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Measuring Patient Satisfaction After Providing a Choice of Nourishment Options Between Meals
in a Long-term Care Setting

A thesis

presented to

The faculty of the Department of Family and Consumer Sciences

East Tennessee State University

In partial fulfillment

of the requirements for the degree

Master of Science in Clinical Nutrition

by

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Keywords: patient satisfaction, Veterans, nutrition, registered dietitian, snack

ABSTRACT

Measuring Patient Satisfaction After Providing a Choice of Nourishment Options Between Meals in a Long-term Care Setting

by

Samantha Hutson

The purpose of this study was to determine whether providing residents of the James H. Quillen Veterans Affairs Medical Center Community Living Center with a choice of nourishment options between meals would improve their satisfaction with the nourishment administration process. As opposed to being given the same nourishment item each day, residents were offered choices from a nourishment cart based upon their diet order. Sixteen residents completed the pre-survey, participated in the revised nourishment cart system for a 3-week period, and completed the post-survey. Level of satisfaction was determined by analyzing the responses given by the residents on the pre- and post-surveys. There were increases in the overall level of satisfaction the residents felt with the incorporation of the new nourishment cart system.

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CHAPTER 1

INTRODUCTION

Patient satisfaction is an important measurement in the health service industry (1). It is vital to know how a patient feels about the service that is provided to him or her. Many experts believe that nutrition factors are directly related to the level of satisfaction a patient feels, as well as being related to their quality of life (2). Quality of life is defined by the World Health Organization as “a complete state of physical, mental, and social well-being and not merely the absence of disease or infirmity” (2) (p177). The American Dietetic Association has long recognized the importance of the registered dietitian in quality of life improvement, stating registered dietitians are “experts who translate food and nutrition knowledge into quality of life” (3) (p1061). Patient satisfaction as it relates to nutrition is an especially important issue in the long-term care setting. Because patients in long-term care typically have chronic illness, nutrition and foodservice make an important ongoing contribution to quality of life and the satisfaction of the patient (1).

Statement of the Problem

There has been much research regarding patient satisfaction in the long-term care setting. Patient satisfaction can be related to presentation of meals, taste of food, quantity of food provided, whether food temperature is correct, and whether the patient receives preferred foods (4). It can be measured by using survey instruments that allow the researcher to determine the level of satisfaction or fulfillment a patient feels about food related issues. Research has shown that to increase the satisfaction of patients in the long-term care setting, registered dietitians should focus

not only on what is eaten but also on how the food is presented to the patients (1). According to a study by Chao et al., 153 national experts in nutrition, health, and aging services in assisted living facilities believe that an important component of patient satisfaction is the availability of between-meal nourishments (5). Furthermore, providing a variety of nourishments, as well as allowing the residents to have a choice of nourishments, influences satisfaction (6).

In this study, the investigator attempted to determine if patient satisfaction was improved by offering patients a choice of between-meal nourishments in the long-term care setting. To do this, a nourishment cart program was planned and implemented allowing the patient to select between-meal nourishments. However, much research in this area not only focuses on patient satisfaction as it relates to between-meal nourishments, but also the importance of nourishments to the health of patients (7 - 9).

Significance of the Problem

While the focus of this study was on the importance of between-meal snacking for patient satisfaction in the elderly population, there are many other reasons why eating between meals is important. A patient receiving only a narrow range of food choices is more likely to have nutritional inadequacies (7). One study by Bernstein et al. found that higher dietary variety is associated with better nutritional status as measured by intake of nutrients, biochemical laboratory values, and body composition measures (7). It is well known that as people age, many changes occur that affect both desire to eat and the body's ability to use nutrients (8). Because it has been found that energy intake declines with age, between-meal nourishments have been found to be beneficial in raising the daily energy intake of older adults (9). Zizza et al. found that people ages 65 and older who ate between meals on a regular basis had higher intakes of energy, protein,

carbohydrate, and total fat. While in younger adults higher intakes of these nutrients could lead to obesity, it was concluded in this study that higher intakes may be necessary to ensure dietary adequacy in older adults (9).

