Obesity Health Education Integrated Into Current Work Roles

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Abstract

Health education specialists (HES) can reduce obesity burden within the public and healthcare systems. This study examined HES' obesity knowledge and attitudes toward obesity with their willingness to integrate obesity health education (HE) into current work roles. A sample of 1297 completed the survey. No relationships were found between respondents' obesity knowledge and willingness, nor between bias and willingness, while 90% were willing to integrate obesity HE into current work roles. Additional results show age, years in practice, and currently working in obesity predicted willingness. Health education specialists are willing to integrate obesity health education regardless of knowledge or biases.

BACKGROUND

Adult and childhood obesity continues to be a major personal, public health, and healthcare concern. The United States adult obesity rate is 39.8% (Hales, Carroll, Fryar, & Ogden, 2017) and continues to increase in many parts of the country, with higher rates found in racial and ethnic minorities (Robert Wood Johnson Foundation [RWJF], 2018). Likewise, while the overall child obesity rate is 18.5%, disparities exist for racial and ethnic minority children (RWJF, 2018). Furthermore, obese adolescents are more likely to become obese adults (Simmonds, Llewellyn, & Woolacott, 2015). Overweight and obesity is defined by four BMI classifications, overweight (BMI 25.0 – 29.9 kg/m^2), class 1 obesity (30.0 – 34.9 kg/m^2), class 2 obesity (35.0 – 39.9 kg/m^2), and class 3 extreme obesity ($\geq$ 40 kg/m^2), with class 3 obesity being the fastest growing category (Blackburn, Wollner, & Heymsfield, 2010).

Obesity is not only a health risk in itself, but also increases the risk for the development of multiple health problems, such as type 2 diabetes, high blood pressure, heart disease and stroke, and certain types of cancer among other conditions. Additionally, obesity and the development of related diseases can disproportionately affect specific populations such as pregnant women and children (The National Institute for Diabetes Digestive and Kidney Diseases, 2015). In fact, type 2 diabetes is projected to increase four-fold in children by 2050 (Imperatore, 2012), leading to an earlier onset of diabetes-related complications. Therefore, early intervention of best practice prevention and treatment strategies for both children and adults is of utmost importance (Barlow & the Expert Committee, 2007). Finally, obesity negatively affects other factors, such as quality of life, psychosocial factors, and economic impact (Hammond & Levine, 2010; Katz, McHorney, & Atkinson, 2000).

Obesity is influenced by multiple causes, such as nutrition, genetics, metabolic changes, and the environment, while synergy among the causes heighten the need to address obesity as a multi-approach process (Brown et al., 2019; Farooqi, 2005). Obesity or obesity risk are often discovered during routine medical visits, presenting opportunities for healthcare providers to offer counseling. However, in-clinic counseling can be costly and logistically impractical with short visit times, busy staff, and patient barriers for regular medical care visits, such as cost and lack of culturally competent care (Ciao, Latner, & Durso, 2012; Office of Disease Prevention and Health Promotion, 2019). There is evidence of weight loss success in clinic-based programs (Martin et al., 2008; Tsai et al., 2010). However, evidence shows that while screening for obesity increased from 2008 - 2013, in-clinic counseling decreased during this time (Fitzpatrick & Stevens, 2017). Additionally, it is reported that providers often lack obesity treatment knowledge (Glauser, Roepke, Stevenin, Dubois, & Ahn, 2015). Study outcomes demonstrate high attrition rates when patients participate in clinic-based or research setting-based obesity programming (Debar et al., 2012; Honas, Early, Frederickson, & O'Brien, 2003), thus creating a need for a multi-layered approach outside the clinic setting by prepared professionals.

Community-based interventions can be effective for weight management (Diabetes Prevention Program Research Group, 2002). Offering such programming in the community can help participants overcome transportation, childcare services, and time-of-day barriers (Barlow & Ohlemeyer, 2006; Hannon et al., 2015). With increasing demands from obesity and related disease burdens, additional workforce segments are needed to extend education, prevention, and treatment opportunities (Society for Public Health Education, n.d.), and health education specialists (HES) are one professional group that can meet this need.

Health education specialists are unique as they are certified in the Eight Areas of Responsibility (NCHEC, n.d.), which are Assessment of Needs and Capacity; Planning; Implementation; Evaluation and Research; Advocacy; Communication; Leadership and Management; and Ethics and Professionalism. Those who are Certified Health Education Specialists (CHES) can apply this skill set to various health content areas, including obesity and diabetes prevention (Society for Public Health Education, 2019). Based on this, HES can be positioned in the community for obesity prevention and treatment efforts, support, and advocacy.

