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WELLNESS POLICY AWARENESS AMONG SCHOOL LEADERS AND THE
IMPACT ON WRITTEN POLICY SCORES

BY
MARIAH REIL

A thesis submitted in partial fulfillment of the requirements for the

Master of Science

Major in Nutrition and Exercise Science

Specialization in Nutritional Sciences

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2019

THESIS ACCEPTANCE PAGE

Mariah Joanne Reil

This thesis is approved as a creditable and independent investigation by a candidate for the master's degree and is acceptable for meeting the thesis requirements for this degree.

Acceptance of this does not imply that the conclusions reached by the candidate are necessarily the conclusions of the major department.

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This paper is dedicated to my son, Theo. You are the reason for all that I do. I love you!

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ABSTRACT

WELLNESS POLICY AWARENESS AMONG SCHOOL LEADERS AND THE
IMPACT ON WRITTEN POLICY SCORES

MARIAH REIL

2019

Background: All schools participating in the National School Lunch Program must possess a written School Wellness Policy (SWP) as mandated by the Healthy, Hunger-Free Kids Act of 2010.¹ School officials and leaders play a major role in SWP implementation. It is essential to written SWP implementation that school level officials and leaders in the district are aware of the SWP. However, the association between school leader awareness of SWP and policy quality has not yet been studied.

Purpose: The purpose of the present study was to determine if school leader awareness of a SWP impacts the written SWP quality.

Methods: 24 Eastern SD elementary school principals from 22 school districts participated. Principal awareness of written SWP was assessed by their answer to having read, not read, or partially read their SWP. Written SWPs were assessed for quality using the WellSAT 2.0 and principal responses were obtained using the WellSAT-i. Written SWP scores in areas of strength and comprehensiveness were compared with principal responses.

Results: Most principals (66.7%) answered that they had fully read their SWP and a smaller percentage of principals (33.3%) answered that they had either not read or only partially read their SWP. No association was found between principal awareness of their SWP, assessed by having read or not read, and written policy scores in areas of overall comprehensiveness, overall strength, or the strength and comprehensiveness of each content section.

Conclusion: Although no association was found between a principal's awareness of the written SWP and the written SWP scores, school leaders can be identified as those beyond general administration or principals. Future research should focus on other professionals within the school as being wellness policy leaders and assess the implementation of a written SWP and leader awareness of the SWP in a more objective way.

Chapter 1: THESIS INTRODUCTION

In order to fulfill the federal requirements set by the Healthy, Hunger-Free Kids Act of 2010, schools are required to have a School Wellness Policy (SWP). In addition, wellness policy leaders are required to assist in the design, compliance, and updating of the SWP.¹ It is the duty of the school wellness policy leader to assure the required components and actions of the SWP are achieved and transparent to the public.

Although participating schools are required to possess a wellness policy, not all are of high quality or contain implemented content at the school-level.² Although determining the strength and comprehensiveness of a wellness policy is important in analyzing the school physical activity and nutrition environment, multiple factors influence SWP implementation.³

A review of recent literature regarding SWPs reveals a need to more directly pinpoint which factors influence both the written SWP quality and the implementation of SWPs. It is clear that school leaders have the opportunity to positively impact the environment of a school district by assisting in the design and implementation of SWPs, but it is not known to what extent a school leader must be involved in SWPs.

Implementation of written SWP and overall quality of SWPs could be influenced by a school leader's awareness of the policy itself. The association between school leader awareness of the SWP and policy quality has not yet been studied. Therefore, the purpose of the present study is to determine if school leader awareness of a SWP impacts the written SWP score.

Chapter 2: LITERATURE REVIEW

TITLE: Wellness Policy Awareness Among School Leaders and the Impact on Written Policy Scores.

PURPOSE: The purpose of this study is to determine the association between school leader awareness of the written SWP and written policy scores in areas of strength and comprehensiveness.

Table 1: Federal Regulations

Author and Year	Study Purpose	Sample Size and Description	Study Outcomes and Pertinent Findings
Orava, 2017 ⁴	Analyze school support for healthy eating at the time of participation in the Ontario School Food and Beverage Policy.	25 consenting elementary and secondary school representatives (8 elementary, 17 secondary) in Ontario in 2 different time periods: Time I (2012-2013) and Time II (2014).	Most schools reported to be in the 'action' category of the continuum in both time periods. Support for the implementation of the policy depended on administration buy-in, stakeholder support, and relevancy to local context.
Mansfield, 2017 ⁵	Examine the current literature regarding school wellness policies and the Healthy, Hunger-Free Kids Act, specifically regarding nutrition behavior in U.S. students in 2006-2016.	Literature was searched and obtained from the databases PubMed, Web of Science, and Sciencedirect.	Most studies determined that better access to healthy foods during school lunches was associated with better food consumption choices. Barriers did exist in regards to study design, policy implementation, and food quality, which impacted the school food environment and food behavior. Further research is suggested.
Belansky, 2009 ⁶	Analyze the impact of Local Wellness Policy implementation on physical activity practices, physical education, and recess time in low-income, rural areas. In	45, randomly selected, rural Colorado elementary schools. Low-income status was denoted as 40% or more students who meet	Policies had low strength in wording and did not have a significant impact on implementation. Barriers were discovered to impact policies,