Patient satisfaction is an especially important issue in the long-term care setting. In this setting, nutrition and foodservice components make an ongoing contribution to quality of life. Research has shown that providing patients with a between-meal nourishment and giving them the opportunity to choose this nourishment can improve the level of satisfaction the patients feel with the foodservice system (5, 6).

Hypothesis

Offering residents at a long-term care center a choice of between-meal snacks will lead to an increase in patient satisfaction related to the nourishment program as determined by a measure of patient satisfaction related to the facility foodservice.

Assumptions

Assumptions of this study include:

- Participants were honest when reporting opinions on their level of satisfaction.
- The survey instruments accurately measured the level of satisfaction of the participants.

Limitations

Limitations of the study include:

- The sample size was small and participation was voluntary.

- The pre- and post-surveys were orally administered by the principal investigator, thus possibly affecting the honesty of the participants.
- The survey instrument was not properly validated.
- The findings cannot be generalized beyond the James H. Quillen Veterans Affairs Medical Center Community Living Center.

Definitions

Patient satisfaction: the measure of fulfillment and appeasement a patient feels about food related issues (1).

Between-meal nourishment: The established definition of between-meal nourishment among professionals in the nutrition field is food, beverages, or nutritional supplements that are distributed or offered to patients between-meals at 10:00 a.m., 2:00 p.m., and 8:00 p.m.

Quality of life: a complete state of physical, mental, and social well-being and not merely the absence for disease or infirmity (2).

Body Mass Index: an index of a person's weight in relation to height; determined by dividing the weight (in kilograms) by the square of the height (in meters) (10).

Short-stay rehabilitation: time limited (up to 90 days), goal directed care for the purpose of returning a veteran to functioning as independently as possible (11).

Respite care: a short stay admission for veterans who are cared for totally in their homes in order to provide a temporary time of rest for the caregiver/family. Applicants may be admitted for up to 30 days of respite care annually (11).

CHAPTER 2

REVIEW OF LITERATURE

Improvement in Nutritional Markers

Providing between-meal nourishments and giving patients a choice of nourishments not only increases their satisfaction and quality of life, but also improves health status as it relates to nutritional markers (7). Bernstein et al. found that increasing the variety of food in nursing home residents' diets related to an improvement in nutrient intake, biochemical measures, and body composition. In men, greater dietary variety was positively associated with higher high-density lipoprotein (HDL), lower very low density lipoprotein (VLDL), and lower triglyceride (TG) levels. In women, results showed a higher body mass index (BMI) and higher serum potassium. In both males and females, an increased variety of foods was related to higher BMI, mid-arm circumference, and mid-arm muscle area (7). Mid-arm circumference is an indicator of fat stores and can aide in diagnosing individuals as having a mild, moderate, or severe fat depletion. Mid-arm muscle area provides an indirect assessment of skeletal muscle protein reserves. Through mid-arm muscle area measurements, an individual can be assessed as having a mild, moderate, or severe depletion of skeletal muscle protein (12). Researchers in this study concluded that "assurance of adequate nutritional intake for frail nursing home residents is essential for promoting health, maintaining functional independence, and preventing malnutrition and related complications such as susceptibility to illness, impaired immune function, and prolonged hospital stay" (7) (p1097).

In a study conducted by Turic et al., researchers' criteria for inclusion in the research were a 10% weight loss during the previous 6 months, a 5% weight loss in the previous month, or a

current weight of less than 90% of their ideal body weight (8). Researchers had three groups participate in the research: a control group, an intervention group that received snacks at 10:00 a.m., 2:00 p.m., and 8:00 p.m. each day, and an intervention group that received 8 ounces of medical nutritional supplement three times a day that contained 300 kilocalories, 15 g protein, 40 g carbohydrate, and 9 g fat. After 6 weeks of receiving the snack or supplement three times each day, all participants' weights had stabilized, with some participants gradually gaining weight (8).

A study by Gray-Donald et al. assessed the adequacy of dietary intake of elderly patients who received home care, as well as their ability to maintain a normal body weight (13). Dietary supplementation was provided to those patients found to have had recent significant weight loss. Those receiving food supplementation had an average increase in intake of 390 kilocalories and an average weight gain of 1.27 kilograms over a 12-week period. The researchers concluded that dietary supplementation led to both a modest weight gain and improvements in general well-being of the participants (13).