Expanding the role of HES into priority areas of health education (HE), intervention, and prevention has been investigated in health content areas such as rapid HIV testing (Santella, Fraser, & Prehn, 2016). Santella et al. (2016) examined willingness of HES to conduct rapid HIV testing outside of their current work role. The authors found the 1,421 respondents had high knowledge levels of HIV (69.7%), thought HES were appropriate for conducting testing (75.2%), and had high willingness to be trained to conduct testing (80.3%), even though respondents reported barriers to the testing and counseling component. Santella et al. demonstrated the appropriateness of HES in providing services to extend the reach of HE and screening while adding to the literature of the uniqueness and underutilization of HES. These findings provide an impact statement that HES may see their value extend past their current job focus.

A lack of obesity knowledge by healthcare providers can lead to gaps in patient care and barriers for providing care (Bucher Della Torre, Courvoisier, Saldarriage, Martin, & Farpour-Lambert, 2018; DiNapoli, Sytnyk, & Waddicor, 2011). Additionally, healthcare providers generally have limited training and practice in obesity (Stanford, Johnson, Claridy, Earle, & Kaplan, 2015), leading to lack of knowledge of diagnostic tools and low confidence levels for

treatment (Block, DeSalvo, & Fisher, 2003). Studies suggest that health educators may be better suited for these efforts (DeBarr & Pettit, 2016), as they report high knowledge of obesity. Thus, health education specialists may overcome barriers often faced by other providers in the clinic.

According to Rubin (2019), weight bias is still commonplace as weight is considered to be within one's control, and weight bias is prevalent within the healthcare setting (Phelan et al., 2015). Puhl and Suh (2015) found obese patients seen by biased providers suffer from disordered eating, avoidance of physical activity, and impaired weight loss outcomes. Weight bias has been established in various healthcare professionals, such as nurses, physicians, and dietitians. Trends in outcomes show these providers find patients with obesity as unattractive and noncompliant (Foster et al., 2003), while endorsing pro-thin, anti-fat bias (Schwartz, Chambliss, Brownell, Blair, & Billington, 2003).

Little is known about the willingness of HES to integrate new content or skills into their roles; however, it is possible for professionals to adopt an innovation without basic knowledge of the content (Rogers, 2003). Recent literature has examined this in content areas such as genomics, sexually transmitted disease (STD) education, and HIV testing (Boekeloo et al., 2002; Chen et al., 2008; Santella et al., 2016).Willingness to provide obesity HE may be influenced by multiple factors, such as topic knowledge, bias toward the topic, and social norms (Boekeloo et al., 2002; Santella et al., 2016), and the Theory of Planned Behavior (TPB) may support how HES decide to integrate their skills with new health content.

The TPB was developed to predict one's intentions to engage in a certain behavior while examining the ability to exert self-control over the behavior. The TPB is based on six constructs, namely (a) attitude toward the behavior, (b) behavioral intention, (c) subjective norms, (d) social norms, (e) perceived power, and (f) perceived behavioral control. The TPB focuses on an

individual's behavioral intentions based on personal attitudes and how subjective and social norms relate to the individual's power and self-efficacy. The TPB includes consideration that individuals may not have full volition over actions and that predictors of behavior are intentions to perform said behavior, which are influenced by attitude and beliefs about the behavior outcomes (Arnold et al., 2006).

Therefore, using the TPB to examine HES' willingness could be useful for understanding the relationship between behavioral, normative, and personal control beliefs and willingness. Increasing HES willingness to integrate obesity HE into their current non-obesity-related work roles may improve the health of a community, but it is important to understand how HES feel about their ability to do so and the possible influences.

PURPOSE

The purpose of this study was to assess HES' willingness to integrate obesity HE into their current work role, HES' knowledge of causes of obesity and associated health conditions, and HES' attitudes toward persons with obesity. The specific objective of this study was to examine factors that may predict HES willingness to integrate obesity HE into their current work roles. The research questions were: (1) what is the relationship between HES' knowledge of obesity causes and associated health conditions and their willingness to integrate obesity health education into their current work roles?; and (2) what is the relationship between HES' attitudes toward persons with obesity and their willingness to integrate obesity health education into their current work roles? Two hypotheses were tested: (1) there would be no relationship found between HES' knowledge of obesity causes and associated health conditions and their willingness to integrate obesity health education into their current work roles; and (2) there

would be no relationship found between HES' attitudes toward persons with obesity and their willingness to integrate obesity health education into their current work roles.

