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Exploring Fruit and Vegetable Consumption with Buncombe County Department of Health and Human Services

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Abstract

Studies demonstrate a strong association between low vegetable and fruit consumption and higher risk for chronic illnesses, such as obesity and heart disease. Heart disease is the current leading cause of death in the United States. The mission of the Buncombe County Department of Health and Human Services (DHHS) is to provide Buncombe County residents with resources and services to maximize their well being, including support in preventing chronic diseases. In order to effectively plan programming and evaluate their efforts, the DHHS seeks to understand health behaviors; such as fruit and vegetable consumption among the population it serves. This project sought to assess fruit and vegetable intake, and involved survey design, training and coordination of data collection, and analysis. Questions about media consumption were also asked to assess the most effective means of disseminating DHHS health information. The results will be used to better understand what interventions are necessary to improve the health of Buncombe County residents. In personally reflecting on this process it is clear that working with a population and truly understanding their individual needs is a key component of civic engagement.

Keywords: Obesity, Cardiovascular Disease, Fruit and Vegetable Intake, Community Assessment

Origins of the Project

In 2010, the Buncombe County Community Health Assessment reported that of adults surveyed in Buncombe County, 57% of were overweight or obese. Further, this assessment found that only a little over one-third of individuals were actually at a healthy weight, having a Body Mass Index between 18.5 and 24.9 (2010). With the rising epidemic of obesity, especially in the United States, the negative impacts of this health condition are becoming more evident. In a study published by the American Heart Association, degree of obesity and incidence of cardiovascular disease were examined in 5,209 men and women over a 26-year period. Results indicate that overweight status was positively and independently correlated with risk of coronary disease, stroke, and cardiovascular disease death (Hubert et. al., 2001). With increasing rates of obesity, risk of chronic disease also increases. As in much of the state and country, there is a need in Buncombe County to lower rates of obesity and subsequently, rates of chronic disease. Clinical evidence shows that increased consumption of fruits and vegetables is an effective strategy for healthy weight management (Tohill et. al., 2008) and has a strong association with lowered risk for chronic heart disease.

The Health Professionals' Follow-up Study and Nurses' Health Study found that participants who consumed eight or more servings of fruits and vegetables daily had a "risk of developing chronic heart disease over the next 8-14 years that was 20% lower than those who consumed less than three servings daily" (Higdon, 2005). Studies conducted by the World Health Organization also found that low intake of fruits and vegetables is estimated to cause about 31% of ischemic heart disease worldwide (WHO, 2002).

Although on one level, with its tailgate markets and local food scene, Buncombe County seems to support a healthy food environment, in 2009 the BRFSS Survey Results on North Carolina Counties and Regions: Fruit and Vegetable Intake reported that 30% of individuals consumed less than 3 servings of fruits and vegetables per day, with only 32% meeting the Recommended Daily Intake of 5 or more. (NC State Center for Health Statistics, 2009) Effectively, 68% of individuals in Buncombe County do not consume the Recommended Daily Intake of fruits and vegetables, and a majority of the population is at an increased risk for obesity and chronic illnesses because of low fruit and vegetable intake.

In Buncombe County the Department of Health and Human Services (DHHS) has a role in providing County residents with resources and services to maximize their well-being and support prevention of chronic diseases. In order to effectively program and evaluate their efforts, the DHHS must understand health behaviors of the population it serves. With the strong association between fruit and vegetable intake and obesity and chronic disease, fruit and vegetable consumption habits is a health behavior of vital importance.

As a leader in the Healthy Buncombe coalition based in the Buncombe County DHHS, a local branch of the statewide "Eat Smart and Move More" campaign, Terri March is particularly dedicated to helping the Buncombe community achieve better health. Terri

March has an established relationship with UNC Asheville and its Health Promotion students and staff. Terri March and I know each other through a project that I developed to promote the use of Electronic Benefit Transfer (EBT) machines at farmers markets, and through coordination with her an my advisor, Dr. Ameena Batada, Terri conveyed her interest in my taking on a project to better understand fruit and vegetable intake locally. Terri March thought I would be an appropriate candidate due to my previous experience with community work and assessment tool development and administration.