	addition, analyze the relationship of these things and principal awareness of policy, score the strength and comprehensiveness of policies, and explore the barriers to implementing policies.	requirements for free or reduced-cost school lunches in the fall of 2005.	including school district burden, low policy resources, low awareness of the policy from the principal, and low liability to establish implementation. Financial assistance and increased communication could improve local wellness policy implementation.
Longley, 2009 ⁷	Analyze the results of school district wellness policy formation.	Study was divided into 3 phases, analyzing United States schools that participate in the NSLP, foodservice directors working with wellness policies, and other U.S. foodservice directors	In 2004, 30 of 50 states scored very low for environment for the development of wellness policy, while only 3 states scored high. In 2006, more states, 22, scored high in this area. Overall, the study found that federal legislation for school wellness policies is important for both developing and implementing the policy for schools.
Moag-Stahlberg, 2008 ⁸	Examine school district wellness policy goals in relation to federal recommendations markers of best practice.	256 small, medium, and large schools' local wellness policies were assessed from Action for Healthy Kids. Schools included each state but Hawaii.	68% of the policies followed federal requirements, while the other 32% failed to include at least 1 area required by federal law, and 15% did not include goals for assessment. Findings show that help is warranted for schools to be consistent with federal requirements in school wellness policies.
Taber, 2012 ⁹	Examine whether or not states	Samples of wellness policies	In both time periods studied,

	with strong physical activity and nutrition policies at the school level also have strong wellness policies for the district. The study also aimed to assess the relationship of wellness policy dissemination of states to districts.	were obtained from both the 2006-2007 and 2008-2009 school years, including both state and national district policies.	district policies for elementary schools were stronger in states that also had strong policies, for competitive foods. States with weak policies also had school districts with weak policies for all domains.
Metos, 2007 ¹⁰	Analyze the impact of federal legislation on wellness policy development.	30 Utah school districts in 2005-2006.	School wellness policies consistent with the CNRA are likely to have an increase in nutrition and physical activity environments, but this is not associated with a strong and comprehensive wellness policy. Districts were more likely to include items in the wellness policy that were stated in other places, such as state or federal recommendations.
Food and Nutrition Service, USDA, 2016 ¹¹	Assess the implementation of school wellness policies after the impact of the Healthy, Hunger-Free Kids Act of 2010.	NA	The article shows the need for and expected results for implementation of the HHFKA in relation to school wellness policies. Schools that participate in the NSLP or NSBP must also have approved school wellness policy components from the HHFKA.

Table 2: Implementation of School Wellness Policies

Author and Year	Study Purpose	Sample Size and Description	Study Outcomes and Pertinent Findings
Lucarelli, 2015 ³	Assess wellness policy quality as well as the accuracy between written wellness policies and school-reported nutrition practices.	Wellness policies and practices were observed from 48 low-income Michigan school districts participating in the School Nutrition Advances Kids study.	Written policies lacked comprehensiveness and strength, and most districts simply used template policies with no alterations. Written wellness policies were not found to be in agreement with school-reported nutrition policies or practices.
Hager, 2018 ¹²	Create and pilot the Wellness Champions for Change (WCC), a tool aimed at increasing the implementation of local wellness policies using wellness teams.	Within 5 Maryland school districts, 63 schools participated, including elementary, middle, and high schools.	Although implementation of local wellness policies was not impacted, schools with Wellness Champions for Change and technical support had a wellness team that was more involved. However, local wellness policy implementation was impacted indirectly by Wellness Champions for Change because of the school wellness teams.
Snelling, 2017 ¹³	Assess if and how well school health policies from state legislation are implemented in schools.	Data was derived from schools in Washington D.C. from the 2012-2013 school year.	Schools did implement legislation required by the state in terms of nutrition practices, but the time of physical and health education is not yet determined. Public and public charter schools

			showed differences.
Hager, 2016 ¹⁴	Assess characteristics associated with local wellness policy implementation at the school level.	Data derived from 1,349 public schools in the state of Maryland.	Despite student health disparities, schools that had a higher chance of implementing local wellness policies were those that had school health councils and system support.
Sanchez, 2014 ¹⁵	Study the impact that a wellness policy has on school practices.	2 school districts and their wellness policies in northern New Mexico.	Conflicting approaches to implementation were found between schools. Barriers were identified in implementation, such as low awareness of policies from administration in schools, or overall health value in the greater community.
Francis, 2017 ²	Determine if physical activity practices were consistent with school district wellness policies in schools with a high obese student population.	40 Pennsylvania schools with high percentage of obesity (>24%)	Most of the studied policies did not mention, or did not mention clearly, the items of importance in relation to physical activity policies. Most districts do not have strong policies for physical activity within the school wellness policies.
Schwartz, 2012 ¹⁶	Analyze the strength and comprehensiveness of written district wellness policies and determine if strength and comprehensiveness indicate implementation of the policy in schools.	Wellness policies from 151 school districts in Connecticut.	When schools used written policies, implementation improved at the school level. Those with higher scores in strength and comprehensiveness implemented policies better. Sociodemographic data may indicate wellness policy

			strength.
Harriger, 2014 ¹⁷	Utilize the Diffusion of Innovations Theory to review the existing literature regarding school wellness policy implementation.	21 observational studies regarding school wellness policies were used.	Of the articles analyzed, 3 findings included "uniformity in methodology, role of context in analyzing policy implementation, and lack of information related to policy clarification." Implementation data regarding school wellness policies was concluded as important in shaping future policy processes.