METHODS

A cross-sectional correlational research design was conducted among CHES and MCHES examining their knowledge of obesity causes and associated health conditions, attitudes toward persons with obesity, and their willingness to integrate obesity HE into their current work roles. Correlations to examine relationships and logistic regression models to predict outcomes were conducted. Data collection took place via a web-based instrument. The study was approved by the A.T. Still Institutional Review Board.

Recruitment

Participants were recruited using a non-probability convenience sample of HES who were listed as currently certified by the National Commission for Health Education Credentialing, Inc. (NCHEC) The list of current certified HES was received via email from NCHEC once the NCHEC board approved the research study. Respondents were currently working in the field and 18 years or older.

Instrumentation

The survey for this study was a composite of two valid and reliable scales that fit the need for this study with the addition of one question adapted from Santella et al. (2016) and eight demographic questions. The survey consisted of 41 questions. The survey was generated in REDCap™ (Harris, Taylor, Thielke, Payne, Gonzalez, & Conde, 2009).

Allison, Basile, and Yuker's (1991) Attitudes Toward Obese Persons scale measures attitudes toward persons with obesity and provides a total score. The original 20-question scale was validated in three populations: members of the National Association to Advance Fat

Acceptance and undergraduate and graduate psychology students. Reliability scores were assessed with Cronbach's alpha, resulting in .84, .81, and .80 for the groups, respectively. Validity was reported as face validity and past utility of questions in the literature as judged by the authors. Although this scale was developed in the 1990s, it is still used in current research (Gujral, Tea, & Sheridan, 2011; Flint, Hudson, & Lavallee, 2013).

The Short Obesity Knowledge Scale (Price, O'Connell, & Kukulka, 1985) measures obesity knowledge and provides a total score. The 12-item true/false version was used for this study. Validity was originally tested by a jury of four experts in the field. The authors' test-retest reliability score for the true/false version was 0.75. The true/false version scored well within the item discrimination index, with nine items scoring in reasonably good or very good categories. Similar to the ATOP scale, the Short Obesity Knowledge Scale was developed in the mid 1980s. However, it is still used today in current research (Debarr & Pettit, 2016).

Eight demographic questions were asked, along with one question adapted from Santella et al. (2016), who examined HES' willingness to conduct rapid HIV testing outside of their regular work.

Data Collection

Data were collected over 17 days during September and October 2019. The study sample size was estimated at 819 using the G*Power tool and sample sizes and return rates from related literature (Heinrich Heine Universistät Düsseldorf, n.d.)., producing a target sample size of 819.

An initial email invitation requesting participation in the study was sent. The invitation included the study purpose, eligibility criteria, informed consent language, incentive information, and a link to the survey. Respondents checked a consent approval radio button prior to starting

the survey. All respondents who submitted name and contact information were eligible for a $25 gift card. The email invitation was repeated weekly for three weeks for nonresponders.

Data Analysis

Once data collection was complete, data were inspected for completeness and plausibility and uploaded into SPSS version 26, where necessary coding took place. Descriptive statistics were conducted to describe the sample characteristics. Univariate analyses determined the sample composition, the distribution of the study variables, and frequencies and percentages. Correlational analyses were conducted to examine the relationships of knowledge and willingness and attitudes and willingness. Additional associations between the eight demographic variables were explored by correlations. The results of the correlational analyses determined which variables to include in the binomial logistic regression. The logistic regression model examined the ability of the attitude toward persons with obesity, obesity knowledge scores, and demographic variables to predict willingness.

RESULTS

Sample Description

Of the 1,343 respondents, 1,297 provided enough data to be included in the analysis. The sample was majority female, had graduate degrees, practiced in the field for five years or fewer, CHES certified for five years or fewer, not working in an obesity-related job, and reported being practitioners in the field (Table 1).

Analysis

Descriptive statistical analyses were completed for all variables, including frequency testing for categorical variables. Continuous variables were examined for skewness, with age (11.59) and attitude total score (-3.41) found to be skewed. Knowledge total score was

symmetric (1.06). Normality was examined for continuous variables, with findings of non-normal data for age, attitude total score, and knowledge total score. The majority (90%) of respondents were willing to integrate obesity HE into their current work roles.