Methods and Work Undertaken

In discussions with Terri March with the DHHS we created two surveys, each assessing fruit and vegetable intake and channels of media consumption by individuals accessing DHHS services. The initial target audiences were individuals attending the new tailgate market at the DHHS site on Coxe Avenue and clients attending WIC clinics. The surveys were administered by a group of students currently participating in the Health and Wellness Promotion course entitled Healthy Parity taught by Professor Batada. Administration of surveys and data entry fulfill required service learning hours for the course and Dr. Batada obtained a classroom-based protocol approval from the Institutional Review Board.

Initial drafts of the surveys were edited with the support of Darcel Eddins, Coxe Avenue market organizer and head of local organization Bountiful Cities, Professor Batada, and Terri March, as well as Georganna Cogburn of the Women Infant and Children (WIC) Clinics of DHHS. One of the final edits was to include a question about which DHHS service market participants were accessing. This allowed the DHHS to observe any differences in food choices based on if and what information or counseling they had received at DHHS.

To promote comfort of WIC clients, WIC staff administered the fruit and vegetable intake survey to individuals and students administered the surveys to individuals in DHHS waiting rooms of two locations: 40 CoxeAvenue and 339 Leicester HWY. The CoxeAvenue market survey was administered by students and also included assessment questions about the market itself. Each survey also included a script for the individual administering the survey. The script introduced the purpose of the survey and prompted for demonstrations of survey sizes using food props with the questions on intake of fruits and vegetables specifically. Figure 1 and Figure 2 contain the final script and questions for each survey.

Figure 1. DHHS Fruit and Vegetable Intake Survey

"Hello, I am assisting the Department of Health and Human Services to understand its clients. Could I ask you 5 quick questions, which should only take about 5 minutes?"

Ask about it they have completed this short questionnaire previously, in person or online.

1. Do you currently receive any type of food assistance such as EBT or WIC? If so, which?

2.How many servings of fruit do you eat?:

Per day 1-2 3-4 5-7 None Don't know/not sure Prefer not to answer

Per week 1-2 3-4 5-7 None Don't know/not sure Prefer not to answer

Per month 1-2 3-4 5-7 None Don't know/not sure Prefer not to answer

3. How many servings of vegetables do you eat?:

Per day 1-2 3-4 5-7 None Don't know/not sure Prefer not to answer

Per week 1-2 3-4 5-7 None Don't know/not sure Prefer not to answer

Per month 1-2 3-4 5-7 None Don't know/not sure Prefer not to answer

4. Do you attend any of the local farmer's markets? If so, which ones?

5. We'd also like to know where do you get most of your information about health and nutrition. I am going to read a short list and ask that you tell me whether you typically get none, some or a lot of your information about health and nutrition from this source.

Television

Local Newspapers

Internet

Friends/Family

Local Organizations

If information received from local organizations, which?

Other

Figure 2. Coxe Avenue Farmer's Market Survey

"Hello, I am assisting the Department of Health and Human Services to understand its clients. Could I ask you 5 quick questions, which should only take about 5 minutes?"

Ask about it they have completed this short questionnaire previously, in person or online.

1. Are you a staff member of DHHS? Yes No

2. What are the services you are accessing today? Medicaid FNS Immunizations WIC Prefer not to answer Other

3. Is this your first time at the market? Yes No

4. How did you hear about the market? Mountain Xpress Asheville Citizen Times Friends/Family Signs at DHHS building Other

5. What is your favorite thing about the market?

6. What would you like to see or are there any changes you would make?

7. How many servings of fruit do you eat per day? 1-2 3-4 5-7 None Don't know/Not sure Prefer not to answer

8. How many servings of vegetables do you eat per day? 1-2 3-4 5-7 None Don't know/Not sure Prefer not to answer

I held a one-hour training with the students involved in survey administration to go over the purpose of the surveys, how to administer the survey, how to approach individuals at the DHHS sites, appropriate and respectful means of asking about information that could be perceived as personal or private, logistics of the DHHS sites, and any questions the students had.

For data entry I created a survey format, using an internet survey site, into which students could enter the data from each participant they surveyed at the DHHS site lobby or Coxe Avenue market and I could sort and analyze the results electronically. I also entered the data collected by the staff at the WIC clinics and analyzed the results.