Table 3: School Characteristics in relation to School Wellness Policies

Author and Year	Study Purpose	Sample Size and Description	Study Outcomes and Pertinent Findings
Wijnhoven, 2014 ¹⁸	Assess the differences between the school nutrition environment and student Body Mass Index (BMI) in Europe.	Of 12 countries in Europe, 1831 schools in 2007-2008 and 2045 schools in 2009-2010 participated by school-reported information regarding 18 school environment factors.	School nutrition environment scores were impacted by the food available at each school. School's that had a higher nutrition environment score were those without sugar-sweetened beverages, high-sugar snacks, or snacks high in sodium. Those with lower nutrition environment scores also had supportive school environment policies.
Meendering, 2016 ¹⁹	Analyze whether or not the size of a school district impacts the strength and comprehensiveness of a school's wellness policy.	School wellness policies were obtained from 10 large, 29 medium, and 31 small school districts in the rural Midwest, grades 9-11.	Size of school districts did play a role in the combined strength and comprehensiveness scores of wellness policies, with small districts showing stronger and more comprehensive wellness policies, as compared to larger school district policies.
Cox, 2016 ²⁰	Determine the consistency of school wellness policies in terms of strength and comprehensiveness across school districts with high childhood obesity rates.	School wellness policies from 8 southeast states from 2009-2010, grades 6-8.	School wellness policies scored low in writing and were missing requirements important for positive school food environments. District size did have an impact on the characteristics of the school wellness policy.

Finkelstein, 2008 ²¹	Analyze food environments in US public schools, as well as wellness policies, and determine the change related to different school characteristics.	395 United States public schools made up of 129 school districts across 38 states.	Lower grade level schools, such as elementary, had lower availability of vending machines, and the percentage increased as grade level increased, with high schools having the highest percentage. School food environments were scored higher in schools with lower grades, such as elementary and middle schools. The study found that increased grade levels are associated with lower school food environment scores.
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Table 4. Assessment of School Wellness Policies

Author and Year	Study Purpose	Sample Size and Description	Study Outcomes and Pertinent Findings
Hood, 2013 ²²	Examine the association between availability of foods and beverages in competitive venues and federal requirements within school wellness policies.	Middle school and high school samples from the United States, including 892 middle and 1019 high schools.	Of the four wellness policy components studied (goals, nutrition guidelines, implementation plan/person responsible, stakeholder involvement), only 31.8% of schools had each component in the wellness policy. Higher policy scores were associated with higher availability of healthy food options. High schools with high scores had lower availability of sugar sweetened beverages.
Hoffman, 2016 ²³	Assess the wellness policies in public school districts and examine the strength and comprehensiveness of policies, as well as the impact on student weight outcomes.	270 Minnesota school districts participating in the National School Lunch Program	According to the scoring tools, the district wellness policies were modest in terms of comprehensiveness and scored low in action requirements. In districts with a large amount of students eligible for Free or Reduced-Cost Lunch, wellness policy quality was more important, as it was shown to impact student weight-related outcomes more than in other schools
Harvey, 2018 ²⁴	Evaluate selected school wellness policies.	School wellness policies were obtained from 46 school	Most of the evaluated district policies did not include strong

		districts in Kansas and Missouri.	writing. District-reporting revealed low implementation of policies, as well as identified barriers to implementation.
Brissette, 2013 ²⁵	Analyze the WellSAT in relation to action in nutrition and physical activity components of school wellness policies.	50 local wellness policies	The WellSAT tool was found to be both dependable and appropriate in terms of assessing local wellness policies. The practitioners who utilized it and associates within schools approved this tool for its intended use.
Schwartz, 2009 ²⁶	Create and analyze the characteristics of a coding tool to assess the strength and quality of school wellness policies.	Using the sample coding tool, 60 policies were utilized from July 2007-2008.	The developed coding tool was found to be reliable and could help assess and compare school wellness policies.
Chriqui, 2011 ²⁷	Analyze the clarity of wellness policies, committee requirements, characteristics associated, and whether or not these things predict a better wellness policy in terms of physical activity and nutrition.	641 district policies from the 2007-2008 school year were used, including elementary, middle, and high schools.	41% of school districts published their wellness policies online, 43% had advisory committees, and clarity of policy was not found to strongly influence the strength of the policy, but advisory committees did help policy strength. Clarity in policies is important for awareness of policies, but may not influence strength, and committees may increase strength of policies.