Improvement in Energy Intake

Similarly, Zizza et al. studied the benefits of snacking in older adults (9). The purpose of the study was to evaluate the influence that having nourishment between-meals has on energy intake and on energy density in the age 65 and older population. Using the National Health and Nutrition Examination Survey (NHANES) data from 1999 – 2002, a 24-hour food recall was analyzed by the researchers. It was found that older adults who snacked between meals had significantly higher intakes of energy, protein, carbohydrates, and total fat (9). The contribution of energy from meals was approximately the same among those who snacked and those who did not, suggesting that it may be easier to change snacking patterns in older adults than it would be to

change meal consumption patterns. The researchers believe that snacking may be necessary for the older population to consume adequate energy level (9). One technique that can be used to determine if a population consumes an adequate energy level is to compare actual food intakes to the guidelines set forth in the Recommended Dietary Allowances (RDA).

Turic et al. conducted a study to determine if between-meal nourishment in long-term care facilities could help patients meet the RDA and not replace energy intake from meals (8). Using 3-day food intake records obtained by registered dietitians at four different long-term care facilities, researchers found that energy intake increased by approximately 30% in the group receiving snacks (8). One way to encourage patients in long-term care facilities to increase energy intake between meals can be to offer them a variety of snacks depending on their prescribed diet, as well as a choice in the snacks they receive as a result of implementing a nourishment cart system (4 - 6).

Focus on Patient Satisfaction

Historically, when measuring patient satisfaction as it related to foodservice, the focus was on more tangible aspects of care, such as food quality, meal service timeliness, and food temperature (4). However, research has been conducted that focuses also on attitudes of staff delivering menus and food and meal customization choices. Dube et al. found that the ability of patients in acute care settings to customize their meal choices was the second most important factor in overall satisfaction with the foodservice system (4). This important study laid the groundwork for additional research into the possible improvement in patient satisfaction that could occur with the implementation of a between-meal nourishment cart that allows patients to select preferred snacks (4).

Likewise, a second study conducted by O'Hara et al. suggested that time, temperature, and presentation can help predict satisfaction among patients in a long-term care setting (1). The authors found the presentation of the food to have the greatest correlation to variability in overall patient satisfaction (1). These findings indicate time, temperature, and presentation should be the focus of registered dietitians when they are attempting to maximize the quality of life and satisfaction of patients in a long-term care setting.

An article by Mike Buzalka describes the breakfast and snack cart program at a long-term care facility in Milwaukee, Wisconsin. Rick Daehn, director of the nutrition department explains why the facility adopted a patient nourishment cart and the benefits to the residents (6). The goals of the facility are to increase the quality of life of residents as well as give them multiple food options to increase their independence. To help accomplish these goals, a breakfast and snack cart program was implemented to offer a greater variety of food options to residents (6). The facility found that in addition to reducing the amount of unexplained weight loss since the cart implementation, satisfaction of the residents improved with the new nourishment cart system (6).

Another feature that could possibly improve patient satisfaction is the concept of a spoken menu (13). Oyarzun et al. used a three-phase system to evaluate the efficiency of the spoken menu system. In Phase I, patients selected meals from printed menu items one day prior to the meals being delivered. Phase I provided patients a choice of three entrees and a choice of multiple food substitutions. In Phase II a dietetic technician would orally present the lunch and dinner menus to the patient 1 to 2 hours prior to the meals being delivered. In this phase, patients had a choice of three entrees and could make substitutions if they desired. In Phase III, patients were orally presented options for lunch and dinner, as well as offered an additional menu with elegant items available to them for a fee, as well as a condiment basket. In this phase, an evening snack cart

offered patients a choice of snack items, second servings of hot beverages during lunch and dinner, and availability of extra meal trays during lunch and dinner (14). While patient satisfaction started off high and rose slightly with Phase II and Phase III as compared to Phase I, it could have been due to the idea that patients fear responding negatively to surveyors for fear of affecting further treatment during a hospital stay. The researchers note that further studies are needed to eliminate this possible extraneous variable (14).