Ties to Academia

My experience working with the Buncombe County DHHS gave me a more well-rounded understanding of working with community based interventions and assessment. When I began working with the community, the majority of my work involved more direct interactions such as teaching cooking classes or collecting donations. My initial passion and abilities were more aligned with this level of intervention, working directly with community members on projects that had already been established. When I began work with the North Carolina Center for Health and Wellness I was given the opportunity to experience the other side of community engagement, creating the tools for data collection with community partners. The project involved standardizing the intake forms used by each of the partners, so data could be compiled and analyzed in one format. Collaborating with community partners on this tool gave me experience working with multiple partners to create a tool that would be useful each partner and also taught me the that patience and flexibility is required when working with multiple organizations.

With the DHHS, the tool I created addressed the other side of community interventions, assessing factors to determine effective means of intervention. Rather than working with an established program, the data collected would serve to justify the intervention. I was able to use many of the skills I learned working with the North Carolina Center for Health and Wellness in coordinating meetings and working with community partners and also the skills I learned working directly with the community in phrasing of survey questions and during the student training in my direction of how to administer the survey at DHHS sites.

The main skills I learned from this civic engagement project were navigation of the DHHS and delegation of outreach work. For approval of the survey and logistics of the project there was a chain of individuals that needed to be consulted to ensure the project would successfully collect the desired information and that participants would feel comfortable with its administration. In involving multiple department members, the final survey involved edits from a wide range of perspectives, but much coordination and organization was required. I learn how to most effectively incorporate suggestions from multiple partners and keep each updated with the most recent edits and details of the project. While in meetings this is a simple task, over email, this takes more tact and clarity. I also obtained experience using the language of the DHHS through edits to the survey questions and answer options. While similar to that I experienced with the North Carolina Center for Health and Wellness, there are always slight differences in language depending on the target population and purpose of the survey.

Delegation of outreach work was one skill with which I had little experience. After creation of the survey I held a training with the students who would be administering the survey at DHHS sites and the new tailgate market. Although I addressed what I believed necessary to successfully administer the survey and enter data, there were factors I failed to address, as multiple students had additional questions after their first session of survey administration. Although the students were very self-sufficient and showed good problem solving skills, this was an important lesson for me. During a training session there should be no assumptions about the prior knowledge of the trainees and all requirements and

logistics should be discussed. I received many questions about how to approach individuals at the DHHS sites, allowing me to refine my explanation and direction giving skills, focusing especially on clarity. This was also required to successfully give directions to enter data in the online program.

In working with DHHS I was also able to observe the skills and knowledge I've gained from he Health and Wellness Promotion courses at UNC Asheville. In Community Outreach, I learned techniques for survey design and administration that I used to create the fruit and vegetable intake surveys. Focus on validity, reliability, acceptability and readability was emphasized to ensure that the survey correctly and accurately measured the DHHS's desired information. In the course textbook, "Health Promotion Program", the author offers resources for testing each of these components and suggests that needs assessment materials should be written to reading level of seventh grade or lower and that questions wording and formatting is essential in creating a successful survey (Fertman & Allensworth, 2010). Especially with information that could be considered personal, the way the question is asked determines participation and reliability of responses, and thus is essential in survey development. Participating in the Health Communications course also added to my feelings of competence as it addressed similar survey creation strategies and gave me experience with the language of public health work.

Health Parity is another course that helped prepare me for working with the DHHS. This course gave me a deep understanding of issues related to factors such as race, gender, and nationality in a health context. We explored the strong associations between race, income, and health and disparities in health experienced in Buncombe County. The fruit and vegetable intake surveys are intended to help in the effort of reducing health disparities in Buncombe County by creating an accurate picture of individuals', especially those on food assistance, current health behaviors so that interventions can be created to help increase health parity in the community. Having the language and knowledge of these issues allowed me to focus on increasing health parity as a long-term goal of the survey.

Challenges Faced and Responses to those Challenges

One of the main challenges in this civic engagement project was coordination with the involved partners. When working with a department like DHHS, scheduling is always a major barrier, as program leaders tend to be involved in many different and simultaneously occurring projects. The concrete details of the project and its purpose were in the discussion phase for multiple weeks before we could set a meeting to discuss the creation of the survey.

