to be coded into themes by researchers and frequencies of each

theme needed to be identified. Students' strength and weakness photos were coded into themes by two researchers. Survey responses regarding what attendees perceived as the biggest strength and the biggest weakness were also coded into themes by two researchers. After all coding was complete, frequencies of the strength photos, weakness photos, and survey responses for both strength and weaknesses were found. Two Pearson correlation tests were then ran to compare frequency of photo themes and survey response themes. The first Pearson correlation ran looked at the frequency between strength survey responses and photos displayed. A second Pearson correlation as ran to look at the frequency between weakness survey responses and photos displayed. Both correlations were ran using the four main themes of survey responses and photos (General Health Promotion, Nutrition, Physical Activity, and Other).

In order to identify the perceived impact in awareness and motivation regarding school wellness efforts within the school community, survey responses were analyzed across all school districts. Two researchers worked to individually code all survey responses separately. Once the initial coding of questions was complete, researchers met to come to a consensus of each code. Then the researchers' reanalyzed the data based on these updated codes. Once completed, a third researcher reviewed the coding. After finalizing the coding of survey responses, queries were run to identify common themes in the data and examine allowing the frequency of themed responses across school district sizes and between the four groups (PhotoVoice students, General students, Community members, School faculty).

RESULTS

Objective 1: To identify student perceived strengths and weaknesses in school wellness efforts to see if the PhotoVoice: School Wellness curriculum could be used as a needs assessment tool within the school environment.

Across all schools, two major strength themes emerged: physical activity (PA) (n=113) and nutrition (n=109). The most common strength subthemes was healthy food and drink choices available within the school (n=50), PA facility/equipment available to students (n=49), and nutrition facility/equipment (i.e. lunchroom equipment, vending machines) (n=36). Across all schools one major weakness, nutrition (n=163, was identified most frequently. Secondary weaknesses of PA opportunities (n=50) and general health promotion efforts (GHP) (n=35) were also identified. When the major weakness themes were broken down into subthemes, the most common weakness subthemes was the prevalence of unhealthy food/drinks (n=85), school lunch requirements/quality of food (n=36), and nutrition facility/equipment (i.e. lunchroom equipment, vending machines) (n=30).

Different major themes, subthemes, and frequency patterns of themes emerged from each participating school. This variation suggests that the protocol utilized in the PhotoVoice: School Wellness curriculum allows students to voice concerns specific to their own school environments. Thus, the PhotoVoice: School Wellness curriculum could be a useful tool to help schools identify the school wellness needs perceived by their school community.