However, in a separate study, investigators found that there was an increase in overall patient satisfaction when patients were read options for meal items (15). While this study was conducted for meals as opposed to snacks, it may relate to the increased level of satisfaction the patient feels by being able to choose preferred foods each day as opposed to receiving preselected items each day. Preferences for different food items are more easily recognized with the spoken menu system (15). This research lends credence to a nourishment cart system in which options are read aloud to patients, resulting in improved satisfaction.

In a later study, researchers found that in a foodservice operation in a rehabilitation hospital setting, a large number of errors were noted including not adhering to or honoring patient preferences (16). Registered dietitians and food service employees should strive to prevent these types of errors (16). In a separate study in which 153 national experts were asked their views on many issues related to health services in long-term care, the findings revealed that the availability of between-meal nourishments to residents was a vital component in maintaining the quality of the nutrition services offered (5). Expert opinion indicates that respect for or honoring patient preferences and the availability of between-meal nourishments in the long-term care setting are important issues (5, 16).

Implications

Many factors influence a patient's satisfaction with their health care provider's foodservice system. Allowing patients to have a choice in foods served for meals and between-meal nourishments has been shown to positively influence satisfaction (4). Also playing important roles in patient satisfaction were the way the food was presented to the patient and provision of between-meal nourishments to residents. Both are believed to be vital issues in maintaining the quality of the nutrition services offered (1, 5). The concept of a spoken menu also has a part in patient satisfaction (15). Folio et al. found that there was an increase in overall patient satisfaction when the options for meal items were read to patients. While the focus of most research was on meals as opposed to snacks, the hypothesis can be presented that the level of satisfaction the patient feels would increase when able to choose foods as opposed to pre-selected items each day for snacks as well as meals because of the results of the research. Likewise, preferences for different food items were more easily acknowledged with the spoken menu system (15).

Providing between-meal nourishments and giving patients a choice of nourishments not only increased their satisfaction and quality of life but also improved health status (7). Older adults should have the option of receiving preferred food between-meals in order to positively influence their health (7).

In long-term care, research indicates that giving patients choices of food items, a pleasant food presentation, and the availability of between-meal nourishments should be the focus of registered dietitians when they are attempting to maximize the quality of life of patients (1, 4 - 7). Based on the research, it is believed that by offering a choice of between-meal nourishments to the patients of the Community Living Center at James H. Quillen (JHQ) Veterans Affairs Medical Center (VAMC), Mountain Home, TN, patient satisfaction will increase.

CHAPTER 3
DESIGN AND METHODOLOGY

Participants

Participants in the study were residents of the Community Living Center (CLC) at James H. Quillen (JHQ) Veterans Affairs Medical Center (VAMC). The participants residing on the second floor unit of the CLC were identified as potential subjects as it was determined that they were typically long-term residents and had adequate cognition to communicate their views. Additionally, the registered dietitians determined the residents to be cognitively able to present their opinions concerning between-meal nourishments. Of the 46 residents of the 2nd floor, 20 were excluded from the study after a review of the medical record by the registered dietitian per the purposive sampling method of identifying study participants. Reasons for exclusion from the study included any of the following: resident was at the facility under a “short-stay rehabilitation,” or “respite care” policy; resident was listed as hospice care; resident was tube fed only; resident had a diagnosis of dementia.

To contact prospective participants, an informative letter was read to and left with each possible participant residing on the second floor unit of the CLC (Appendix A). The letter provided the resident with information regarding the study as well as the contact information of the principal investigator. Based on the regulations of the Institutional Review Board of East Tennessee State University, an informed consent was not required for this study as the research involved only a survey instrument, did not involve children as participants, information obtained was not recorded in such a manner that participants could be identified directly or through

identifiers that could potentially link them to the information, and the research was not subject to FDA regulation.