For each round of editing of the survey and for the approval of its use, I consulted Ameena Batada, Terri March, and Darcel Eddins by email and also received feedback from Georganna Cogburn through Terri March. While there was great benefit from the perspective of each partner, involving this many individuals required much patience and flexibility. Having worked with community partners before, I expected the timeline would include these delays, but because the group of students administering the survey had deadlines for their civic engagement hours, there was more pressure to obtain feedback quickly.

While involving a group of students allowed for more surveys to be administered, coordination and reliability posed some difficulty. Scheduling the training required multiple sessions, as each student had different scheduling conflicts and two sessions had to be rescheduled when students failed to attend the scheduled meeting. Deadlines were set for start dates and data entry, but few were successfully met. Having experienced participating in service learning classes, I am aware that it can be difficult to complete hours with all the other commitments many students have in their lives. Personally, there were instances where I overcommitted myself, not wanting to say no to any of the community projects I was offered and then struggled to complete schoolwork. Due to this, I understand the need for flexibility with deadlines when working with students, but when there is a time limit for completing a project, this becomes difficult. To address this issue, I analyzed the early data and will continue to collect and analyze data past my personal deadlines. This period of time will also act as a pilot of the fruit and vegetable intake survey project, so it will be continued in the future.

Constructing the survey using the appropriate health language was another logistic that was a challenge. While questions needed to be accessible to the participants, they also needed to use current measurements set as standards in community assessment research. The struggle was with whether to use servings as a measure of fruit and vegetable intake or a different standard. While some research we consulted used questions about more specific food intake, such as about frequency of consumption of fruit juices, or leafy greens, others maintained the serving measurement. The shift from using serving sizes is due to the common misunderstanding of what constitutes an actual serving. To address this issue I continued to use serving size in the survey language but had the students administering the survey show examples to the survey participants. Example serving sizes were obtained from the DHHS.

In my future work I anticipate facing challenges similar to those I experienced during this project. While some may be unavoidable, I now possess skills that will help me most effectively address challenges of managing a community project.

Results

Early data indicate low fruit and vegetable intake among DHHS participants. Of the 20 surveys currently entered, more than half, 55%, of those receive some type of food assistance benefits, most commonly EBT. For EBT and WIC recipients, individuals who meet household and income eligibility guidelines are credited with benefits each month that can be used to purchase approved food items. Eligibility guidelines include factors such as income, household composition, employment, and disability (USDA, 2012).

For fruit and vegetable intake, 55% of participants report consuming 1-2 servings of fruit per day and 44% report consuming 1-2 servings of vegetables per day. No participants report consuming the recommended 5-7 servings of fruits per day and only 16.7% report consuming the recommended 5-7 servings of vegetables each day. With this early data, it is clear that fruit and vegetable consumption is low among participants at DHHS. With more than half of these individuals participating in food assistance programs, this is a population already at a heightened risk for chronic illness. With the strong association

between fruit and vegetable consumption and chronic illness, the low intake of these nutrients further increases the risk of chronic illness for an already vulnerable population.

Despite low fruit and vegetable intake, 69% of those surveyed report attending a local farmer's market, the most common being the Western North Carolina Farmer's Market, referred to as the Brevard Road Market. This leads to the question of the barrier to fruit and vegetable consumption. Almost 70% of individuals are able to access fruits and vegetables at locations such as farmer's markets, yet only 16.7% are consuming the recommended amount of vegetables per day. Factors to consider are cost, convenience, and knowledge of importance of fruit and vegetable consumption or fruit and vegetable preparation.

Survey participants report receiving most of their health information from friends and family, and the Internet. This response will help the Health Department better reach DHHS participants with pertinent health information. Local newspapers and local organizations are also sources that participants cite as receiving some of their health information. Local organizations have an especially pivotal role in promotion of health information as they are reliable sources that can address health in a person-to-person manner.