Table 5. Model School Wellness Policies

Author and Year	Study Purpose	Sample Size and Description	Study Outcomes and Pertinent Findings
Smith, 2012 ²⁸	Compare the comprehensiveness and strength of school wellness policies created using a standard template and those created without a standard template.	20 randomly selected school districts in Virginia, including 10 districts with locally developed wellness policies and 10 districts with template-based wellness policies.	Of the 20 policies analyzed, 17% met the federal requirements. Locally-developed wellness policies met more requirements than template-based policies. Locally-developed and template-based policies both received low scores in strength and comprehensiveness.
Eggert, 2018 ²⁹	Determine whether a model wellness policy can help schools improve their own school wellness policies, specifically in respect to the strength and comprehensiveness of policies.	91 school district wellness policies	Districts using a model policy and those that did not scored similarly to one another in terms of strength and comprehensiveness. Model wellness policies did not improve the strength or comprehensiveness of policies as compared to those that did not utilize model policies.

Chapter 3: MANUSCRIPT

INTRODUCTION

The Healthy, Hunger-Free Kids Act of 2010 (HHFKA) required all schools utilizing the National School Lunch Program or the School Breakfast Program to establish a School Wellness Policy (SWP).¹ In order to fulfill the federal requirements set by the HHFKA, schools are required to have wellness policy leaders to assist in the design, compliance, and updating of the policy.¹ It is the duty of the school wellness policy leader to assure the required components and actions of the SWP are achieved and transparent to the public. Required SWP items include stakeholder participation, content requirements, informing the public, and regular assessment. Required content includes goals for nutrition promotion and education, physical activity, and additional activities at school used to promote wellness, as well as statements regarding marketing of food and beverages.¹ SWP are also required to include the nutrition guidelines for all food items that are made available during the school day, which must align with federal regulations for the National School Lunch Program for reimbursable meals and competitive foods.¹

Although participating schools are required to possess a wellness policy, not all are of high quality or contain implemented content at the school-level.² The quality of a school wellness policy has generally been categorized into the policy's strength and comprehensiveness.²⁶ Language used in SWP is of high importance when determining the quality, because weak language could result in weak implementation.^{2, 26} Quality assurance of SWP have been developed in the form of scoring tools, particularly the WellSAT.²⁶ The WellSAT is a comprehensive coding tool used to measure SWP.²⁶ The tool scores 96 different components within a policy, and scores are based on whether an

item was mentioned, mentioned vaguely, or mentioned with strong language.²⁶ Because of differing state standards and legislation, some elements of the scores are dependent on the state that the school district is in.²⁶

Although determining the strength and comprehensiveness of a wellness policy is important in analyzing the school physical activity and nutrition environment, multiple factors influence SWP implementation.³ While some studies have found that strong or weak language in a written SWP will result in either high or low implementation, respectively, barriers exist to implementation outside of written policy language.²

School officials and leaders play a major role in policy implementation. The attitude of school leaders and their perceptions of SWP help reveal readiness to change and confidence in putting policies to action.³⁰ Successful written policy implementation could be influenced by school officials' value of student wellness, a designated official to coordinate wellness goals and implementation, and motivating staff to implement based on wellness values and program monitoring.³⁰ It is essential to written SWP implementation that school level officials and leaders in the district are aware of and knowledgeable on the SWP. However, the association between school leader awareness of the SWP and policy quality has not yet been studied. Therefore, the purpose of the present study is to determine if school leader awareness of a SWP impacts the written SWP score.

METHODS

Participants

For the present study, 110 public school districts, particularly elementary, in eastern South Dakota were recruited during the 2017-2018 academic school year.

‘Eastern’ was defined as being located east of the Missouri River in South Dakota. ‘Elementary’ was school-defined, ranging from K-6 grades. Superintendents and principals in eastern South Dakota were recruited by researchers via email by the Department of Education. Emails described the study and included a link for survey that included participants indicating a ‘yes’ or ‘no’ for study participation. Participating schools were able to upload a SWP and staff contact information. If schools did not upload a SWP the documents or a link to the document was obtained during the onsite visit.

After survey completion, principals and staff were contacted and a school site visit date was scheduled. Incentives for participation included a ‘report card’ for schools containing the strengths and weaknesses of policy/implementation found by researchers and an entrance into a drawing to win 1 of 5 \$200 gift cards for the school’s PTA. Ultimately, 24 eastern SD schools from 22 school districts voluntarily participated, which included 22 of the 110 school districts recruited. The South Dakota State University Institutional Review Board approved all protocols and procedures.

Assessment Tools

Two trained researchers assessed written SWPs for their strength and comprehensiveness using the WellSAT 2.0.²⁵ This assessment contained an online evaluation of 78 items and 6 content areas required by law to be included in SWP. The content areas scored included Nutrition Education, Standards for USDA School Meals, Nutrition Standards, Physical Education and Physical Activity, Wellness Promotion and Marketing, Implementation, Evaluation, and Communication.²⁵ Items were scored using

a 0-2 point scale. Scores of 0 were given if an item was not mentioned, 1 was given if it was mentioned, and 2 was given if it was mentioned with plans to implement. Higher scores, for both sections and overall, indicate a higher quality written SWP.