Instrumentation

The pre-survey instrument that was used in this study is found in Appendix B, while the post-survey instrument is found in Appendix C. Instruments for pre-survey and post-survey were created by the principal investigator in conjunction with the staff of registered dietitians at the JHQ VAMC. On the pre- and post-surveys, questions 1 and 2 determined the times that the subjects received between-meal nourishment. On the pre-survey, questions 3, 4, 5, and 7 helped determine the level of satisfaction a subject had with the current system of between-meal nourishments. Questions 6 and 8 helped determine new items to be offered to the residents. On the post-survey, questions 3 and 4 helped determine if the subjects noticed a difference in the between-meal nourishment administration process. Questions 5 and 6 helped determine the level of satisfaction the subject had prior to the nourishment cart being implemented. While the measures were not validated against a standard measure of patient satisfaction, they were assessed for face validity by the registered dietitians on staff at the JHQ VAMC. However, the instruments were not validated by a similar demographic population.

Procedures

The procedures of this study follow the regulations of the Institutional Review Board at East Tennessee State University as well as the regulations of the JHQ VAMC Research and Development Department. Approval for the study was received from both bodies.

Prior to implementation of the new system for selecting nourishments, residents received the same pre-determined nourishment item each day based on the prescribed diet. The snack was provided to the residents in their rooms by a foodservice staff member at 10:00 a.m., 2:00 p.m. and 8:00 p.m each day. While the resident could request a change in the nourishment item he or she was to receive, the new item would then be sent to them each day until another new item was requested. Research has shown that providing residents with the opportunity to choose the nourishment they receive each day can improve the level of satisfaction the residents feel with the foodservice system (5, 6). The new between-meal nourishment system offered subjects a choice of food items they would like to have each day based upon their prescribed diet. A menu was created using the diet manual at the James H. Quillen Veterans Affairs Medical Center that clarified what each participant was allowed to choose from the nourishment cart. This enabled the foodservice worker who delivered the snack items to be able to clearly see what each participant's choices were based on their prescribed diet. The menu used can be found in Appendix D.

A pre-survey was orally administered by the principal investigator to all participants at the beginning of the study to collect data on observations of the participants regarding the previous nourishment distribution system. A new system for selecting nourishments from a cart system was then implemented, offering patients between-meal snacks based on the subjects' prescribed diet. After a 3-week trial period of the nourishment cart, a post-survey was orally administered to the same subjects by the principal investigator to determine if the satisfaction with between-meal nourishments increased.

Data Analysis

Data were collected and compiled to determine the frequencies of answers for all questions on both the pre- and post-survey. The statistical results were evaluated quantitatively and used to test the hypothesis.

CHAPTER 4

RESULTS

Participants

The participants in the study population were residents of the second floor unit of the JHQ VAMC Community Living Center. The residents of the second floor unit were chosen at the advisement of the registered dietitians at the JHQ VAMC. Of the 26 eligible residents, 17 agreed to participate and were enrolled in the study. Of the 17 who agreed to participate, 16 completed the study in its entirety. One subject was unable to participate in the post-survey due to admission into the hospital prior to completing the post-survey. Results were based on the 16 participants who were able to complete the pre-survey, take part in the new nourishment system, and complete the post-survey.

Participants Receiving Between-Meal Nourishments

Of the 16 subjects who completed both the pre- and post-survey, 100% stated that they received between-meal nourishments daily. On the pre-survey, 9 participants (52.9%) indicated that they received a snack at both 10:00 a.m. and 2:00 p.m. One resident (5.9%) was unsure as to what time he received a snack. On the post-survey, 15 participants (93.8%) indicated that they received a snack at both 10:00 a.m. and 2:00 p.m. One resident (6.3%) was unsure as to what time he received a snack as assessed on the post-survey (Table 1).

Time of Day	Pre-Survey	Post-Survey
10:00 a.m.	52.9%	93.8%
2:00 p.m.	52.9%	93.8%
Participant Unsure	5.9%	6.3%

Participant Opinion Regarding Snacks Prior to Implementation of Nourishment Cart: Pre-Survey

On the pre-survey, 13 subjects (76.8%) indicated that they would like to have more food items to choose from for snacks, while 4 participants (23.5%) stated they would not like to have more items to choose from. When asked if they had trouble opening their snack, 3 subjects (17.6%) answered “Yes,” while 14 (82.4%) answered “No.” However, many also stated that they answered no to this question because the foodservice staff and/or nurses helped them to open items that were difficult for them. Food items that were difficult to open included: juice and milk containers, wrapped cheese, and sandwiches in bags. Question 7 asked participants if they would like to choose items that they would like to eat or drink each day. To this question, 16 participants (94%) answered “Yes,” while 1 participant (5.9%) answered “No.”