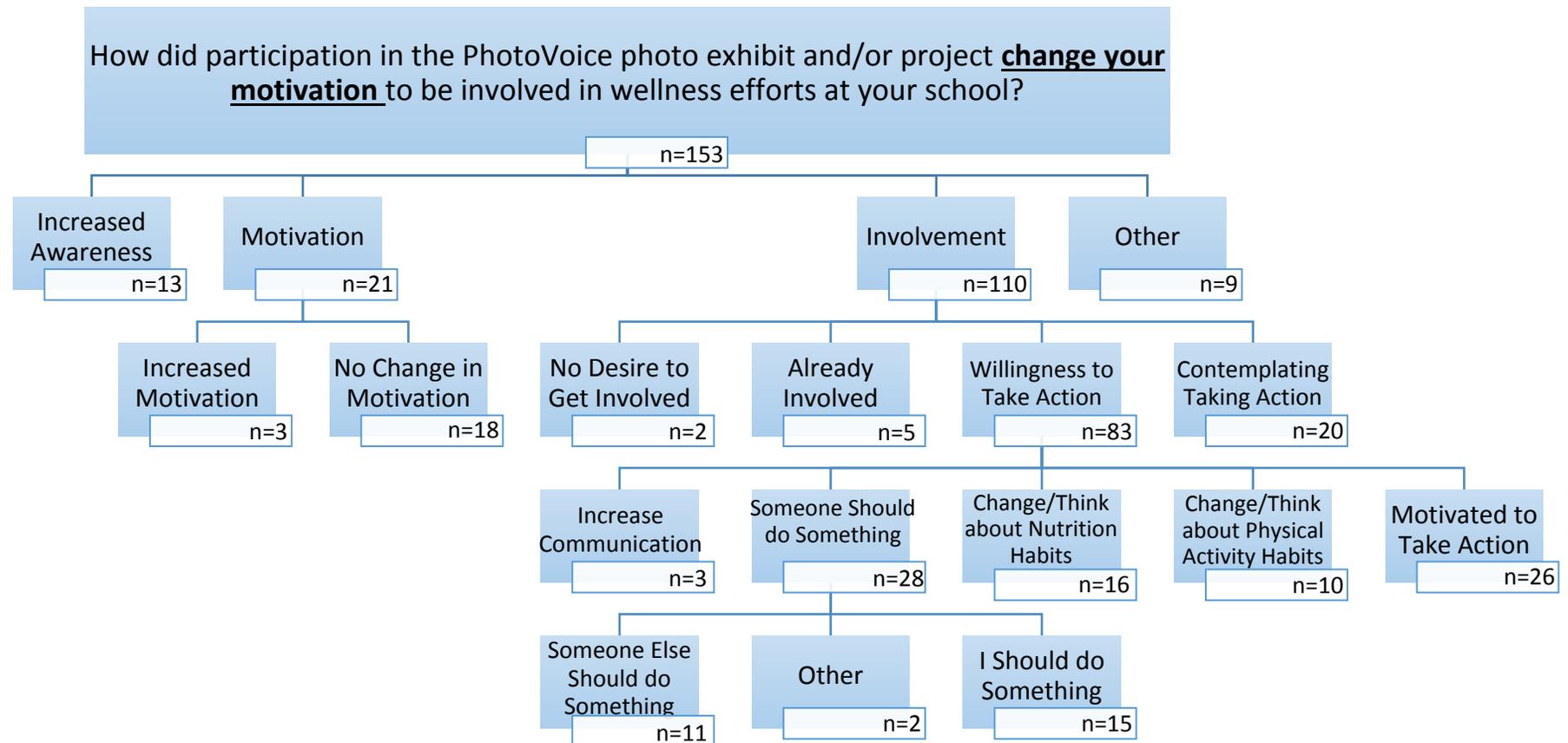
Objective 2: To identify if the frequency of themes within student photos displayed during the photo exhibit influenced the perception of the main strength and weakness identified by the school community after viewing the photo exhibit.

Across all schools, the most common strength photos displayed during photo exhibits belonged to the following subthemes: healthy food/drink choices (n=14), PA facility/equipment (n=14), and nutrition facility/equipment (i.e. lunchroom equipment, vending machines) (n=9). Interestingly, the most common responses to the question “What do you see as strengths of your school’s wellness efforts?” were classified into the same three subthemes: PA facility/equipment (n=81), healthy food/drink choices (n=73), and nutrition facility/equipment (i.e. lunchroom equipment, vending machines) (n=32). Although common overall themes were identified within the photos displayed and the perceived strengths noted in response to the survey, there was not a significant relationship when evaluated statistically ($p > 0.05$). The most common weakness photos displayed were the prevalence of unhealthy foods/drinks (n=23), school lunch requirements/quality of food (n=12), and PA facility/equipment (n=7). The most common responses to the question “What do you see as weakness of your school’s wellness efforts?” were classified into three subthemes: prevalence of unhealthy foods/drinks (n=115), nutrition facility/equipment (i.e. lunchroom equipment, vending machines) (n=24), and other (n=23). Common overall themes were identified within the photos displayed and the perceived weaknesses noted in the response to the survey, there was a significant relationship when evaluated statistically ($p=0.05$).

Objective 3: To gather the school community's perception as to how the PhotoVoice: School Wellness curriculum impacted their awareness and motivation to be involved with school wellness efforts.