Comprehensiveness was related to whether or not items were mentioned in the policy, while strength was related to policy language. Therefore higher scores indicate comprehensiveness with strong language.

Two trained researchers assessed implementation of the SWPs onsite at each school. Principal awareness of written policies was measured using the WellSAT-i.³¹ Key informant interviews were conducted with multiple individuals, but for the purpose of the present study, principal interviews were used. Interviews were noted and recorded. School leader awareness of the SWP was determined using Section 1: Wellness Promotion; Item 1 of the WellSAT-i, which asks, “Have you read your school’s wellness policy?”³¹ Interview answers were then evaluated on a 1-3 point scale with 1 being not read, 2 being partially read, and 3 for fully read.

Two researchers completed both the WellSAT 2.0 and the WellSAT-I separately, and then the results were compared. If either total scores or section scores differed by more than 10 points, researchers discussed and came to a decided score. If results differed by less than 10 points, researcher one’s score was used. Like questions were matched for each tool and policy sections were designated by each question and matched to the WellSAT 2.0 sections.

Statistical Methods

All data were analyzed using Stata 14.1® (Stata/IC 14.1, College Station, TX).

For analyses, principal responses were coded as 0 for either not read or only partially read and 1 for fully read. Regression analysis was used to examine the association between the continuous dependent variable and outcome, which was the written SWP score and the independent variable, which was the principal having read the SWP or not. Statistical significance was set at $p \leq 0.05$. The quality of written SWP was determined using scores from the WellSAT 2.0 tool in areas of overall strength, overall comprehensiveness, and strength and comprehensiveness scores for each of the content areas, including Nutrition Education, Standards for USDA School Meals, Nutrition Standards, Physical Education and Physical Activity, Wellness Promotion and Marketing, Implementation, Evaluation, and Communication.²⁵

RESULTS

No association was found between principal awareness of their SWP, assessed by having read or not read, and written policy scores in areas of overall comprehensiveness, overall strength, or the strength and comprehensiveness of each content section, as shown in Table 3. Most principals (66.7%) answered that they had fully read their SWP, coded as a 1. A smaller percentage of principals (33.3%) answered that they had either not read or only partially read their SWP. Average strength and comprehensiveness scores for each section for the 22 SWPs are shown in Table 3. The highest average scores for comprehensiveness and strength are seen in the Nutrition Education section. The highest average comprehensiveness in the Nutrition Education section, specifically for the SWPs that principals had not read or only partially read, had a score of 85.8 ± 10.6 . Average strength scores were also highest for the Nutrition Education section with the highest strength score for the SWPs that the principals had fully read, a score of 38.4 ± 7.6 . The

lowest average scores are seen in the Implementation, Evaluation and Communication section, with higher strength and comprehensiveness scores for the SWPs that principals had fully read. All sections of the WellSAT 2.0 scored higher in strength and comprehensiveness for SWPs that the principal had fully read, except for the Nutrition Education section.

DISCUSSION

The federal government requires that all schools participating in the National School Lunch Program possess a written SWP, but quality and implementation of the written policies are impacted by many different factors. A high quality written SWP does not necessarily mean that it is implemented to the fullest extent. Leaders within a school district have a major role in the quality of a written SWP. The present study analyzed the relationship between principal awareness of SWP and the SWP strength and comprehensiveness scores. These results do not show an association between a principal's awareness of their SWP, as demonstrated by having read or not read the SWP, and subsequent strength or comprehensiveness scores of the SWP. Most of the principals surveyed (nearly 67%), reported having read their SWP in full. SWPs that the principal had fully read did not score higher in areas of strength or comprehensiveness as opposed to the SWPs that principals had not read, which suggests that principal awareness of a SWP is independent of the SWP's overall quality.

Studies have revealed a gap between the content included in a written SWP and the components of the policy that are implemented at the school level.³ Lucarelli and colleagues found that written policies were not in agreement with school-reported nutrition policies or practices.³ Even required components do not always appear in a

written policy, demonstrated by Hood et al. when only 31.8% of schools had all of four components in SWPs, which included goals, nutrition guidelines, implementation plan/person responsible, and stakeholder involvement.²² Others, such as Schwartz et al. have seen a relationship between written quality of SWPs and implementation of SWPs.¹⁶ It is important to assess the factors that influence higher policy scores in order to improve SWPs and the nutrition and physical activity environments of elementary schools.

It has previously been shown that school leaders play a foundational role in SWP implementation.³⁰ The attitude of school leaders and their perception of SWPs help reveal readiness to change and confidence in putting policies into action.³⁰ Agron et al. found that successful written policy implementation is in part influenced by school officials' value of student wellness, having a designated official to coordinate wellness goals and progress, motivating staff to implement based on such wellness values, and program monitoring.³⁰ In this national study, leaders were surveyed about their perceptions of the needs and barriers of SWPs, including school board members, superintendents, school administrators and educators, health and nutrition professionals, state agency professionals, and more.³⁰ In order for a school leader to have perceptions of the needs and barriers to SWPs, they must first be aware of what the written SWP is composed of, which means that school leaders must be aware of and knowledgeable on their SWP, as was the focus of the present study.