Spearman's rank-order correlation was used to assess the relationship between willingness and age, attitude, and knowledge. There were no significant findings between willingness and knowledge, $r_s(1223) = -.046$, $p < .111$ nor were significant findings found between willingness and attitude, $r_s(1207) = .027$, $p < .356$. There was a significant finding between willingness and age, $r_s(1167) = .079$, $p < .007$. There was a statistically significant, small negative correlation between age and knowledge total, $r_s(1131) = -.280$, $p < .001$. A small negative correlation was found between attitude total score and knowledge total score, $r_s(1163) = -.225$, $p < .001$. Age explained 7% of the variation in knowledge score, and attitude total score explained 6% of the variation in knowledge score, making it a poor candidate for prediction of either variable. Contingency coefficients were run to examine the relationship between willingness and other categorical variables; all results showed little association, and none were significant. Additional contingency coefficients were completed to examine relationships between the other categorical variables (Table 2).

A binomial logistic regression was performed to ascertain the effects of attitude total score, knowledge total score, and demographic characteristics on the likelihood that HES were willing to integrate obesity HE into their current work roles. Six variables were kept in the model. Two variables were discarded. First, years since certify was discarded due to the possibility that one can certify at any point during his/her career, therefore was not an adequate indicator of experience. Second, the professional role was discarded due to 399 respondents who

indicated they were neither practitioners nor faculty members. Therefore, it is uncertain the role of respondents as HES.

The logistic regression model was statistically significant, $\chi^2(11) = 58.68$, $p < .001$. The model explained 11.0% (Nagelkerke R^2) of the variance in willingness and correctly classified 90.1% of cases. Sensitivity was 100.0%, specificity was 0.0%, positive predictive value was 90.1% and negative predictive value was 0%, indicating an indiscriminate model. Therefore, a ROC Curve procedure was completed. The area under the ROC curve for age was 0.711, 95% CI [.665, .756], which is an acceptable level of discrimination. The area under the ROC curve for attitude was 0.698, 95% CI [.653, .742], which is considered poor discrimination. The area under the ROC curve for knowledge was 0.681, 95% CI [.635, .726], which is considered poor discrimination. Of the predictor variables, three were statistically significant: age ($p = .018$), years in practice (11-15; $p = .019$), and work in obesity ($p < .001$).

A second regression model examining the three significant variables was conducted. The model was significant $\chi^2(6) = 60.81$, $p < .001$. Therefore, the second regression model was reported since there was minimal reduction in the Nagelkerke R^2 ($R_N^2 = 0.108$; Table 3). Increasing age was associated with 4% greater likelihood of willingness to integrate obesity HE into current work roles. Those with years in practice (11-15 years) were 51% less likely to be willing to integrate obesity HE. Finally, those who currently work in an obesity role were almost twice as likely to be willing to integrate obesity HE into their current work roles.

DISCUSSION

There were no significant findings when examining willingness and obesity knowledge or willingness and attitudes toward persons with obesity. These findings are not surprising as HES work in a variety of health content areas. Although the mean knowledge scores were lower

in this study when compared to DeBarr and Pettit (2016) at 9.63, knowledge level does not affect willingness, as 90% reported being willing. Health education specialists work under a code of ethics, and Article IV states that HES are to respect rights, dignity, and worth of all people. Therefore, HES are willing, likely because they strive to meet the code of ethics values. Likewise, HES would feel obligated to integrate obesity HE into their current work roles if it became a work responsibility, regardless of knowledge and bias.

Three significant findings were found when examining willingness, age, attitude score, and knowledge score correlations. First, as HES age, they are more willing to integrate obesity HE into current work roles. Older professionals have more experiences, perhaps seeing the need from a broader perspective. Second, as the age of the respondents increased, the knowledge scores decreased. This may be due to older professionals working in HE prior to the increase in awareness of the obesity epidemic. Likewise, those HES who are older may be working in management or other positions that do not require them to be content experts. Finally, there was a significant finding when examining attitude score and knowledge score. As the attitude score increased, the knowledge score decreased. Therefore, as respondents had more positive attitudes toward persons with obesity, knowledge decreased. Initially, this seems counterintuitive. However, as stated above, HES serve under the code of ethics. Therefore, HES may have more positive attitudes toward persons with obesity as they are working to create a healthier community, even if not obesity experts.