Qualitative Data

Participants were given the opportunity to state what items should be added and available as between-meal nourishment options. Table 2 lists their responses.

Doughnuts	Peanut butter and jelly sandwich
Assorted flavors of Glucerna	Fruit
Sausage and bacon	Fruit salad
Cheese and crackers	Pears
Peanut butter sandwich	Grapes
Potato chips	Chocolate milk
Little Debbie cakes	Buttermilk

Participant Opinion Regarding Snacks Following Implementation of Nourishment Cart: Post-Survey

On the post-survey, 13 residents (81.3%) noted a difference in the snacks being administered, while 3 (18.8%) had not noticed a difference. In addition, 14 participants (87.5%) indicated being given the ability to choose a between-meal nourishment, while 2 participants (12.5%) noted not being able to choose a between-meal nourishment.

Improvement in Patient Satisfaction

On the pre-survey, 17 participants provided responses as opposed to 16 participants on the post-survey. One participant was unable to complete the post-survey due to admission into the hospital prior to administration of the post-survey. Because the survey instruments did not record any information in such a manner that participants could be identified, results of the pre-survey are based on 17 participants and results of the post-survey are based on 16 participants. On the pre-survey, when asked if they always ate snacks, 13 subjects (76.8%) indicated “Yes,” while 4 subjects (23.5%) responded “No.” When asked the same question on the post-survey, 14 participants (87.5%) indicated “Yes,” while 2 (12.5%) responded “No.” When asked to rank the snack they receive between-meals on a scale of 1 to 10, with 1 being the least enjoyable and 10 being the most enjoyable, the pre-survey mean was 7. After implementation of the new nourishment cart system, the mean increased to 8.8. In addition, on the pre-survey, 6 subjects indicated a satisfaction level of 6 or below, while on the post-survey only 2 subjects indicated a satisfaction level of 6 or below. Results of this question can be found in Table 3. Conducting a one-tailed t-test for correlated means, it was determined that the *t*-value was 2.29. To be

statistically significant at 0.05 confidence level, a t -value of greater than 1.75 is needed. Because $p > 0.05$, the data were determined to be statistically significant (Appendix E).

Table 3. Rankings indicating how much residents like snacks they receive		
Ranking of Satisfaction	Frequency of Ranking (Pre-Survey) (n=17)	Frequency of Ranking (Post-Survey) (n=16)
1	1	0
2	0	0
3	0	0
4	1	0
5	1	2
6	3	0
7	4	1
8	3	2
9	1	1
10	3	10
Overall Mean ^a :	7	8.8
^a Significantly different between pre- and post-survey; $p > 0.05$.		

CHAPTER 5

DISCUSSION, CONCLUSIONS, RECOMMENDATIONS

Discussion

The purpose of this study was to determine if offering residents at the JHQ VAMC Community Living Center the ability to choose between-meal nourishments would increase patients' satisfaction with the snack program. The data collected and analyzed indicated a significant improvement in the level of satisfaction the subjects felt after the implementation of the new nourishment cart system. The average change in overall satisfaction increased from a mean rank of 7 on the pre-survey to a mean rank of 8.8 on the post-survey out of a possible 10. This change is of a magnitude that is considered statistically significant ($p > 0.05$), so the hypothesis that offering patients at a long-term care center a choice of between-meal nourishments will lead to an increase in satisfaction with the snack program is supported. It should also be noted that the percentage of subjects who stated they always ate their snack increased from 76.8% to 86.5%. Additionally, only two subjects indicated a satisfaction level below a 7 on the post-survey, compared with six subjects on the pre-survey. These findings were valuable to the registered dietitian at the Community Living Center at the JHQ VAMC as they indicated positive outcomes related to the new nourishment cart system. Because the results were found to be statistically significant, this leads to the recommendation that residents should be offered a choice of nourishments between-meals rather than a pre-selected item.