In addition, another study by Hager et al. found that even despite school health disparities, schools that had a higher chance of implementing local wellness policies were those that had school health councils and system support.¹⁴ It is unclear if a principal was included in these health councils, but it is possible that they played a role in some of the

wellness committees surveyed.¹⁴ Such studies indicate an important key to written SWP implementation being school leader awareness of the written SWP. This led us to predict that if a school leader, such as a principal, was fully aware of the written SWP the school would have a stronger and more comprehensive written policy. However, the present study did not show an association between school leader awareness of the SWP and written policy scores.

The present study identified principals as school leaders for each elementary school. While the study findings do not suggest principal awareness of the written SWP to be a predictive factor for higher written SWP scores, it is important to note that other school leader awareness may have a different impact on scores. Due to the comprehensive nature of the requirements within a SWP, from meal and classroom environments to physical activity, a principal may not be familiar with the best practice in all areas. Perhaps a more appropriate school leader would be a foodservice supervisor or a physical education teacher. Assessing these leaders' awareness of the written SWP may have a different impact on written SWP scores. In addition, perhaps scores are impacted on a section-by-section basis, meaning that each section has its own designated leader that most impacts the quality of said section. For example, perhaps the Physical Education teacher has the most impact on the PEPA section, but the Foodservice Director has the greatest impact on the quality of the Nutrition Standards section, and so forth. Future research should focus on identifying which leaders within a school district have the greatest impact on written SWP scores and sections, both in their perceptions of school wellness and in their awareness of their SWP.

In addition, future research should better identify the impact of barriers on SWP implementation and written scores. Many factors are thought to play a role in the implementation of and scores of SWPs, however until these factors are thoroughly analyzed and their impact known, there remains barriers as to what can be done to positively impact the nutrition and physical activity environments of schools.

LIMITATIONS

Principal awareness of their SWP was assessed via interview with a trained researcher. Because the principals' awareness of the written SWP was self-reported, social desirability bias could have played a role in the informant's response to the question, "have you read your school's wellness policy?" and some principals may have stated that they had fully or partially read the policy in order to avoid feared criticism or judgment. In addition, a principal's awareness of the SWP was only assessed from having read or not read the policy, but simply being aware of the written policy is not the same as implementing a policy throughout the school.

CONCLUSION

School leaders play a vital role in the implementation and quality of written SWP, therefore their awareness of the SWP is important. Although no association was found between a principal's awareness of the written SWP and the written SWP scores, school leaders can be identified as those beyond general administration, to include foodservice supervisors and physical education teachers. Future research should focus on other professionals within the school as being wellness policy leaders and assess the impact of their awareness of a SWP and subsequent quality and implementation. In addition, future

research should assess the implementation of a written SWP and leader awareness of the SWP in a more objective way.

Table 1. WellSAT 2.0 Item Numbers and Items within each Section.²⁶

WellSAT 2.0 Section	Item
Section 1: Nutrition Education	NE1. There is a standards-based nutrition curriculum, health education curriculum, or other curriculum that includes nutrition.
	NE 2. All elementary school students receive nutrition education.
	NE 3. All middle school students receive nutrition education.
	NE 4. All high school students receive nutrition education.
	NE 5. Links nutrition education with the school food environment.
	NE 6. Nutrition education teaches skills that are behavior-focused.
	NE 7. Nutrition education is sequential and comprehensive in scope
Section 2: Standards for USDA School Meals	SM 1. Addresses access to the USDA School Breakfast Program.
	SM 2. Addresses compliance with USDA nutrition standards for reimbursable meals.
	SM 3. School meals meet standards that are ore stringent than those required by USDA
	SM 4. District takes steps beyond those required by federal law/regulation to protect the privacy of students who qualify for free or reduced priced meals.
	SM 5. USDA National School Lunch Program and School Breakfast Program standards are described in full (or a link to the standards is provided in the wellness policy)
	SM 6. Specifies strategies to increase participation in school meal programs.
	SM 7. Addresses students leaving school during lunch periods
	SM 8. Ensures adequate time to eat.
	SM 9. Ensures annual training for food and nutrition services staff in accordance with USDA Professional Standards. (Available: http://www.fns.usda.gov/sites/default/files/CN2014-0130.pdf)
	SM 10. Addresses school meal environment
	SM 11. Nutrition information for school meals (eg calories, saturated fat, sodium, sugar) is available t students and parents
	SM 12. Specifies how families are provided information about determining eligibility for free/reduced priced meals
	SM 13. Recess (when offered) is scheduled before lunch in elementary schools
	SM 14. Free drinking water is available during meals
Section 3: Nutrition Standards for Competitive and Other Foods and Beverages	NS 1. Addresses compliance with USDA minimum nutrition standards for all FOODS sold to students during the school day (commonly referred to as Smart Snacks)
	NS 2. Addresses nutrition standards for all FOODS sold to students during the EXTENDED school day
	NS3. Addresses nutrition standards for all FOODS AND BEVERAGES served to students while attending before/aftercare on school grounds
	NS 4. Regulates food served during classroom parties and celebrations in elementary schools.
	NS 5. Addresses compliance with USDA nutrition standards for all BEVERAGES sold to students during the school day (commonly referred to as Smart Snacks)
	NS 6. Addresses nutrition standards for all BEVERAGES sold to