The logistic regression model revealed three significant predictor variables, namely age, years in practice (11-15), and work in obesity. An aging professional will have more experience as a HE professional. This may allow older professionals to recognize a need and be willing to fill a gap, regardless of knowledge of the content area. Therefore, using age could help the field

understand how to reach HES regardless of years in practice. For instance, if older HES are willing to integrate obesity HE, continuing education activities should target younger professionals. Respondents in this study reported being less willing to integrate obesity HE if in practice for 11-15 years. It may be that HES with higher years in practice are not as familiar with the need for integration of obesity HE. The obesity epidemic is not new, however awareness efforts have grown over the past 10 years, potentially missing this range of years in practice as they set out as professionals, similar to other healthcare providers (Choudhry, Fletcher, & Soumerai, 2005). There may be personal reasons for this result, such as respondents in this range of years in practice may be raising families, thus limiting their time and desire to assume new responsibilities. Regarding HES who currently work in the obesity content area, they can act as educators to other professionals by sharing knowledge, skills, and best practices for working obesity HE. Additionally, the logistic regression model was not a discriminatory good fit model, indicating there are likely other variables that predict willingness not considered in this study.

Evidence shows barriers for providing obesity-related HE, treatment, and access to care (Block, DeSalvo, & Fisher, 2003; Puhl & Heuer, 2010; Ciao, Latner, & Durso, 2012; Puhl & Suh, 2015) in a variety of healthcare professionals, such as time to discuss all obesity-related factors, funding for outpatient obesity programs, or enough qualified providers to handle the influx of patients with obesity. Therefore, HES can play a vital role in addressing the obesity epidemic. Health education specialists have the training to address some of the barriers found in clinic settings. Additionally, HES are capable of adopting innovations regardless of their training in specific content. This study adds to existing data that open opportunities for HES to examine how else they can affect the field of HE even when not specifically targeting their current work role.

Appropriately trained professionals are needed to help prevent and treat obesity. To optimally prepare this workforce, more knowledge and less bias toward persons with obesity should be addressed. The results are clear that HES are willing to integrate obesity HE into their current work roles, indicating that HES are willing to increase their scope of work regardless of their obesity knowledge or biases.

The knowledge and attitudes scores were not as high as initially expected. However, this aligns with literature about other healthcare professionals' knowledge and attitude levels. It is not surprising there is a gap in obesity knowledge as HES are not trained in specific health content, but rather skills. Any opportunities for HES to increase obesity knowledge could help fight the obesity health threat. Obesity-related continuing education opportunities are needed to fill the knowledge gap, overcome negative attitudes, and prepare HES for helping communities and individuals become healthier. The HES workforce has been relatively untapped with regard to working toward the prevention and treatment of obesity. These findings also support the idea that the HES workforce is relevant and should be considered an important addition to the obesity fight.

Limitations of this study include: (1) the sample population was specifically HES, however other professionals (such as nurses) conduct HE activities in community settings; (2) since respondents were already working in the field, they may have been biased to the context of the study as many HES understand the obesity epidemic and how it affects public/community health; (3) working in the content areas of nutrition and physical activity is common for HES; (4) due to the nature of the study, respondents may have answered questions in a way they felt was socially and/or professionally acceptable, indicating response bias; and (5) demographic characteristics may have limited the generalizability of the results.

Future research should expand on differences found among HES based upon their work site, such as clinical settings, public health, and community-based organizations. Additionally, research should examine in which Area(s) of Responsibility HES work. Investigating the Areas of Responsibility would further stratify the results. Examining how HES align with the TPB constructs could help the field understand where to target interventions and education. Additionally, HES may benefit from theory-based questions by having an understanding of where one stands with regard to behavioral, normative, and personal control beliefs. A qualitative approach to capture HES' willingness to integrate obesity HE into their current work roles could bring out other predictive factors not examined in this study that might influence their willingness. Second, a qualitative research study with a sample of HES could further explain the levels of knowledge and bias observed.

DECLARATIONS

The authors have no relevant financial or non-financial interests to disclose.

AUTHOR CONTRIBUTIONS

All authors contributed to this manuscript. Lisa Yazel-Smith conducted the research and was the main contributing author to this manuscript. Candace Ayars assisted with conducting the research, provided guidance on the project as a whole, and contributed to writing this manuscript. Charity Bishop contributed to writing this manuscript.

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