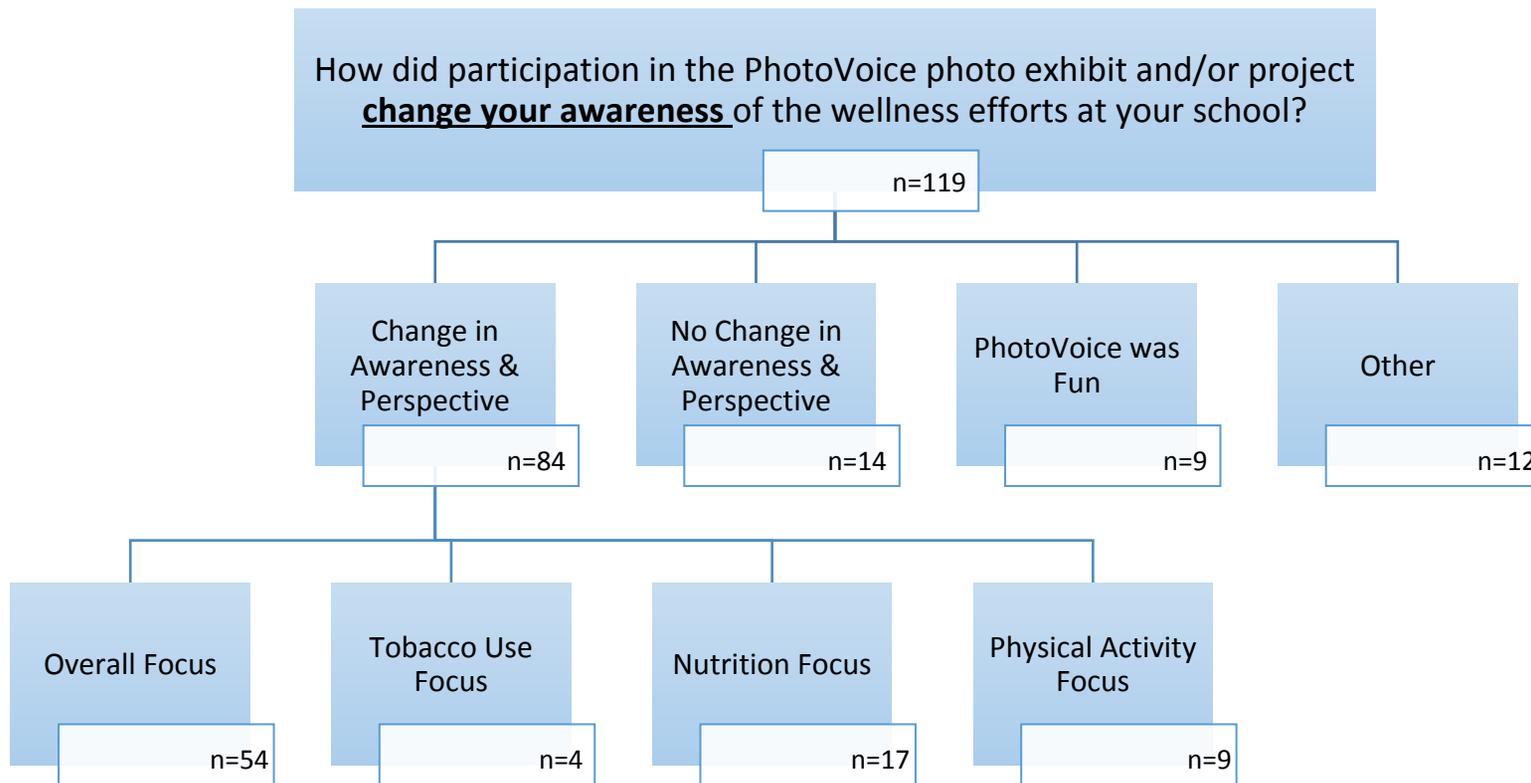
Overall the most common theme reported amongst all survey questions in response to the PhotoVoice: School Wellness project was an increase in motivation to get involved in school wellness efforts (n=110). The photo exhibit also made participants' willingness to take action (i.e., wanting to discuss school wellness efforts with others) (n=83) or made them begin contemplating taking action (i.e., need to get more involved with the school) (n=20) to improve school wellness efforts. Of the survey responses, 28 suggested that someone, if not themselves, should get involved in school wellness efforts. Specifically, 11 of the 28 responses suggested that participants thought something should be done but did not want to take on the responsibility. School faculty (22%) and PhotoVoice students (18%) responded with the most motivation to take action to improve school wellness efforts compared to General students (13%) and Community members (7%). Further results of the survey responses for a change in motivation can be found in Figure 3: Change in Motivation Survey Response Themes.