In addition, when asked on the pre-survey 94% of subjects indicated on the pre-survey that they would like to be able to choose what they wanted to eat and drink for a between-meal snack

each day. According to Dube et al., giving patients the autonomy to decide what they would like to have for nourishment each day positively impacts the level of satisfaction they feel (4).

The qualitative portion of the survey also gave the subjects an opportunity to offer opinions and state what additional food items would be enjoyable to have for nourishments. Responses given will be used by the staff of registered dietitians at the JHQ VAMC to enhance the nourishment system in the future.

There were multiple factors that could have had an effect on the outcome of this study. The sample size was small with 17 subjects beginning the study and 16 subjects completing the study. In addition, the nourishment cart system was implemented for only a 3-week period. It should be noted that for approximately 1 and ½ weeks of the study, many participants simply took the same items they were used to having prior to implementation of the nourishment cart system. Another limitation of the study that could have affected the outcome is that the survey instrument was orally administered to each subject. While this could have possibly influenced the participant to answer the question in a certain way, it was deemed necessary by the staff of registered dietitians at the JHQ VAMC Community Living Center due to the diminished eyesight of many participants in the study. A final limiting factor of the study was that the survey instruments were not validated against a standard measurement of patient satisfaction nor by a similar demographic population. The pre- and post-surveys were reviewed for accuracy and understanding by the staff of registered dietitians at the JHQ VAMC. While the results of the study cannot be generalized beyond the JHQ VAMC Community Living Center facility, they were meaningful to the staff at this facility as the data obtained indicated a statistically significant increase in overall satisfaction of the subjects with the newly implemented between-meal nourishment cart system.

Conclusions

Participants in the study involving the new nourishment cart system at the JHQ VAMC Community Living Center indicated positive feelings towards the new system and showed an overall increase in the level of satisfaction they felt. The hypothesis was supported as the increase in satisfaction before and after the new system was found to be statistically significant at the 0.05 level. The outcomes are valuable as there was an increase in the mean satisfaction patients felt on a scale of 1 to 10. Prior to implementation of the nourishment cart system, the mean satisfaction of the subjects was 7, as indicated by the pre-survey results. Post-survey results indicate an increase in overall satisfaction to a mean of 8.8. Even though the sample size was small, the data were meaningful to the staff at the JHQ VAMC in that they show that opinions about snacking generally changed in a positive manner by allowing participants to have a choice of nourishments between meals.

Recommendations

In the future it would be valuable to incorporate a larger number of participants in similar investigations. Increasing the number of participants would enhance the data and produce more meaningful data. In addition, it would be helpful to implement the new nourishment cart for a period longer than 3 weeks to allow the participants an opportunity to adjust to the new system. Because many subjects were accustomed to receiving a certain snack item each day during their extended stay, it may take longer than 3 weeks for them to become comfortable with a new method. An additional factor to consider when measuring patient satisfaction could include questions related to why participants felt they were more or less satisfied with the new snack system. It would also be important to properly validate the survey instruments in the future.

To expand the study, it would be reasonable to measure resident intake data. While this study asked participants to indicate if the nourishment given was always consumed, it did not actually measure the amount of food eaten. This could lead to a study that could assess improvements in nutritional outcomes such as weight, body composition, and biochemical measures from implementation of a similar nourishment cart system.

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APPENDICES

APPENDIX A

Letter to Potential Subjects

My name is Samantha Hutson. I am a Graduate Student at East Tennessee State University studying Clinical Nutrition.

I would like to visit your room and ask you a few questions about the snacks you receive each day. I will be using the information you give me for my research project. I will use the answers you give me to create a menu of choices of snacks for you. In 3 to 4 weeks, I will return to ask more questions about the snacks you received.

Your participation in the research is voluntary. If, at any time, you would like to stop participating in the research, you may do so.

Feel free to contact me with any questions you might have.

Thank you!

Samantha Hutson

Phone number: 931-808-6606

APPENDIX B

Nourishment Cart System Pre-Survey

1. Do you receive a snack at 10am, 2 pm and/or bedtime?

YES NO

2. What time do you get snacks?

10am 2 pm BEDTIME

3. On a scale of 1 to 10, with 1 being the least and 10 being the most, how much do you like the foods and beverages you receive for snacks?