	students during the EXTENDED school day
	NS 7. Addresses foods and beverages containing non-nutritive sweeteners
	NS 8. Addresses foods and beverages containing caffeine (high school)
	NS 9. USDA Smart Snack standards are described in full (or a link to the standards is provided in the wellness policy)
	NS 10. Addresses availability of free drinking water throughout the school day.
	NS 11. Regulates food sold for fundraising at all times (not only during the school day).
Section 4: Physical Education and Physical Activity	PEPA 1. There is a written physical education curriculum for grades K-12.
	PEPA 2. The written physical education curriculum is aligned with national and/or state physical education standards.
	PEPA 3. Addresses time per week of physical education instruction for all elementary school students.
	PEPA 4. Addresses time per week of physical education instruction for all middle school students.
	PEPA 5. Addresses time per week of physical education instruction for all high school students.
	PEPA 6. Addresses teacher-student ratio for physical education classes.
	PEPA 7. Addresses qualifications for physical education teachers for grades K-12.
	PEPA 8. District provides physical education training for physical education teachers.
	PEPA 9. Addresses physical education waiver requirements for K-12 students
	PEPA 10. Addresses physical education exemptions for K-12 students
	PEPA 11. Addresses physical education substitution requirements for K-12 students (e.g., substituting physical education requirement with other activities).
	PEPA 12. District addresses the development of a comprehensive school physical activity program (CSPAP) plan at each school. Click here for information on CSPAP.
	PEPA 13. District addresses active transport for all K-12 students
	PEPA 14. District addresses before and after school physical activity for all K-12 students. * wellsat-I divides up options
	PEPA 15. District addresses recess for elementary school students
	PEPA 16. Addresses physical activity breaks for all K-12 students.
	PEPA 17. Addresses staff involvement in physical activity opportunities at all schools
	PEPA 18. Addresses family and community engagement in physical activity opportunities at all schools
	PEPA 19. District provides physical activity training for all teachers.
	PEPA 20. Joint or shared-use agreements for physical activity participation at all schools.
Section 5: Wellness	WPM 1. Encourages staff to model healthy eating/drinking