Figure 3. Change in Motivation Survey Response Themes



The second most common theme reported amongst all survey questions was an increase in awareness of school wellness efforts (n=84). Majority of the responses were aimed towards an overall change in awareness (n=54) while others focused on a change in awareness for nutrition (n=17), physical activity (n=9), and tobacco use (n=4). A small number of participants reported no change in awareness (n=14). A report of no change in awareness was more likely in General students (13%) compared to PhotoVoice students (2%). Further results of the survey responses for a change in awareness can be found in Figure 4: Change in Awareness Survey Response Themes.

Figure 4. Change in Awareness Survey Response Themes



Discussion

Therefore, the purpose of this study was threefold: 1) To identify student perceived strengths and weaknesses in school wellness efforts to see if the PhotoVoice: School Wellness curriculum could be used as a needs assessment tool within the school environment. 2) To identify if the frequency of themes within student photos displayed during the photo exhibit influenced the perception of the main strength and weakness identified by the school community after viewing the photo exhibit 3) To gather the school community's perception as to how the PhotoVoice: School Wellness curriculum impacted their awareness and motivation to be involved with school wellness efforts.

The findings of this study support the idea that the PhotoVoice: School Wellness curriculum can be used as a needs assessment tool to identify perceived strengths and weaknesses of school environments. The frequency of themes within student photos displayed during the photo exhibit did not influence the main strength and weakness perceptions of photo exhibit attendees. However, photo exhibit attendees identified the same main strengths and weaknesses which suggest it is not the frequency of the photos that makes a difference, but the specific themes displayed were communicated to the photo exhibit attendees. Lastly, the data also indicates that the PhotoVoice: School Wellness curriculum can increase school community members' awareness and their motivation to get involved in school wellness efforts.

The data suggested that the PhotoVoice: School Wellness curriculum can be useful in assessing and identifying the needs of school environments by allowing students to identify what they felt were their schools wellness strengths and weaknesses. The majority of the photos students took related to nutrition or physical activity components.

In the school districts we worked with, schools required students to have fruits and vegetables on their lunch trays and all students were required to partake in physical education and/or health at some point in their high school career. With schools having national requirements about improving school wellness efforts, physical education and school lunches are a common topic among students.^{2,8} Therefore, strength and weakness photographs that fall within physical activity and nutrition as the primary themes is not surprising.

The PhotoVoice: School Wellness curriculum was used as a way for students to assess their school's needs, which is the first step in the process for change as recognized by Evidence Based Public Health practices.⁵¹ Once schools have assessed their needs, they then can begin taking steps towards changes such as developing and implementing new plans. Due to the barriers schools commonly identified, such as lack of time and resources, writing effective wellness policies are difficult for schools and may create schools to rush through the process including taking the first initial steps in assessments.^{23,29,30} PhotoVoice: School Wellness is a way to help school wellness committees take time to evaluate their needs while gaining the different perspectives of their students. PhotoVoice: School Wellness allows students to do the majority of the work identifying needs while being provided the opportunity to express their thoughts. Involving students in major school efforts promotes strong student-faculty relationships, which has been shown to help facilitate changes in school curriculums, policies, and implementation methods.²² PhotoVoice: School Wellness can help students further their knowledge and involvement in their school while also helping school wellness committees fulfil the first initial steps towards stronger school wellness efforts.^{22,35}