1 2 3 4 5 6 7 8 9 10

4. Do you always eat your snacks?

YES NO

5. Would you like to have more foods to choose from for your snacks?

YES NO

6. Do you have trouble opening your snack?

YES NO

7. Would you like to be able to choose what you want to eat and drink for snack each day?

YES NO

8. What food items would you like to have for snacks?

APPENDIX C

Nourishment Cart System Post-Survey

1. Do you receive a snack at 10am, 2 pm and/or bedtime?

YES NO

2. What time do you get snacks?

10am 2pm BEDTIME

3. Have you noticed a difference in the snacks you have been receiving?

YES NO

4. Have you been able to choose which snack you would like to eat?

YES NO

5. Do you always eat your snacks?

YES NO

6. On a scale of 1 to 10, with 1 being the least and 10 being the most, how much do you like the foods and beverages you receive for snacks?

1 2 3 4 5 6 7 8 9 10

APPENDIX D

Nourishment Cart System Menu

Nourishment Options/Diets	2% Milk	Tea	Coffee	Soda	Fruit Juice	Pudding	Ice Cream	Sherbet	Gelatin	Yogurt	Fruit	Applesauce	PB/ Crackers	Vanilla Wafers	Cookies	1/2 Sandwich	Graham Crackers	Tomato Juice
Regular/Low Residue/Bland/ High Fiber											Not w/ Bland diet					WW bread w/ High Fiber diet	N	
Vegetarian																	N	
Clear Liquid	N				Apple or Grape	N	N	N	any but red	N	N	N	N	N	N	N	N	N
Full Liquid	N									N	N	N	N	N	N	N	N	N
Dysphagia Pureed									N	N	Pureed	N	N	N	N	N	N	N
Dysphagia Pureed/Calorie/ Cardiac	Skim	Decaf	Decaf	N		Diet	N			N	Pureed	N	N	N	N	N	N	N
Dysphagia: Minced; Minced/ Calorie/Cardiac; Diced/ Calorie; Diced; Advanced; Advanced/Calorie/Cardiac	Skim	Decaf for Cardiac	Decaf for Cardiac	N		Diet for Rad. Cal.	N			N	Banana; Fruit Cocktail	N	N	N	N	Advanced Diet only	N	
Diabetic Diet/Maintenance Diabetic; Hypoglycemia; Calorie Controlled (1800 kcal); Calorie Controlled (1800 kcal)/Sodium Controlled	Skim	Unsweet		Diet	N	Diet		N						N	N			LS Tomato Juice for Sod. Cont.
4 gm Na+;3 gm Na+;Low Sodium							N	N					Not w/ Low Sodium	N	N			
Low Fat (40 – 50 gm); Low Cholesterol and Saturated Fat	Skim					Diet	N			N			N		N			
Cardiac; Cardiac/Calorie	Skim	Decaf	Decaf	Diet			N			N			N		N			
Low Protein (50 gm)	N				N	N	N	N	N	N			N	N	N	No meat sandwich		
Low Potassium; Chronic Renal Insufficiency; Hemodialysis	N	N	N	Lemon; Not w/ Low K+	Cran or Grape	N				N	Canned Pears		N		Shortbread/ Sugar only	White Bread		N
Reduced Bacteria; Neutropenic									N	N	Canned	N		N		N	N	

^aFood item not allowed with participant’s therapeutic diet.

APPENDIX E

Data Analysis

t-test for correlated means:

$$\frac{\text{Difference in means}}{(\frac{\sqrt{\text{Variance}}}{n}) + (\frac{\sqrt{\text{Variance}}}{n})} =$$
$$\frac{1.8}{(\frac{\sqrt{5.095}}{17}) + (\frac{\sqrt{5.085}}{16})} = 2.29$$

t-statistic = 2.29

Statistical significance at the 0.05 level for a one-tailed test with 16 degrees of freedom requires a t-statistic of at least 1.75.

Because the t-value is greater than 1.75, ($p > 0.05$) the null hypothesis is rejected and it is concluded that offering residents at a long-term care center a choice of between-meal nourishments led to an increase in patient satisfaction.

VITA

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