Recommendations

With assessment of the early data it is clear that an intervention to increase fruit and vegetables intake is necessary. While this survey is a pilot, first I believe it is important to continue its administration to obtain a more accurate assessment of DHHS participant health behavior habits. The next step should be to assess barriers these individuals have to fruit and vegetable consumption. If 70% report that they attend local farmer's markets where local fruits and vegetables are widely available, what are the barriers to consuming these necessary foods? Some to consider include convenience of markets, cost of fruits and vegetables, cultural barriers, low consumer awareness, and market ability to accept food assistance such as EBT (ASAP, 2012). With a better understanding of the true cause of low fruit and vegetable intake in the DHHS population in Buncombe County a more specific intervention can be designed to directly address the local health situation.

By including the question about media consumption in the current survey information necessary to reduce the barriers determined in the next survey can be disseminated most effectively. Internet and local newspaper should be used as the major source of printed information, and local organizations can encourage participants to take the information home and share it with friends and family. Whether the barrier is based on low awareness or logistics such as cost or ability to accept EBT, keeping Buncombe County citizens informed on efforts to increase their wellbeing is pertinent to the success of DHHS interventions.

The CDC suggests forming a Food Policy Council that can support and advise residents and governments on developing policies and programs to improve the local food system. These councils keep issues of accessibility, availability, distribution, and policy with food at the forefront of the local discussion and have seen great success in advocating for a healthy food environment (CDC, 1991). The recently-formed Asheville Buncombe Food

Policy Council, involving individuals and organizations in Western NC who are concerned with hunger, food security, sustainable land use, and health education. In 2012, they adopted a Food Action Plan with the goal of identifying innovative solutions to improve the local food system (Asheville Buncombe Food Policy Council, 2012). As this council grows, involvement with the DHHS has the potential to increase awareness and mobilization of resources to create a food environment more support of fruit and vegetable consumption, especially for those on food assistance such as EBT.

Importance of Service Learning

From my experiences in service learning I feel that I have been able to truly help create positive change in the community. When I declared the Health and Wellness Promotion major at UNC Asheville, I knew I had an interest in promoting health and wellbeing, but really had no concept of how to accomplish this in a supportive, effective, and most importantly, empowering way. Working with organizations in Buncombe County allowed me to be part of successful interventions that have affected the lives of many in our community. In the service learning classes I was shown the importance of working with rather than for a community, to address their true needs and create change that is sustainable and utilizes their personal strengths. Service learning gives students the experiences necessary to learn to navigate planning, execution, and assessment of interventions, exploring each step of the process to promoting actual change. It allows students to understand the concept of basing interventions not on preconceived ideas of what a community needs but instead on collaborative decisions made through an open dialogue with the community and individuals being affected. It is through this method that community programs will have the desired effect of increasing wellness and individual and community empowerment.

Sustainability

The fruit and vegetable intake survey administered this spring will act as a pilot for the DHHS to collect health behavior information on an ongoing basis. After the initial administration period, any necessary edits will be made to the survey and its use will continue by DHHS staff and with the data support of faculty and students at UNC Asheville. Students reported overall positive responses of participants at DHHS sites, with few individuals declining or preferring not to answer certain questions. Fruit and vegetable intake will continue to be an important factor in determining health outcomes for residents in Buncombe County, so the survey will continue to serve a purpose in helping direct DHHS interventions toward increasing community health.

Conclusion

In conclusion this project sets the stage for a more in-depth understanding of health behaviors of DHHS participants in Buncombe County. With this information the DHHS can more effectively create and evaluate their programs and community interventions. The early data suggests that fruit and vegetable intake is currently low, prompting a need for a follow-up survey on specific barriers individuals experience to consuming fruits and vegetables. Removing these barriers and thus increasing fruit and vegetable intake among individuals in Buncombe County has the potential to reduce rates of obesity and lower risks of chronic disease like cardiovascular disease, creating a healthier and more empowered community.

From this experience I have gained skills in creating community analysis tools, communication and coordination, and most importantly mobilization of a survey administration team. I learned that I needed to refine my abilities with clarity and specificity when giving directions and was able to put this into practice to successfully delegate work.

The service-learning program has allowed me to have a well-rounded experience of working with the community and community organizations and given me the inspiration to pursue outreach work further in my life. I have applied what I have learned from service learning in all aspects of my life, even outside of the university setting, seeing it guide my personal interactions and understanding of local and global issues.

My hope for this project is that it will allow the DHHS to better understand individuals in Buncombe County so that they can help encourage healthy behavior and thus give the community a healthier future.

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