The same themes were identified between photos displayed at the photo exhibit and attendees' survey responses indicating that the photos may have had a meaningful and lasting impact on the exhibit attendees. However, the frequency of photos did not seem to have a significant impact on attendees' perceptions due to the same themes being communicated and identified between photos and survey response. Weakness photos are geared closer to the original PhotoVoice purpose of showcasing weaknesses of a community in order to advocate for needed changes.³⁶⁻³⁸ Participants may have expected the strengths of school environments but were surprised by some of the weaknesses displayed in the school environment. When looking at the survey responses, participants may have also been surprised not by the identified weaknesses but the high prevalence of weaknesses such as pop and candy. With there being evidence that student's perspectives were relayed to the school community through their photos, PhotoVoice: School Wellness may be a good tool to use in public health settings, such as schools, as a tool to help assess and advocate for needed changes in wellness efforts.

With the federal government passing the Child Nutrition and Women, Infants and Children (WIC) Reauthorization Act of 2004 and Healthy, Hunger-Free Kids Act of 2010, schools were required to expand their wellness committees to include members of the school community and also disseminate information regarding school wellness policy to the school community.^{2,8} PhotoVoice: School Wellness helps to meet some of these requirements by involving the school community. Students are provided the opportunity to use photographs to vocalize wellness strengths and weaknesses to their wellness committee, administration, parents, classmates, and community residents. The wellness committee can then use the photos to help prioritize school wellness needs and begin

working towards change. The most important needs are not based on the frequency of photos but based on what photos resonate with photo exhibit attendees the most allowing one impactful photo to have as much meaning as ten photos.

PhotoVoice: School Wellness allows for communities to see a variety of perspectives. Since schools have commonly identified with gaining support for school wellness efforts as a barrier, it is important to increase school communities' buy-in to the importance of wellness efforts.²³ Students who participated in the PhotoVoice: School Wellness curriculum were key in creating community buy-in to PhotoVoice: School Wellness's potential. The way to gain buy-in from the school community was through the photos taken by the students throughout the educational component and displayed at the photo exhibit. Survey results showed that PhotoVoice: School Wellness increased participants' awareness and motivation to get involved in school wellness efforts proving that school communities did buy-in to the project and become more aware of school wellness efforts.

Our findings showed potential in getting school community members becoming more interested in school wellness efforts. With such a high response rate in participants stating they had a change in awareness and motivation to get involved, there may be a connection between participants seeing the school environment through photos versus other methods. For instance, community members indicated more of a change in awareness in nutrition (n=6) and physical activity (n=5) compared to other groups. Community members may have gained more of an increase in awareness due to their lack of awareness in school wellness efforts prior to the photo exhibits. These types of

responses may also indicate that by displaying photos, participants connect and feel the need to see change and possibly become more motivated to help change.

Second, survey results showed that the group that seemed to be the most impacted by the project was the PhotoVoice students. This may be due to PhotoVoice students having more hands-on experience and being more invested in the PhotoVoice: School Wellness project compared to the other groups. School faculty seemed to be the second group to be the most impacted by the PhotoVoice: School Wellness project which may be due to their amount of time in the school environment and their prior knowledge of wellness challenges schools are facing.

With school community members indicating their awareness was changed and that they are more motivated to take action in improving school wellness efforts, schools may be able to overcome some of their commonly faced barriers in wellness efforts. By gaining support, schools may be able to gain help in implementing changes in wellness efforts, such as gaining key members of the community who can help organize and implement change, receiving additional support from volunteers when time and help are needed, or providing vocal support when it comes to making changes.²³

Overall, the present study suggests the PhotoVoice: School Wellness curriculum has the ability to identify strengths and weaknesses in school wellness efforts, identify the frequency of displayed photos in relationship to survey responses, and identify the impact PhotoVoice: School Wellness curriculum has on increasing awareness and motivation to get involved in school wellness efforts. The PhotoVoice: School Wellness curriculum especially shows promise in engaging those who are hands-on throughout the sessions such as the PhotoVoice students. Future PhotoVoice: School Wellness projects should

include mechanisms to get school communities more involved in wellness efforts and then follow up the initial photo exhibit to see if participants actually get more involved and take action.

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