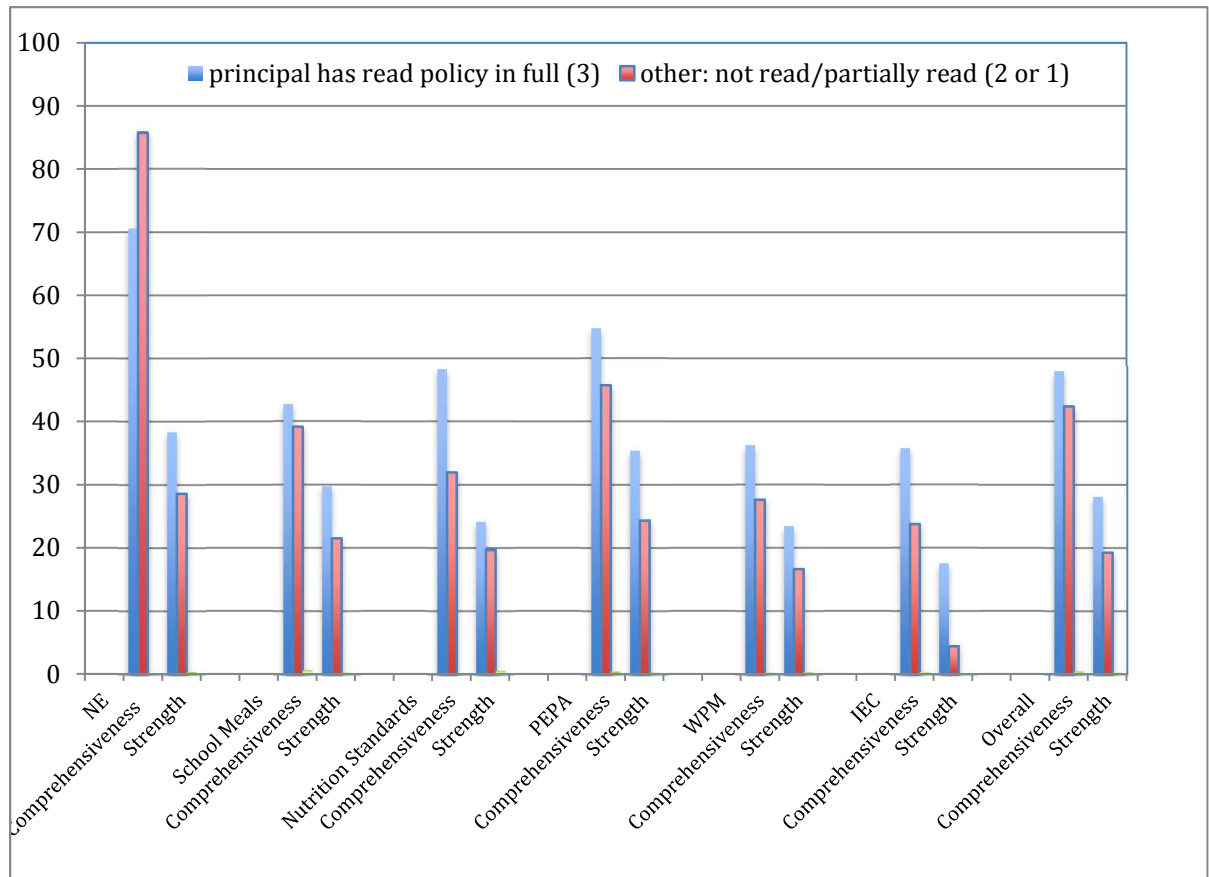
Promotion and Marketing	behaviors.
	WPM 2. Addresses staff not modeling unhealthy eating/drinking behaviors
	WPM 3. Encourages staff to model physical activity behaviors.
	WPM 4. Addresses food not being used as a reward.
	WPM 5. Addresses using physical activity as a reward.
	WPM 6. Addresses physical activity not being used as a punishment.
	WPM 7. Addresses physical activity not being withheld as a punishment.
	WPM 8. Specifies marketing/ways to promote healthy food and beverage choices.
	WPM 9. Specifies ways to promote physical activity
	WPM 10. Specifies that family wellness activities will be planned and will include nutrition and physical activity components
	WPM 11. Restrictions of marketing of food and beverages on signs, scoreboards, sports equipment.
	WPM 12. Restrictions of marketing of food and beverages in curricula, textbooks, websites used for educational purposes, or other educational materials (both printed and electronic)
	WPM 13. Restrictions of marketing of food and beverages on exteriors of vending machines, food or beverage cups or containers, food display racks, coolers, trash and recycling containers, etc.
	WPM 14. Restrictions of marketing of food and beverages on advertisements in school publications, on school radio stations, in-school television, computer screen savers and/or school-sponsored Internet sites, or announcements on the public announcement (PA) system.
	WPM 15. Restrictions of marketing of food and beverages on fundraisers and corporate-sponsored programs that encourage students and their families to sell, purchase or consume products and/or provide funds to schools in exchange for consumer purchases of those products.
Section 6: Implementation, Evaluation and Communication	IEC 1. Establishes an ongoing <i>district level</i> wellness committee.
	IEC 2. <i>District wellness</i> committee has community-wide representation.
	IEC 3. Designates one district level official accountable for ensuring each school is in compliance (ensuring that there is reporting up)
	IEC 4. Designates a leader in each school accountable for ensuring compliance within the school.
	IEC 5. Addresses annual assessment of SWP implementation/progress toward wellness goals
	IEC 6. Progress report on compliance/implementation is made to the school community (Board of Education, superintendent, principals, staff, students and parents)
	IEC 7. Progress report on compliance/implementation is made to the public
	IEC 8. Progress report ensures transparency by including: the web address of the wellness policy, a description of each school's activities and progress towards meeting wellness goals, contact details for committee leadership and information on how to join the

	committee
	IEC 9. Addresses a plan for updating policy based on best practices.
	IEC 10. Addresses methods for communicating with the public
	IEC 11. Specifies how district will engage families to provide information and/or solicit input to meet district wellness goals (e.g., through website, e-mail, parent meetings, or events)

Table 2. Principal awareness of SWP as compared to WellSAT 2.0 scores

WellSAT 2.0 section	principal has read policy in full (3)	other: not read/partially read (2 or 1)	p-value
Nutrition Education			
Comprehensiveness Score	70.6 ± 7.5	85.8 ± 10.6	0.255
Strength Score	38.4 ± 7.6	28.6 ± 10.7	0.466
Standards for USDA Child Nutrition Programs and School Meals			
Comprehensiveness Score	42.8 ± 5.1	39.1 ± 7.2	0.686
Strength Score	29.8 ± 4.3	21.5 ± 6.1	0.279
Nutrition Standards for Competitive and Other Foods and Beverages			
Comprehensiveness Score	48.3 ± 6.8	32 ± 9.6	0.182
Strength Score	24.2 ± 5.9	19.8 ± 8.3	0.668
Physical Education and Physical Activity			
Comprehensiveness Score	54.8 ± 7.9	45.8 ± 11.2	0.519
Strength Score	35.4 ± 6.9	24.4 ± 9.7	0.365
Wellness Promotion and Marketing			
Comprehensiveness Score	36.2 ± 5.4	27.6 ± 7.7	0.372
Strength Score	23.4 ± 4.9	16.6 ± 7	0.438
Implementation, Evaluation and Communication			
Comprehensiveness Score	35.8 ± 8.4	23.8 ± 11.9	0.418
Strength Score	17.6 ± 5.5	4.5 ± 7.8	0.185
Overall			
Comprehensiveness Score	48 ± 5.3	42.4 ± 7.5	0.549
Strength Score	28.1 ± 4.7	19.3 ± 6.6	0.286

Figure 1. Principal awareness of SWP as compared to WellSAT 2.0 scores by section.



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